



CONFERENCE PROCEEDINGS

EDAMBA 2017

International Scientific Conference for Doctoral Students and Post-Doctoral Scholars

KNOWLEDGE AND SKILLS FOR SUSTAINABLE DEVELOPMENT:
THE ROLE OF ECONOMICS, BUSINESS,
MANAGEMENT AND RELATED DISCIPLINES

EDAMBA 2017

International Scientific Conference for Doctoral Students and Post-Doctoral Scholars

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The Role of Economics, Business,
Management and Related Disciplines

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Foreword by Rector of the University of Economics in Bratislava

Organised by the University of Economics in Bratislava located in the region of Central Europe and operating in the European Higher Education Area & the European Research Area as the most specialised Higher Education Institution in the field of economics, business & management in the Slovak Republic, in the year of the 10th anniversary of the *Principles for Responsible Management Education (PRME)* initiative on top of the science diplomacy and frontier research context, the **International Scientific Conference for Doctoral Students and Post-Doctoral Scholars EDAMBA 2017 titled "Knowledge and skills for sustainable development: The role of Economics, Business, Management and Related Disciplines"** held at the University of Economics in Bratislava on 4 – 6 April 2017 aimed to provide a forum for exchanging state-of-the-art knowledge and findings of doctoral students and post-doctoral scholars.

In the words of the United Nations Secretary-General António Guterres in his *Message* to 2017 Principles for Responsible Management Education Global Forum (New York, 18 July 2017), the PRME – being an initiative of the United Nations (UN) Global Compact – was launched "to nurture responsible leaders of the future". Never has this task been more important and bold leadership & innovative thinking are needed to achieve the Sustainable Development Goals (SDGs), the UN Secretary-General continues, stating: "I welcome the theme of this year's PRME Global Forum: "Making global goals local business, bringing the SDGs to every classroom." Business and management-related higher education institutions are important partners in communicating the global Goals to the next generation of executives, managers, politicians and policymakers. Students who understand the values of corporate responsibility, sustainability and ethics can be more effective change-makers, and their work can advance the common good."

Mission of our University is to provide quality higher education in all three levels of university study within the framework of economic and management programmes of study and selected programmes of study in humanities and information sciences, the development of knowledge based on the freedom of creative scientific research in the field of business, economics, informatics, humanities and social sciences, and thus contributing to the development of the knowledge society in the Slovak Republic and Europe, bearing in mind the contemporary civilisation that faces the Fourth Industrial Revolution has been challenged by issues of not merely economic, societal, ethical, political, or philosophical nature. Seeking inspiration in the reflection published in the recent 2017 edition of the EFMD Global Focus Business Magazine by the Special Advisor to the UN PRME Giselle Weybrecht as follows: "Sustainability is not an additional item to be included in the curriculum, at the beginning or end of a lecture, or the word added to a range of centres or events, some more relevant than others. It is a core part of business and hence should be a part of everything, every research project, core course, case study and event that a school engages in.", our University shall retain its focus on the UN 2030 Agenda. Should any of the SDGs be in the centre of your (multidisciplinary) attention, we wish to facilitate further interdisciplinarity in the framework of the forthcoming 21st edition of the University of Economics in Bratislava International Scientific Conference for Doctoral Students and Post-Doctoral Scholars EDAMBA 2018 titled "Capacity and resources for sustainable development: The role of Economics, Business, Management and Related Disciplines" to be held on 17 – 19 April 2018.

> Ferdinand Daňo Rector University of Economics in Bratislava

Foreword by the Ambassador-at-Large Science and Innovation, Ministry of Foreign and European Affairs of the Slovak Republic

The University of Economics in Bratislava – as a renowned Higher Education Institution in the Slovak Republic with tradition, international engagement and pursuit of specialisation in the area of economics, business and management – has addressed the "Open Innovation, Open Science and Open to the World" European Union (EU) agenda (launched in 2015) since its International Scientific Conference for Doctoral Students and Post-Doctoral Scholars EDAMBA 2016 titled "Open Science & Open Innovation: Opportunities for Economics, Business, Management and Related Disciplines" the full-text proceedings of which have been registered in the prestigious Web of Science database.

Current EDAMBA 2017 edition titled "Knowledge and skills for sustainable development: The role of Economics, Business, Management and Related Disciplines" (University of Economics in Bratislava, 4 – 6 April 2017) reflects the recent OECD Education at a Glance 2016: OECD Indicators report released in 2016. Namely, the OECD Secretary-General Angel Gurría pointed out in his Measuring what counts in education: Monitoring the Sustainable Development Goal for education editorial to the respective 2016 OECD report (2016: 13) the fact that "participation in education is not an end in itself. What matters for people and for our economies are the skills acquired through education. It is the competence and character qualities that are developed through schooling, rather than the qualifications and credentials gained, that make people successful and resilient in their professional and private lives.". When compared with the 2000-2015 Millennium Development Goals (MDGs) edition, the 2015-2030 Sustainable Development Goal 4 (SDG 4) targeting the quality of education and learning outcomes is perceived beyond mere access – participation - enrolment. The respective Education at a Glance 2016: OECD Indicators report attempted for the first time to measure the effort to ensure "inclusive and equitable quality education and promote lifelong learning opportunities for all" (SDG 4) – with the OECD having identified a quantitative benchmark for each indicator: just 12 out of the 35 OECD countries and only 6 among 22 EU members (subject to available data) met the benchmark level in the case of at least five of ten SDG 4 targets. Yet, besides comparing data and benchmarking the OECD fosters exchanging experiences and learning from good practices. If one could imagine a world where all children have the opportunity to develop basic literacy and numeracy skills after 9 years of study then the rewards would accrue to economies and societies to which the students shall contribute as adults – as a matter of fact, "[f]or lower middle-income countries, potential economic gains from ensuring that all 15year-olds attain at least the PISA baseline level of proficiency in reading, mathematics and science are estimated at 13 times their current GDP; on average, 28% higher GDP over the next 80 years. For upper middle-income countries, which generally show better learning outcomes, the gains would average 16% higher GDP over the same period," the OECD (2016: 14) claims. Therefore, in terms of continuity, let me acknowledge the focus of the follow-up 21st edition of the University of Economics in Bratislava International Scientific Conference for Doctoral Students and Post-Doctoral Scholars EDAMBA 2018 titled "Capacity and resources for sustainable development: The role of Economics, Business, Management and Related Disciplines" to be held on 17 – 19 April 2018.

Igor Hajdušek

Ambassador-at-Large Science and Innovation Ministry of Foreign and European Affairs of the Slovak Republic

Preface

In 1798 Th. Robert Malthus published his famous manuscript "An Essay on the Principle of Population", where he argues that population increases exponentially and food linearly, soon leading into a collapse. It is interesting to mention that Malthus' work greatly influenced Charles Darwin. Several later editions were published till 1826. Malthus' work was strongly criticized emphasizing that creative capabilities of humankind have been ignored in his work and that they have enormous power. In late 1960ties the founders of The Club of Rome: Aurelio Peccei and Alex King were confirmed about overuse of nonrenewable resources and about pollution. The thoughts and actions of The Club of Rome founders expressed an evolving attitude of humankind at that time, but were present in the work and ideas of Justus von Liebig and Thorlein Veblen 50 years earlier. Rachel Carson published "Silent Spring" in 1962, UNESCO organized Biosphere conference in 1968, First Earth Day was organized in 1970 and Rene Dubos and Barbara Ward published "Only One Earth" in 1971. Term sustainable development was coined by Barbara Ward and it became widely used following the famous G. H. Brundtland et al., "Our Common Future" containing now broadly accepted definition of sustainable development: "Sustainable Development is development that meets the needs of the present generation without compromising the ability of the future generations to meet their needs." H. Daly formulated conditions for physically sustainable system: 1) rates of use of renewable resources should be smaller than their rates of regeneration, 2) rates of use of non-renewable should be smaller than the rate of development of renewable substitutes, and 3) pollution should be smaller than assimilative capacities of environment.

In 1968 Sweden proposed to the UN (UN ECOSOC) to host the organization of the international conference devoted to the interaction of humans with the environment. First Earth conference was held in Stockholm in 1972 and Maurice strong, fellow of the World Academy of Art and Science and member of The Club of Rome was designated as its secretary general. The UN conference on environment and development was held in 1992 in Rio de Janeiro and in 2012 again Rio+20.

The most significant document is the UN Agenda 2030 – Sustainable Development Goals (SDGs) unanimously adopted on September 25, 2015 by the UN General Assembly. SDGs are a set of 17 goals and 169 targets harmonious and mutually reinforcing. The

realization of all these goals and targets is the paramount responsibility and duty of all human beings and of all political, social and economic institutions.

The University of Economics in Bratislava (Slovak Republic) organized the 20th International Scientific Conference EDAMBA 2017 devoted to "Knowledge and Skills for Sustainable Development – the Role of Economics, Business, Management and Related Disciplines", April 4-6, 2017. Emphasis on knowledge and skills is particularly important. Certainly, there are many challenges in accomplishing all 169 targets and our knowledge and understanding is far from complete or even adequate. International Council for Science (ICSU) published recently 'A Guide to SDG Interactions: from Science to Implementation' analyzing specifically four goals: SDG2: Zero Hunger, SDG3: Good Health and Well-being, SDG7: Affordable and Clean Energy and SDG14: Life below Water and 316 interactions among them. The analysis concluded that 238 interactions are positive, 12 are neutral and 66 negative. This analysis clearly demonstrates how much more should be done to understand the SDGs and to develop skills to achieve them. Such international conferences involving researchers and students are exceptionally useful and they are formulated in the SDG17: 'Strengthen the means of implementation and revitalize the global partnership for sustainable development'.

As Albert Einstein said "We can't solve problems by using the same kind of thinking we used when we created them." New, out-of-the-box ideas are necessary. And as Nobel laureates concluded at their symposium held in 2000: "It is time to turn our backs on the unilateral search for security, in which we seek to shelter behind walls. Instead, we must persist in the quest for united action to counter both global warming and a weaponized world. To survive in the world we have transformed, we must learn to think in a new way. As never before, the future of each depends on the good of all." It is proper that the UN Agenda 2030 is also called **Transform Our World!**

Ivo Šlaus

World Academy of Art and Science

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International and National Policies for Elimination of Value Added Tax Avoidance

Peter Benko

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: peterbenko.euba@gmail.com

Abstract

This article is focused on the extent of value added tax collection and factors that influence effective value added tax collection, it also refers to the methodology for calculating the VAT gap, which is currently preferred by some states and EU institutions. Factors often associated with the scale of tax evasion are also presented. Selected theoretical approaches to assessing taxpayer's motivation to commit crime of an economic nature, and impact on taxpayer's decision making related to tax compliance are mentioned at the end of the article.

Keywords: value added tax, value added tax gap, tax evasion, tax avoidance, tax administration

JEL classification codes: H21, H26, H30

1. Introduction

Value added tax, in view of the size tax to the state budget, is an important source for national budgets of the EU countries. In 2015, collection of value added tax in the EU achieved the amount of 1,032.55 billion euros. Value added tax collection makes up one third of total tax revenues for half of the countries of the European Union. The goal of the European Commission and the individual states is to effectively collect value added tax focusing primarily on illegal actions of taxpayers. For this reason, tools and measures on EU level, which aim to exchange information between the Member States of the European Union, have been adopted. At present, the European Union has a harmonized system of VAT, which is governed by the Council Directive 2006/112/EC of 28th November 2006, on the common system of VAT. Harmonisation represents a basic approach to the application of the VAT mechanism in the member states of the European Union.

Due to the shortcomings and low efficiency and of value added tax collection, related legal acts of the mentioned Directive, which is a European Union Regulation no. 904/2010 of 7th October 2010, on administrative cooperation in the field of value added tax, have been adopted. Regulation governs the fight against tax evasion on VAT, which requires closer cooperation between the administrations of the individual member states, which are responsible for applying the provisions in the mentioned field. The necessity of the application of the regulation is conditional by the nature of tax evasions, which exceed the borders of member states and lead to budget losses and breach of the principle of fair taxation and can cause the deformation of capital movements and conditions of economic competition. European Union Council Regulation no. 904/2010 founded the Eurofisc system. The system became operational with the effectiveness from 10th November 2010. The activity of Eurofisc network helps member states in their fight against VAT fraud such as: the details of anti-fraud investigations, exchange of sensitive information relating to persons involved in fraudulent transactions, newly emerging fraud or practical measures to promote multilateral controls in the fight against VAT frauds.

Fiscalis program designed for the period from 2014 to 2020 plays an undeniable role in the fight against tax criminal activity. The program FISCALIS was established on the basis of the Regulation of the European Parliament and the European Council no. 1286/2013 of 11th December 2013, establishing an action program to improve the operation of taxation systems in the European Union for the period 2014-2020 (FISCALIS 2020) and repealing the Decision no. 1482/2007/ES. FISCALIS was founded in 1993 as the beginning of a series of EU programs aimed at contributing to the efficient functioning of the taxation systems in the single market through improved cooperation between tax administrations and their employees.

1.1 Methodology and Calculation of VAT gap

Certain inefficiency in the choice of value-added tax is depicted in VAT values gap. Up to half of EU countries had the value of VAT gap in 2015 of more than 12%, while in 2012 half of the countries of the European Union reached the value of VAT gap of 14.5%. VAT gap Hence the tax gap may occur as a consequence of an intentional conduct designed to reduce tax liability or an unintentional conduct attributable to the lack of ability/knowledge to report one's tax liability. Some work indicates that the size of VAT collection affects the application of different tax rates, in particular, its reduction and various kinds of exemptions. These different measures and the system rates make it complicated and it becomes a more closed ground. Policy gap is an indicator that aggregates the theoretical fiscal effects of the introduction of such measures. Countries that have higher levels of policy gap, have at the same time the lowest values of VAT gap. We can calculate the value respectively the size of VAT gap as the difference of real choice of value added tax (VR) and the VAT Total Tax Liability (VTTL).

$$VR = VTTL - VAT gap (1)$$

$$VAT gap = VR - VTTL$$
 (2)

Gap calculation based on the above methodology has its drawbacks, too, which lay in abstracting from statistical uncertainties, the amount of late payment, or other reasons of possible deviations when calculating the amount of tax liability. In the calculation, the bankruptcy and insolvency of taxpayers are also included.

For the calculation of VTTL a 'top - down' or macroeconomic approach is now often applied. Another possible way of calculating the tax gap on VAT is a "bottom - up" approach, respectively microeconomic approach. The approach "top-down" is based on multiplying the weighted average tax rate and base. We can calculate the value "base" using input-output method and using national input-output tables (NIOT), or we can apply methods based on the adjusted nominal GDP, where we adjust GDP in current prices by those items that are not subject to VAT. To calculate the VTTL application of adjusted nominal GDP expense method of calculating GDP is used.

$$VTTL = \sum_{i=1}^{N} (rate_i \times base_i)$$

$$+ \sum_{i=1}^{N} (rate_i \times propex_i \times IC \ base_i)$$

$$+ \sum_{i=1}^{N} (rate_i \times propex_i \times GFCF \ base_i) + net \ adjustment$$
(3)

Where:

Rate is the weighted average tax rate i.e. the effective rate,

Base is the final consumption value,

IC base is the value of intermediate consumption,

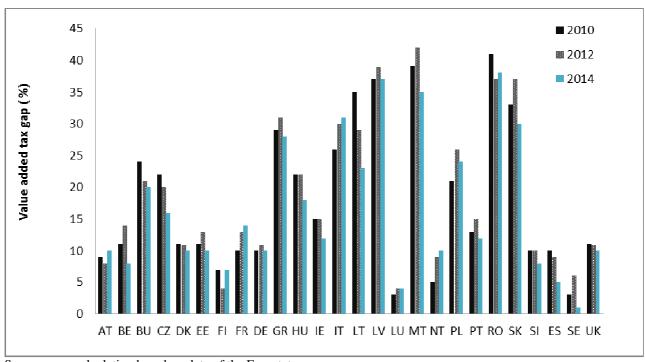
Propex is the percentage of output in a given sector that is exempt from VAT,

GFCF base is the value of gross fixed capital formation, and

index i denotes sectors of the economy.

Development of VAT gap values are presented in the Figure 1.

Figure 1Development of VAT gap in Member States of the European Union



Source: own calculation based on data of the Eurostat

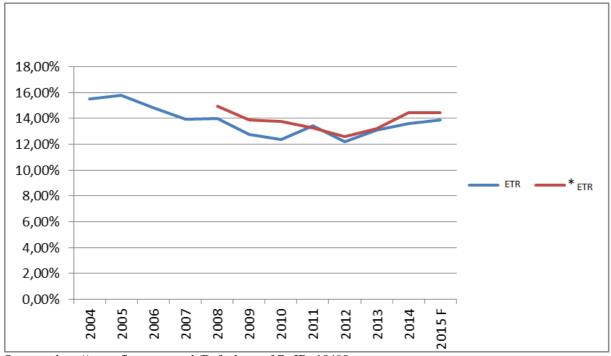
In chart above we can see, that up to half of EU countries had the value of VAT gap in 2015 of more than 12%, while in 2012 half of the countries of the European Union reached the value of VAT gap of 14.5%.

2. Effective collection of value added tax in Slovakia

The effectiveness of value added tax collection in the Slovak Republic had from 2004 rapidly decreased until 2012, when the value of the VAT gap rose to 37% in absolute terms 2.526 billion Eur. Unflattering results of tax collection led, under the Government of the Slovak Republic to the adoption of an action plan against tax evasion. The Government of the Slovak Republic proposed in three stages from 2012 to 2016 fifty measures, most of which has been implemented and applied in practice. Continuously with applying the individual measures from the Action Plan against tax evasion, an analysis of the measures taken and their confrontation in the results of tax collection was conducted. In 2014 the value of VAT gap dropped to 29.96%. Sectoral analysis, which identified wholesale and retail trade and repair of motor vehicles, construction, accommodation and food services, agriculture and professional services as the riskiest industries, should contribute, too. Only about 8% of companies in 2014 paid more than four fifths of the total VAT. As much as four-fifths of VAT revenues are from the retail and wholesale industries and industry.

An important memento in the case of assessment of the size of tax losses in VAT is also the share of private consumption in the growth of revenue from VAT and the total increase in these revenues in the state budget. During period 2006 - 2010 the level of domestic consumption increased by 6.40%, whereas the total VAT collection increased by 1.70%. That fact thus demonstrably indicates that tax revenues do not develop in line with the developments in the economy and a large part of VAT revenue as a result of illegal enrichment of certain entities is not in the state budget. The fruitfulness of collection of VAT is to be measured, except the VAT gap by the effective tax rate, the development of which can be seen in the Figure 2.

Figure 2Development of effective rate of value added tax in Slovakia for the years 2004 - 2015



Source: http://www.finance.gov.sk/Default.aspx?CatID=10490>.

The effective tax rate is below the statutory tax rate, which is currently at 20%. The effective tax rate is decreasing in view of the different tax rates which are imposed on some

taxable transactions. The decrease of effective value added tax is also influenced by effective tax rate decrease. In view of an unfavourable result development of the efficiency of tax collection, the Slovak Government adopted an Action Plan against tax evasion by the Resolution of the Government of the Slovak Republic no. 235/2012.

2.1 Measures taken in the Action Plan by the Government of the Slovak Republic

The introduction of obligation to pay the financial guarantee for risk entities at the VAT registration. In the past, the Slovak tax law did not know the institute of financial guarantee at the registration. The intention of the adoption of this instrument was to prevent the entrance of a person registered for VAT who is expected to abuse this system in order to commit illegal crimes. Persons covered by the obligation to pay a financial guarantee are defined at § 4c section 1 of the VAT Act. The provision relating to the composition of the financial guarantee related to persons in a certain status (as individuals or managers, or associates of legal entities) have tax arrears. Using the subjective software assessment, the exclusion of subjective assessment is ensured, which establishes a degree of riskiness, and also the desirable level of the financial guarantee. During period 1st October to 31st December 2014, from the total of number 29,773 applicants of registration for VAT was 6817, what is almost a quarter of applicants, identified as risky, while an obligation to pay a financial guarantee in the amount of € 11,755,000 EUR was cumulatively laid. The application practice has also brought special cases, e.g. companions found out only on the basis of the financial guarantee that the designated agent appointed by them is a risky person. Subsequently, they acceded to the personnel measures.

The cancellation of registration for VAT for non-contact and non-communicative payers. Until 31st December 2014, the tax authorities identified 11,997 VAT payers who did failed to fulfil their obligations, were mostly non-contact and performed the task of frontmen. On the basis of these facts the tax authorities cancelled the registration for VAT to these tax payers and were therefore hindered the possibility of committing tax delicts.

A common and non-different liabilities for tax in the chain. The result of the measure was an increased prudence and a mutual control, respectively, consistent verification from the side of business partners. Publishing lists of risk persons played an extremely important role in the case of the referred measure. In many cases in trade relations there came to non-payment of VAT on invoices for fear of future liability for tax in view of the fact that the business partner is published in the list of risk persons. In response to this reality a measure, which allowed in these cases to pay the tax directly to the personal account of the business partner, was taken, while the account was registered in the State Treasury. Fears of entrepreneurs regarding the future tax liability have been averted by this step. Financial Administration imposed a total of 62 decisions on the liability for tax of 1 293 939,38 EUR.

Tax cobra, respectively, setting up of specialized tripartite teams. The measure falls under the second phase of implementation of APBP with effect from 1st October 2013, when tripartite specialized teams of tax specialists were created, consisting of investigators and prosecutors to deal with serious tax crime. For the formation of the team cobra, tax cooperation of institutions consisting of successive members - the Financial Administration, General Prosecutor's Office, the police presidium and the National Criminal Agency was needed. The result of the implementation of such a team are saved funds amounting to 45 million EUR which the fraudsters requested unduly to be paid from the state budget as excessive deductions. The tax cobra via its activities identified VAT fraud totalling to EUR 187 595 898.43. Following the publication of information, the most frequent cases of fraud scams included commodities such as stone, diesel, concrete steel, non-ferrous metals, toners, cereals, sugar, meat, wood and wine.

The establishment of a list of potential risk subjects. By the implementation of the list of payers of value added tax, at which reasons for cancellation of registration for VAT occurred, the Financial Administration was able to identify by 30.03.2016, 5379 taxpayers. Financial Administration until this date under the provisions of the Act under Section 52 of the Act 563/2009 Coll section 8, cancelled the registration to 11,260 subjects. This measure is aimed at the prevention of tax evasion respectively for action by certain individuals, which is essential to be monitored and evaluated in the sense so that the law does not create space for misuse and illegal activity for these persons. This publication of the list in terms of risk assessment of the partner, enabled the tax payers to avoid involvement in fraudulent acts. Tax Financial Administration gained from the implementation of VAT control statement in electronic form an effective tool for identifying fraudulent acts of the taxpayers.

An automated system of control and evaluation of the data in the VAT control statements as well as the aggregated databases allows:

- Unveiling carousel fraud,
- Unveiling the invoices unrecorded in the accounting,
- Unveiling alterations of accounting,
- Unveiling the exchange of invoices in accounting,
- Unveiling the unexposed invoices,
- Unveiling non-using of ERP,
- Unveiling tax non-payers exhibiting tax invoice including tax,
- Unveiling taxpayers who twice exercise a deduction of the same invoice in two different tax periods.

In 2014 based on data from the control statement of VAT fraudulent behaviour at the 7106 subjects with a total amount of VAT 213 043 604.23 EUR was managed to be identified. VAT control statement also increases the efficiency of tax controls of VAT, which are based on the information, focused on specific objectives.

3. Reasons of inefficient tax collection in the context of tax evasion

In the literature the main factors for the development and intensity of committing tax fraud e.g. political factor, social and economic factors, legislative factors, size of the tax burden and mechanism of taxation and tax audits are often mentioned. These factors are mainly general views on the emergence of tax fraud. For the effective overfill of the mechanism of taxation and control, it is important to know the effects on decision making of the taxpayers. These knowledges will allow us to find a balance between law enforcement and preventive measures. Among the studies that have significantly contributed to the development of knowledge to commit a crime, we can include the Becker's study (1974). In his work he introduces the normative preview on questions, namely, how many resources and how much punishment should be used to enforce compliance with the various forms of legislation, while he deals with the criminal activity in general for all elements of the crime (economic crime, murders, etc.). The individual crimes have a different character and different motives and factors that have an impact on crime. Analysis of statistics related to crime (number of crimes) and expenses to support their prevention (prevention) and repression (fining) allows determining the optimal model for the prevention of crime respectively, reduction of criminal activities. Becker's research results are used to explain, among other things, reasons for which more harmful offenses are more punishable and more severe and impulsive offenders are punished less severely. (murder, rape has higher social costs as shoplifting, etc.).

Graetz et al. (1986) in his work propose a comprehensive theoretical basis for the analysis of observance of tax regulations. The authors perceived failure to comply with tax laws in the context of the interaction. In terms of setting of preventive measures the analysis of individual choice of an individual who responds to the structure of detecting fraudulent activity i.e. a person decides to commit a crime in the context of a possible likelihood of detection and punishment of the proceedings of the case revealed, is significant. The model in Graetz et al. (1986) takes into account not only business taxpayers, in their models also other parties involved in the process of tax collection are taken into account. For a more detailed analysis it is necessary to take into account the relationships between flexible tools of fiscal policy and its incompliance. The application and implementation of the fiscal policy has a significant influence on the conduct of taxpayers. Current approaches should take into account, except the behaviour of taxpayers also the interaction between all the actors who appear in the process of tax collection (individual institutions and instruments - tax returns, etc.). Such a procedure should provide objective and relevant research findings in this area. Approach of Graetz et al. (1986) describes the process of tax collection as "play" with a certain level of tax control, with certain settings of repressive measures in the form of fines. This has resulted in interaction between taxpayers and tax authorities; a significant role in this "game" is the fulfilments of tax audits respectively, controls.

The authors Allingham and Sandmo (1972) in their work also dealt with the issue of tax evasion, respectively fraud Their theoretical analysis focuses on the "relationship" between the size and riskiness of the tax in the context of tax effects on a portfolio of consumer decision making, and build on theoretical approaches of Mossin (1968) and Stiglitz (1969). Allingham and Sandmo operate with concepts of tax evasion, which may take various forms (different types of tax evasion). The size of taxes and size of the risk that is associated with tax evasion and have an impact on actions of individual taxpayers and their decisions about whether and to what extent to avoid taxes. On the one hand, this approach is based on studies of the economic approach to crime on the work of Becker (1968); Tulkens and Jacquemin (1971). On the other hand, it is related to the theoretical approach analysis of optimal policies and insurance portfolio for uncertainty (with exposure), such as theoretical approaches of Mossin (1968) and several other major theoretical approaches in this field.

Hashimzade et al. (2014) in their work analysed a specific group attitudes, values and opinions that affect tax compliance in the event that individuals interact in a network of social interactions and interpersonal relationships. This model is enhanced with individual and social impacts, in which taxpayers have a variety of individual characteristics, including the relationship to risk, the potential for success in the profession respectively in business, and also the weight of links to social practices in relation to honesty. The individual occupations that the individuals have, also differ in the opportunities for tax avoidance. Social networks and connectedness of the individuals in them provide the taxpayer with the information to affect the perception of the probability of controls which has a direct impact on tax compliance. In this model the tax compliance is in the face of conversations between related taxpayers. Compliance with the rules is different across professional groups, and this effect is reinforced by the development of specific group attitudes and opinions. Choice of selfemployment in the context of some degree of risk aversion affects the subjective perception of the probability of controls, and the subjective value can be maintained over objective probability. These factors together lead to different levels of compliance, which differ with respect to the specification of taxpayers based on their profession and so on.

4. Conclusions

With the calculations of VAT gap we receive an overview of the magnitude of the problem, which threatens the state of public finances and inefficient tax collection. This is largely due to tax evasion. In the paper, other factors that cause lower collection of value added tax are also mentioned. Such factors include different tax rates and exemptions at the same time, which is reflected in the so-called policy gap. The size of gap policy is a very sensitive topic, as the instigators of economic policy advocate social concerns through the application of exemptions and reduced tax rates. VAT gap in addition to fiscal effects, affects the healthy competitive environment, and there comes to the warping of the competitive market. This shows the need to eliminate such conduct of taxpayers. The measures adopted should take into account various aspects of the case of tax fraud and evasion. A man decides on the basis of simple heuristics.

The impact of simple heuristics of an individual also appear in conjunction of taxes. The individual makes their decisions, judgments in the context of available information on the likelihood of occurrence of a certain phenomenon under conditions of uncertainty. An example would be the impact of probability of detection of tax fraud to return the total amount of the individual, namely its tendency to tax fraud under conditions of uncertainty. Contentious issue can be the difference between subjectively perceived probability of detection of the individual and the actual probability of detection. The inclination of the individual to errors can lead to an incorrect assessment of the risk which leads them to decide against the results that would be achieved by conscious judgment. From the research of tax policies, tax burden and tax evasion it follows that people, in case of fulfilment of their tax obligations, decide differently depending on several endogenous, exogenous factors affecting the individual. These can include a psychological aspect, decision-making and reasoning of the individual. In this respect, it is important to consider the empirical findings of cognitive psychology in the design of the tax system. It is important to continue research of the impacts of the error-proneness of the individual in relation to the tax policy of a specific country.

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β-convergence of Chosen Countries of Europe

Michaela Blaško

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: michaella.blasko@gmail.com

Abstract

Convergence is the process of balancing disparities represented by economic indicators within a homogenous economic group. The primary objective of the article is linked to an analysis of the real product per capita, recalculated according to purchasing power parity (real GDP per capita in PPP), and verifying β -convergence by the Least Squares Method during three time intervals (between 1996 and 2005; 2006 to 2015; and 1996 to 2015). The analysed database consists of thirty European countries and one integration grouping – the EU 28. The assumption of β -convergence is that poor countries tend to grow faster than the rich ones. According to obtained results it is possible to accept β -convergence only for the period between 1996 and 2005.

Keywords: β-convergence, Least Squares Method, real GDP per capita in PPP

JEL classification codes: C13, C84, F43

1. Introduction

The aim is verifying the β -convergence in time interval since 1996 to 2015 based on the dependence between the average annual growth of the real GDP per capita in PPP and its initial level. Methodology is inspired by the concepts described in the 90ies of the 20th century in the thesis Economic Growth (R. Barro, X. Sala-i-Martin, 2004). Authors tested β -convergence for USA, European countries and Japan and their concept had been applied by many authors across Europe during last decade, for example use by T. A. Young, J. M. Higgins and D. Levy (2007), E. Marelli (2007), K. Dvoroková (2014) or by B. Forgó and A. Jevčák (2015).

By using software Eviews is estimated model that may correctly verify the β -convergence in three time intervals (since 1996 to 2005, since 2006 to 2015 and since 1996 to 2015). For estimation are used cross-sectional data of the real GDP per capita in PPP. Source of data is Eurostat (the Internet portal of economic indicators for Europe). For work with the software were used previously acquired knowledge and the econometric portal Eviews.com. During application of Bootstrapping were used the study Bootstrapping Clustered Data (A. H. Welsh, 2007).

The main benefit of the article is practical application of merged known theory and methodology, which may say conclusion about verification of β -convergence concept.

1.1 Used methodology and data

In this section we explain used model of β -convergence verification and Bootstrapping of data. Convergence is tested for three time intervals (since 1996 to 2005, since 2006 to 2015

and since 1996 to 2015). For estimation are used cross-sectional data of the real GDP per capita in PPP downloaded from Eurostat. Monitored countries are Austria, Belgium, Bulgaria, Croatia, Czech Republic, Cyprus, Denmark, Estonia, EU 28, Finland, France, Greece, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom and the Netherlands.

1.1.1 The Model for verification of β -convergence

For the purpose of estimated model (dependence between the real GDP per capita growth and its initial level) is used the Least Squares Method. Because we assume the same steady state level of income and the same level of technological progress is mathematic formulation of model expressed as

$$\left(\frac{1}{T}\right) * log\left(\frac{y_{iT}}{y_{i0}}\right) = a - \left[\frac{\left(1 - e^{-\beta T}\right)}{T}\right] * log(y_{i0}) + u_{i0,T}$$

$$\tag{1}$$

where T is the number of monitored years, i is the country, y_{iT} is the GDP per capita in PPP in T (the last reporting period), y_{i0} is the GDP per capita in PPP in θ (the initial reporting period), θ is coefficient of convergence, $u_{i0,T}$ is the effect of the error terms (the impact of random shocks in production conditions and preferences), $\left(\frac{y_{iT}}{y_{i0}}\right)$ is the rate of the real GDP growth per capita in PPP between T and θ , $a = x - \left(1 - e^{-\beta T}\right) * log(\hat{y}_i^*)$ is the level constant (is predicted the same level of steady state \hat{y}_i^* and the same level of technological progress x for all countries. The term $-\left[\frac{\left(1 - e^{-\beta T}\right)}{T}\right]$ is the speed of convergence.

Significant convergence parameter of estimated dependence in significant model with met model's assumptions says about β -convergence. We predict a negative value of parameter of convergence speed, which is possible express as $-\left[\frac{\left(1-e^{-\beta T}\right)}{T}\right]$, because if parameter of convergence is significant and negative, percentage expressed speed rate of β -convergence is positive and chosen countries converge to the same steady state. In the case of β -convergence, poor economies tends to the steady state faster than richer one (speed of growth is faster in poorer country). This expression is true only with assumption of the same steady state and rate of technology progress in each country.

For the verification of β -convergence is necessary to calculate with geographical and political differences between countries. This may significantly affects dependence between growth and initial level of the real GDP per capita. Because of this reason we use dummies by using which is possible to explain impact of geographical and political differences. Model specification without dummies is not completely defined, when the impact of shocks would be lost, what would also reflected the random variable, so ordinary least squares estimator would be biased. Based on thesis Economic Growth (R. Barro, X. Sala-i-Martin, 2004) were created five dummies (North, South, West, Central and Others) with following distribution according to geographical and political aspects:

- North (Denmark, Finland, Sweden, Norway, Switzerland),
- South (Spain, Italy, Cyprus, Malta, Portugal),
- West (Belgium, Germany, Ireland, France, Luxembourg, the Netherlands, Austria, United Kingdom),
- Central (EU, Czech Republic, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Slovakia, Slovenia),

Others (Bulgaria, Greece, Romania).

Specification of the model with dummies may eliminates differences between countries, this countries become more similar. The modified model's specification may include a maximum k-l dummies, what is possible to express as

$$\left(\frac{1}{T}\right) * log\left(\frac{y_{iT}}{y_{i0}}\right) = \alpha - \left[\frac{\left(1 - e^{-\beta T}\right)}{T}\right] * log(y_{i0}) + \gamma N_t + \varepsilon W_t + \vartheta S_t + \pi C_t + u_{i0,T}$$
 (2)

where $\gamma N_t + \varepsilon W_t + \vartheta S_t + \pi C_t$ are created geographical-political dummies and their parameters. Others variables are the same with dependence (1).

Next step is determination, whether this formulation of dependence is finally completed and right. The question is whether the random variable is independent from the initial level of the real GDP per capita in PPP and from the previous random shocks in each period. In the real economy may occur to unforeseen events. However these events impact only particular sectors of economies (for example unexpected shocks from economic activities, which is not possible to predict).

In this case is the explanatory variable and a random shocks correlated each other and the random variable violates the assumption of independence, so estimation of β parameter may be biased. To avoid biasing of this parameter and ensure of the best possible estimation we have previously described dependence (2) to modify and add structural variable s_t , which is constructed as a weighted sum of the average income growth per worker in the various sectors of the economy². Weights express the shares of each economy sector in the country on the overall economy of comparisons in terms of income level per worker in the initial period. Mathematic formulation of structural variable is defined as

$$s_{it} = \sum_{j=1}^{13} \omega_{ij,T-0} * \left[log \left(\frac{y_{jT}}{y_{jT-0}} \right) / T \right]$$
(3)

where T is the number of monitored years, i is the country, j is the sector of the economy, y_{jT} is the personal income per worker in PPP in sector j at time T (the last reporting period), y_{jT-0} is the personal income per worker in PPP in the sector j at time T-0 (the initial reporting period) and $\omega_{ij,T-0}$ is the weight of sector j in country i 's personal income at time T-0. Modification of model (2) with addition of structural variable is dependence specified as

$$\left(\frac{1}{T}\right) * log\left(\frac{y_{iT}}{y_{i0}}\right) = \alpha - \left[\frac{\left(1 - e^{-\beta T}\right)}{T}\right] * log(y_{i0}) + \gamma N_t + \varepsilon W_t + \vartheta S_t + \pi C_t + \varphi_i S_t + u_{i0,T}$$
 (4)

where $\varphi_i s_t$ is structural variable and its parameter (s_{it} is replaced by approximation s_t). Others variables are the same with dependence (2). The structural parameter reveals how much a country would grow if each of its sectors grew at the national average rate.

After the final specification of model we have to verify significance of model's parameters, significance of model and fulfilment of model assumptions. Since we work with cross-sectional data, problem of autocorrelation is not authoritative. Case of autocorrelation would be easily solved by reordering of data. Second necessary assumption of estimation is homoskedastic residuals. The existence of heteroscedasticity can invalidate statistical tests of significance which assume, that the modelling errors are uncorrelated and uniform (variances of model do not vary with the effects being modelled). Case of heteroskedasticity will be

¹ Used abbreviations: N - North, W - West, S - South, C - Central.

² Due to the availability of the data from Eurostat, economic sectors are divided into 13 sectors: Agriculture, Industry (excluding Construction), Manufacturing, Construction, Trade & Services, IT Finance, Real Estate, Education, Science, Education - the public sector, Health and Art.

solved by Weighted Least Squares Method. For application of Weighted Least Squares Method is necessary to calculate weights, which are constructed as linear combination of explanatory variables. The issue of the normal distribution is more complex, therefore we devote own chapter for explanation of Bootstrapping.

1.1.2 Bootstrapping of data

The best known procedure to achieve the normal distribution is to change specification or functional form of the model. Because we do not want to change used data or methodology explained above in chapter 1.1.1, we have to explore a new methods.

In cause, that hypothesis of normal distribution is not accepted, data will be modified in the way that do not lose ability of adequate interpretation of parameters, but will be possible to rely on the information value of t and F statistics. If the problem of inadequate distribution for random variable is solved, effective and unbiased estimator of Least Squares method is ensured. For the verification of t and F statistics in cause of no acceptation of normal distribution hypothesis of data is used the Bootstrapping technology of random errors. There is implemented multiple selection with repetition from residuals and created a new distribution which fulfils assumption of the normal distribution. Theoretical background is based on the study Bootstrapping clustered data (A. H. Welsh, 2007). The aim of Bootstrapping is not creating normal distribution of used data, but creation of the model by use a new bootstrapped dependent variable and original independent variables, save acquired t and F statistics from iterations and compare t a F statistics within of 95% confidence interval. Based on this iterated simulation we may verify explanatory value of originally estimated model. The Bootstrapped model is estimated by Least Squares Method. Whole described process of Bootstrapping is based on simulation of 95% confidence interval which is used for verification of originally estimated t and F statistics. If original t or F statistics are within of Bootstrapped confidence interval, this statistics are trustworthy.

2. Results - verifying of β-convergence

Calculation processes of dummies and structural parameter were provided in Excel an verifying of β -convergence in Eviews. Results of convergence testing are shown in Table 1. The most important for verification of every dependence (1), (2) and (4) is parameter of convergence (B1). Hypothesis of parameter's significance is accepted based on the p-value of parameter (p-val). Ability to explain variability of the real GDP per capita in PPP growth (dependent variable) is expressed by coefficient of determination (R2). Because model's assumptions must be met, we present estimations of three model's specifications based on formula (1), (2) and (4) for three time intervals (since 1996 to 2005, since 2006 to 2015 and since 1996 to 2015) after testing of model's assumptions.

The model (4) is complete specification of the original model (1). To the original specification were added dummies and structural parameter. Dummies may describe the impact of any geographical and political shocks of countries and structural parameter reflects economic and sector diversity of every analysed country. The inclusion of additional variables in the model may better explain the original dependence and ensure effective and undistorted estimation. This is the reason, why is model's specification (4) the most important for estimation and testing of β -convergence. In Table 1 are published calculated parameters of convergence (B1) with their p-value (p-val) and coefficient of determination (R2).

Table 1 Results of β -convergence estimation

Time interval	Model's specification	B1	p-val	R2
1996 - 2005	1	-0,00522	0,00020	0,38455
	2	-0,00503	0,00064	0,36912
	4	-0,00165	0,00079	0,96079
2006 - 2015	1	-0,00218	0,15674	0,06793
	2	-0,00303	0,08711	0,00757
	4	-0,00056	0,58915	0,07198
1996 - 2015	1	-0,00395	0,00063	0,33636
	2	-0,00398	0,00083	0,36312
	4	-0,00097	0,00234	0,93903

Source: The own output of the Eviews

Firstly is provided the interpretation of the estimated model for the time interval since 1996 to 2005. Model's specification (4) states about β -convergence since 1996 to 2005. Parameter of convergence equals -0,00165 and is significant in significance level 5% (p-value of convergence parameter is 0,00079). After recalculation based on formula $-\left[\frac{1-e^{-\beta T}}{T}\right]$, speed of convergence equals 0,00166. Because we can accept hypothesis of significant parameter of convergence, since 1996 to 2005 is possible to write about 0,17% annual convergence speed of European countries towards to the one level of steady state.

Second time interval since 2006 to 2015 is useless to interpret. No one of model's specification (1), (2) or (4) proven β -convergence since 2006 to 2015, because parameter of convergence was not significant in significance level 5%.

Model of third time interval since 1996 to 2015 had significant parameter of convergence, but in the model was strong problem with heteroskedastic residuals. Impact of heteroskedasticity was not possible exclude even after application of Weighted Least Squares Method. Estimation in cause of heteroskedasticity is inefficient, so we would not accept estimation of β -convergence during whole time interval since 1996 to 2015.

In results are published only calculated parameters of convergence with their p-value and coefficient of determination. Others parameter's values are not published because the core indicator for verification of β -convergence by this methodology is coefficient of convergence. In the second and third model's specification were not dummies significant in significance level 5%, so we do not publish values of their coefficients. Structural parameter was in the last model's specification (4) significant, it means, that aggregate shocks affect groups of countries differentially. This impact of structural parameter was verified in each period, but the main target of the article is testing and proving of existence of β -convergence (no quantification of sector's differences).

3. Conclusion

In the article is briefly definite β -convergence and used dependences for verification of β -convergence for chosen thirty European countries and one integration group EU 28 during three time intervals (since 1996 to 2005, since 2006 to 2015 and since 1996 to 2015). For calculation of linear dependence between the real GDP per capita in PPP growth and its initial level were used cross-sectional data. Results of convergence verification were based on model's specification (4), what is original dependence (1) with addition of dummies and structural parameter.

Conclusion from our econometric analysis is acceptance of β -convergence only in time interval since 1996 to 2005. The variability of the real GDP per capita growth during this interval is explained by 96%, what is shown by the coefficient of determination (R2) in Table 1. During this period, is accepted assumption that European countries converge to the same steady state of the real GDP per capita in PPP. Since 2006 to 2015 is β -convergence not verified, because there is no significant coefficient of convergence and since 1996 to 2015, β -convergence is again not accepted, because of persistent heteroskedasticity and the estimation with heteroskedasticity is inefficient.

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Application of Import and Export Intensity Index to the Visegrad Group's Trade with the People's Republic of China

Juraj Bronček

University of Economics in Bratislava Faculty of Commerce Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: juraj.broncek@gmail.com

Abstract

Deepening trade cooperation of the political and economic bloc of the Visegrad Group (V4) with China has been substantial under the objective of increasing the bloc's competitiveness and optimising its territorial diversification. Measuring bilateral trade intensity has been a key tool for discovering the importance of planned free trade agreements or expansion of economic cooperation between countries or groupings. On this basis, the paper determines V4's export and import intensity indices with China in the last five years and identifies the export and import share of China in V4's international trade since 2001, the year of China's accession to the WTO. Results show low export participation of selected countries compared to China's importance in world imports and below-average import ties with China, compared to China's export importance in the global economy.

Keywords: Visegrad Group, Import Intensity Index, Export Intensity Index

JEL classification codes: F10, F14, F19

1. Introduction

Since its establishment in 1991, the Visegrad Group was one of the most influential regional groupings in Central and Eastern Europe. By joining the NATO and EU, the member states have fulfilled their initial motive, which guaranteed them equal status on a global scale. This has shifted their strategic thinking outside the boundaries of the single EU market and turned it also towards the external perspective markets. Among them, the global trade leader - the People's Republic of China - can not be overlooked. As part of China's cooperation with the 16 countries of Central and Eastern Europe (CEE), V4 countries are the most significant individually when taking into account the volume of bilateral trade. They cover more than two-thirds of CEE trade with China. Along with the dominant investment position they can be considered as the pioneers of commercial cooperation in Central and Eastern Europe. China may be one of the solutions that can lead the V4 countries to possibly break the disproportionate territorial concentration of the intra-EU trade.

The growth of the Chinese economy is a matter of worldwide respect and was recorded and analyzed in detail. China's integration within regional clusters and business partnerships was an important catalyst for achieving its economic and trade objectives. Trade with the EU in the past two decades has had an increasing trend and Europe as a whole is the primary importer of Chinese products in the world, because it represents a competitive integrated economic unit with a high standard of living and purchasing power. The level of exports and imports from China is therefore only a result of high concentration of competitive market forces in the region. Economic cooperation is based on the EU-China Trade and Economic Cooperation Agreement of 1985, which was signed ten years after the establishment of the diplomatic relations between the European Economic Community and the PRC. In 1989, in connection with the tragic incident of Tian'anmen Square, European Community froze relations with China and imposed several sanctions on it. It took a few years until the mutual relations returned to normal. The first summit between the EU and China has taken place in London in 1998. At the 16th summit in 2013, both sides agreed to begin the negotiations regarding the mutual investment agreement.

In the light of revival of the diplomatic ties this paper focuses on the quantification of trade positions these efforts try to enhance. The aim of this work is to evaluate the trade intensity and interpret the resulting values in the context of development of bilateral trade relations.

1.1. Methodology

The main methods used for the analysis of trade intensity between the V4 countries and China are the index of export intensity and the index of import intensity calculation, analysis of the time series of the share of China in the exports and imports of the Visegrad Group and complementary statistical methods. The source of secondary data is mainly the World Integrated Trade Solution (WITS) database of the World Bank. Trade intensity index monitors whether the bilateral trade between selected countries is more significant than the position of the countries in world trade. It was created by Brown (1949) and later popularized by Kojima (1964). The analysis will use two variations of index of trade intensity, i.e. the index of export intensity and the index of import intensity. The derived indices were used by, for example, Wadhwa (1985) in his analysis of the economic relations between ASEAN and South Asia, and Sarath Chandran (2010) when analyzing the benefits of a regional trade agreement between India and ASEAN. Detailed and updated analysis of trade between V4 countries and China using these indicators is currently lacking.

Index of export intensity is the ratio of two variables, i.e. the share of the value of exports from country i to country j and the value of total exports from the country i and share of the value of world exports to country j and the value of world exports. The resulting index value of less than 1 indicates that exports from country i to country j are less than would be expected based on the significance of country j in world exports flows (and vice versa). Index oscillating around 1 indicates that exports from country i to country j is in terms of total exports of country i proportionate to world exports to country j. Index of export intensity is expressed as follows:

$$EII_{ij} = \frac{\left(X_{ij}/X_i\right)}{M_i/(M_w - M_i)}$$

While Xij is the value of the country i's exports into the country j, Xi is the value of total exports of the country i, Mj is the value of total imports of the country j, Mw is the value of total world imports and Mi is the value of total imports of the country i. Values greater than 1 reflect a higher export intensity between the two countries. Import intensity index is expressed as follows:

$$III_{ij} = \frac{\left(M_{ij}/M_i\right)}{X_j/(X_w - X_i)}$$

While Mij is the value of imports of country i from the country j, Mi is the value of total imports of the country i, Xj is the value of total exports of the country j, Xw is the value of

total world exports and Xi is the value of total exports of the country i. Values greater than 1 reflect a higher import intensity between the two countries.

The share of the trade partner in the total imports and exports of selected countries is calculated as a simple value of total imports (or exports) of the country i with the country j expressed as a percentage of the value of total imports (or exports) of the country i. Higher values indicate a higher degree of trade integration between countries i and j.

2. Results

EU-China Partnership brings benefits to both parties. On the other hand, intensification of Sino-European trade channel is the source of controversial and politically sensitive topics. It's also because the Chinese economy reaches trade surplus and in many cases poses a new challenge price- and quality-wise for European producers. Discussions blaming undervalued renminbi weakened in the light of its revaluation since 2005. This means that if the exchange rate was an important determinant of success for Chinese exports in the past, in recent years, its role is declining. Moreover, one can observe the convergence of the price level in China compared to the rest of the world.

The total size of the Chinese international trade in 1978 was only about \$ 20.6 billion and it took up to ten years of reforms for this amount to increase to more than \$ 100 billion. Acceleration of trade growth was due to China's accession to the WTO in 2001 and continued until 2008, when the value of the share of foreign trade on the size of China's GDP culminated. Global business appetite and purchasing power decreased, and the year 2009 fully showed the impact of the global financial crisis on international exchange of goods and services. Understandably, V4 as a whole can not be found in the top ten trade partners of China. In terms of China's strategic intentions, this regional grouping belongs in the region of Central and Eastern Europe which includes a total of 16 countries, including 11 EU Member States. According to the rankings of "The Global Competitiveness Report 2016-2017", within the V4, Czech Republic (31st place) is ranked the highest, followed by Poland (36th place), Slovak Republic (65th place) and Hungary (69th place). Exports and imports in these economies are key determinants of employment, price levels, tax collection, and even productivity due to the high openness of their economies.

2.1. China's share on V4's imports and exports

Simple country's share on imports and exports can be considered as an essential tool to determine the trend of intensity of mutual trade. It is shown in the Table 1.

Table 1 PRC share on exports and imports of the V4 countries (2001-2015)

	Slovak 1	Republic	Czech Ro	epublic	Pola	nd	Hun	gary
Year	I	E	I	E	I	E	I	E
2001	1,6%	0,1%	2,9%	0,2%	3,2%	0,5%	4,0%	0,4%
2002	2,1%	0,3%	4,5%	0,4%	3,8%	0,5%	5,5%	0,5%
2003	2,5%	0,6%	5,2%	0,5%	4,3%	0,5%	7,0%	0,4%
2004	2,7%	0,3%	5,3%	0,4%	4,6%	0,8%	4,8%	0,7%
2005	3,3%	0,4%	5,1%	0,4%	5,4%	0,7%	5,4%	0,7%
2006	3,7%	0,5%	6,1%	0,4%	6,1%	0,7%	5,0%	1,0%
2007	5,1%	0,8%	7,9%	0,6%	7,2%	0,7%	5,4%	1,1%
2008	5,8%	0,9%	8,8%	0,5%	8,0%	0,7%	5,6%	1,0%
2009	5,7%	1,4%	10,1%	0,8%	9,3%	1,1%	6,4%	1,5%

2010	6,2%	2,0%	12,2%	0,9%	9,5%	1,0%	7,1%	1,6%
2011	6,1%	2,6%	12,5%	1,0%	8,7%	1,0%	6,0%	1,5%
2012	6,3%	2,2%	11,2%	1,1%	9,0%	1,0%	5,7%	1,8%
2013	7,5%	2,5%	10,9%	1,2%	9,4%	1,0%	5,4%	1,9%
2014	8,2%	2,1%	11,4%	1,2%	10,6%	1,0%	4,9%	1,9%
2015	8,5%	1,5%	13,4%	1,2%	11,8%	1,0%	5,8%	1,8%

Source: Own calculation based on WITS databases and database of the World Bank.

At first glance it is noticeable that the V4 countries are struggling with relatively low export success on the Chinese market, despite the fact that China (with about 18.5% of world population) accounts for approximately 10% of world imports in terms of total value. For 2015, Hungary has had the highest share of exports to China, and Poland the lowest, accounting to 1.8% and 1.0% respectivelly. It is possible to observe a growing trend for the whole period, but for the Slovak Republic, this trend maintained only in the period of 2011-2013 and since then, the share decreased to 1.5%. It exports mostly vehicles (Volkswagen), in the far second place industrial machinery and shoes. Poland's share of China on the total exports doubled for the period, while the main products include raw materials, high technology products for agriculture and aviation, computers and cars. Poland also exports food, but China has made the exchange of this article more complicated when it blocked the imports of Polish pork after recording several cases of swine flu. The growing trend of exports from the Czech Republic is mainly a manifestation of the expansion of the automotive and engineering industries and deepening diplomatic trade relations. China holds the fourth place among the main import partners of Hungary and fifteenth place in terms of Poland's exports. The recent trend in the field of economic cooperation is increasing the flow of foreign direct investment (e.g. comapnies such as CEFC, ZTE Corporation, Lenovo, China South Locomotive Group, Hisense, LiuGong etc.).

2.2. Indices of import and export intensity

By calculating the index in the past five years, several facts are possible to observe. In terms of import and export intensity of the Visegrad Group, the People's Republic has lower values, almost always below 1. Thus, the trade links between these economic units are relatively small.

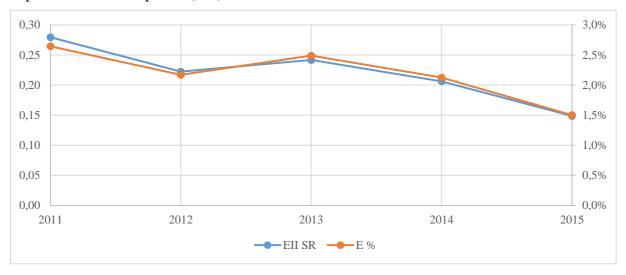
Table 2 Export intensity index (EII) and import intensity index (III) for V4

Year	EII	Slovak Republic	Czech Republic	Poland	Hungary
2011	EII	0,28	0,11	0,10	0,16
2011	III	0,58	1,20	0,83	0,58
2012	EII	0,22	0,11	0,10	0,18
2012	III	0,57	1,00	0,81	0,51
2013	EII	0,24	0,11	0,10	0,18
	III	0,64	0,92	0,80	0,46
2014	EII	0,21	0,11	0,10	0,19
2014	III	0,66	0,91	0,85	0,40
2015	EII	0,15	0,12	0,10	0,18
	III	0,61	0,96	0,84	0,41

Source: Own calculation based on WITS databases and database of the World Bank.

However, given the indices of export and import intensity, which compare the EU and China since the turn of the millennium, the resulting values oscillated around 0.30 to 0.40 from the perspective of China (Wang - Zhu, 2015). In the research study, it was found that the export intensity index is higher than the index of import intensity, i.e. the European Union was the stronger buyer in the bilateral trade. The results show that, despite the undeniable export orientation of V4 economies, their territorial focus does not primarily involve China. The indices of export intensity measured for the period ranged from 0.1 to 0.28, with the highest levels on average for Slovakia and the lowest for Poland. Over the last five years this index stagnated, for Slovakia it even declined. Import intensity index is, as expected, higher. In general, however, China is not such an important supplier for the V4 countries as it is for the countries in other regions such as ASEAN, East Africa, and others. Czech Republic hovered around the parity of 1 as the only one of the selected countries, which means that China has a comparable position in Czech imports as is the position of its own exports to the world. China, with regards to its exports and imports, does not grow in the region of Visegrad Group. The causes may be the geographical distance, high rate of intra-EU trade, and higher tariff burden in various sectors.

Figure 1 Index of Export intensity of Slovak Republic for China (EII SR) and China's share on the exports of Slovak Republic (E%)



Source: Own calculation based on WITS databases and database of the World Bank.

Figure 1 highlights the fact that over the last five years, the export intensity index movement has copied the movement of China's share on the total exports of Slovakia. Pearson correlation coefficient which determines the degree of intensity of the linear correlation between two variables, was used to evaluate the degree of correlation between the index of export intensity (as dependent variable) and the share of China on the total exports of Slovakia (as independent variable). It reached the value of 0,984 for the measured period, indicating a nearly absolute positive linear relationship. The reason is mainly the fact that the mathematical formula for calculating the index of export intensity uses (in our case) the China's share on the total Slovak exports as a numerator and the Chinese imports share on total world imports adjusted for total Slovak imports as the denominator, with the denominator during the reporting period changing only minimally. Index therefore depends only on the export success of Slovakia, which, however, declined.

3. Conclusions and policy implications

We are currently witnessing an acceleration of growth of the Chinese economy and its convergence to developed market economy. International trade is one of the most important tools to raise the living standards of the country's population. In terms competitiveness, China is an important business partner and this means that if we uplift and stabilize the bilateral trade, the countries of Central and Eastern Europe will successfully increase their trade competitiveness. It is thus an untapped potential, as suggested by this research. Particularly with regard to the export linkages, in general, Central European economies remain unsuccessful in applying their comparative advantages outside the EU. The import intensity with China is also not on par with the rest of the world and the V4 does not utilize all of the comparative advantages of Chinese production. Trade intensity of V4 countries towards China is in both of its forms heterogeneous. Despite the undeniable growth of both imports and exports to China (as a share of total imports and exports), trade ties between the rest of the world and China are intensifying much faster than the trade ties of V4 and China. To break the stagnation of trade ties, there is a number of tools which can be used. The fulfillment of the The EU-China 2020 Strategic Agenda for Cooperation, establishment of a credit line by Chinese investment funds, settlement of bilateral swaps, opening branches of Chinese banks in Central Europe and the potential construction of regional road or rail networks are just the tip of the iceberg, with numerous other methods available.

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Barriers of a Sustainability Business Strategy

Lucia Budinská

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: budinska.lucia@gmail.com

Abstract

The main objective of the article is to identify barriers to realisation of a sustainability business strategy and possibilities to overcome them. This objective is based on the assumption that sustainability business is important for successful business, especially for financial performance, what is proven in many foreign studies and research. So if sustainability business can positively influence business performance, it is useful to practice it. But there are many obstacles to sustainability business on the strategic level, what is discussed in this article. First, every enterprise goes through the process of acceptance related to a sustainability business strategy. The first part of the article deals with this. The next parts describe the most common barriers to starting and continuing a sustainability business strategy, and one chosen barrier was subject to own research. There are also recommendations for their solution based on a survey among CFOs carried out abroad. In the end of the article there is a summary of the most important findings and conclusions.

Keywords: sustainability business strategy, barriers to sustainability

JEL classification codes: L20, M14, Q56

1. Introduction

The concept of sustainability business is a more recent development. For some, it represents an extension of the CSR concept. Sustainability has been considered in a number of ways. One conceptualization considers it to be a regime of corporate, state, and civil society actors (Bansal, 2002 and Epstein; 2007), whereas others consider the term to be so vague that it means different things to different people and institutions. Generally, sustainability focuses on a broad view of economic, social, environmental outcomes with an emphasis on the long-term perspective and strategic dimension. (Garavan and Mcguire, 2010)

So sustainability has evolved considerably over the last number of years. The economic, social and environmental challenges facing enterprises today are unlike any that enterprises faced in the past. Today many business leaders have begun to view sustainability as a more integral component of their business strategy, linking it with opportunities to enhance revenue, reduce costs, improve margins and strengthen brand value. (Healy and Casey, 2013)

Naturalizing sustainable action will not and cannot occur when sustainability is used and viewed in such a wide variety of ways. Sustainability must be clear enough that when we accept sustainable action as the natural course of action, we all mean the same thing and thus move in the same direction. (Farley and Smith, 2013) It requires to shift sustainability business into the strategic level. Sustainability as a strategy should include all aspects of the enterprise's operations and entails a new perspective, recognizing that financial gain is not the only imperative of the firm.

It is increasingly recognized that integration the sustainability into business makes good business sense and creates unique business value. The most common benefits of sustainability business initiatives are improvement the reputation and employee morale, strengthening competitiveness. These factors are reflected to the financial performance with different intensity.

1.1 Methodology

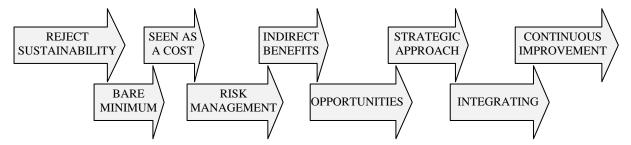
Used methods are basic scientific methods like analysis, synthesis, inductions, deduction, composition, abstraction, generalization. These methods are methods ordinary used for data processing - for whole exploring and research cycle. Purpose of these methods is analyse available data, studies and researches in the area of sustainability business strategy especially barriers of starting and continue this strategy. And then processing this information to achievement of set aim.

During own research was used methods of correlation and regression analysis for identifying the sustainability business impact on the financial performance in order to examine the relevance of the fear of possible negative relationship between these two variable as one chosen barrier of sustainability business strategy.

2. Process of acceptance the sustainability business strategy

Sustainability business strategy is a unique document, what is a reason why its creation is unrepeatable process specific for each company. However, there are certain standard stages through them pass every enterprise on the way to building a functional sustainability business strategy (Weybrecht, 2013):

Figure 1
Stages of acceptance the sustainability business strategy



Source: Own processing

- 1. Reject sustainability Rejection may occur because a company is unaware of sustainability, or believes it has nothing to do with their business.
- 2. Bare minimum. Companies have no sustainability strategy, and at this level, a company is doing the absolute minimum required to stay in business.
- 3. Seen as a cost Some companies see sustainability as a philanthropic activity that is just a cost. In some cases they will communicate things that they haven't actually done, or exaggerate claims for things they have done.
- 4. Cutting costs Companies begin exploring the opportunity to cut costs by reducing consumption. This usually starts with office-greening projects coordinated by employees.
- 5. Risk management At this stage, companies begin to see that governance structures allow them to better manage their risks.
- 6. *Indirect benefits* Companies now begin looking beyond just saving costs and managing risks, to identify the opportunities that sustainability can present.
- 7. Opportunities Companies are now actively engaged on multiple fronts, exploring opportunities across the business in the form of new products, markets and partnerships.

- 8. Strategic approach Beyond significant levels of activity on new opportunities, companies begin to look at these individual activities across the organization with the goal of bringing them together as part of an overall strategy. Upper management is fully involved.
- 9. *Integrating*. Sustainability begins to be really integrated into the way that everyone at every level does business. It is part of people's job descriptions and all departments are involved.
- 10. Continuous improvement. A company works with other businesses to really push these issues forward, companies continually revisit their processes to make them stronger and to acknowledge and work on their weak spots.

On the way to building a functional sustainability business strategy it is necessary to keep in mind four basic facts:

- Various initiatives can be in different stages.
- Sustainability business is constantly changing and growing.
- There exists many incentives for moving from one stage to another.
- The road to sustainability business is a long process.
- Sustainability business strategy is an integrated system which accepting principles of triple bottom line and requirements of existing business partners.

3. Barriers of starting the sustainability business strategy

Many enterprises which want to integrate sustainability business into their strategic level encounter a number of problems that discourage them from this idea. Kevin Hagen (2013), the former corporate social responsibility director of REI, says that sustainable business will outperform a traditional business, it's the change required to make the shift that is most difficult.

First before attempting to implement sustainability across your company, it's important that you first truly understand how your company and employees manage change within its operations, processes, and culture. Only after you have that understanding of behaviour change can you break down barriers, engage the sceptics, and set your company on a path toward sustainability that will last for the long term. (Wilhelm, 2013) The most common barriers of starting the sustainability business strategy are: (Laughland and Bansal, 2011)

- There are too many metrics that claim to measure sustainability and they're too confusing.
- Government policies need to incent outcomes and be more clearly connected to sustainability.
- Consumers do not consistently factor sustainability into their purchase decisions.
- Companies do not know how best to motivate employees to undertake sustainability initiatives.
- Sustainability still does not fit neatly into the business case.
- Companies have difficulty discriminating between the most important opportunities and threats on the horizon.
- Organizations have trouble communicating their good deeds credibly, and avoid being perceived as greenwashing.
- Better guidelines are needed for engaging key stakeholders, such as aboriginal communities.
- There is no common set of rules for sourcing sustainably.
- Those companies that try leading the sustainability frontier often end up losing.

3.1 Doubts regarding the benefits of sustainability business to financial performance

One important barrier of starting the sustainability business strategy is distrust its benefits to financial performance, possibly presumption of its negative impact on financial results. We decided to examine relevance of this fear among enterprises in SR - the partial aim of our research was to identify the sustainability business impact on the financial performance of enterprises in SR.

For verification of this relationship was used methods of correlation and regression analysis which confronts the modern financial performance indicator EVA as dependent variable and Integral Indicator of Sustainability Business as independent variable. Indicator of Sustainability Business is created special for this research, as the weighted average of partial indicators expressing the sustainability business in specific fields. The weights of each partial indicators are calculated based on their intensity dependence with financial performance (EVA) expressed by correlation coefficient.

Research is conducted at five-year period (2011-2015) business outcomes of a selected sample of Slovak enterprises which includes 79 enterprises from three economic sector/industry. Results of regression and correlation analysis of this research is below.

Table 1Results of regression and correlation analysis of own research (2011-2015)

INDUSTRY (SR)	R	R Square	Beta	Sig. $\alpha < 0.005$
Electricity, gas, steam and air conditioning	0,55	30%	0,55	0,002
Information and communication	0,03	0%	- 0,03	0,801
Manufacturing	0,02	0%	- 0,02	0,783

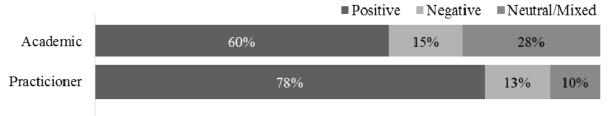
Source: Own processing

As we see in the chart only industry Electricity, gas, steam and air conditioning reported a positive statistically significant results. The other two industry didn't reach statistically significant results, but their results indicate negative relationship (Beta is negative).

Based on these results we can't clearly confirm or refute positive impact of sustainability business on the financial performance in SR in general because the selected industry reported different results. It confirms the relevance of the fear of possible negative impact of the sustainability business initiatives in Slovak enterprises on their financial field. Because of some enterprises actually reported this effect. But it is important to understand why some enterprises can benefit from the sustainability business initiatives in financial field and other one can't. If companies uncover the cause of this, they don't have to worry about a negative effect on their financial results, right other way round.

For comparison of our research with other similar ones we have to use foreign studies because in Slovakia we didn't find relevant one. In SR is topic of sustainability business very young, maybe only at the stage of birth. But we can find a lot of foreign surveys and studies on this topic because correlation between sustainability and financial performance is issue for many years aboard. Next figure compiles the results of 159 studies (from 1972 to 2008). Most of the studies are drawn from academic sources (128 articles) and 31 come from the practitioner literature. Results from these studies show a positive relationship between sustainability and financial performance (63%).

Figure 2
Correlation between sustainability business and financial performance by foreign researches



Source: Network for Business Sustainability. (2008). Valuing Business Sustainability: A Systematic Review

These historical studies confirms more actual research (2014) - interviews of 150 sustainability leaders at UK firms across 20 industry sectors. One of question was "How important is sustainability to the financial success of your firm" and 51% of respondents answer "Sustainability describes energy, environment and sustainability factors that will impacts our firm's financial performance in the next two years".

4. Barriers of implementation the sustainability business strategy

If enterprise decides to integrate the initiatives of sustainability business into a strategic level despite of many initial obstacles, they will be faced more obstacles during the implementation. Implementation of the sustainability business strategy is a long and difficult process during which the enterprises face ta lot of problems limiting the success of the strategy. Company Sustainability4SMEs conducted a survey (2014) among small and medium-sized enterprises (187 enterprises in the USA), which have finished or actually are doing process of implementation sustainability business strategy in order to identify what types of obstacles they encountered. In the table below it can be seen results of this survey listed from the most to the least frequent problem:

Table 2Barriers of continue sustainability business strategy (implementation sustainable initiatives)

BARRIER / OBSTACLE	%
Deficiency of information how to implement.	50,0%
The implementation of the initiatives is too expensive.	50,0%
Initiatives encroached into other business processes.	35,1%
The implementation of the initiatives is too complex.	32,4%
Apathy of employees.	31,1%
Initial disinterest of the management.	18,9%
Local regulatory policy.	17,6%
State regulatory policy.	14,9%
Suppliers are not able to meet the requirements.	14,9%
Federal regulatory policy.	10,8%
Suppliers are not willing to fulfil the requirements.	10,8%

Source: YOUNG, M. L. (2015) State of Sustainable Business Practices for Small and Midsized Businesses.

The problems of implementation become apparent as there is a great uncertainty about priorities and responsibilities at all levels of decision-making. These barriers are not insurmountable, but present real difficulties in achieving sustainable development, with the fear that poor implementation may be counterproductive. Hence, there is a natural caution with decisions being taken incrementally rather than seeing how they might form part of the overall picture. (Batty, Davoudi and Layard, 2012)

5. Barriers of investment into sustainability business strategy

It can be defined specific investment barriers of the sustainability business initiatives from the perspective of CFOs as a current key players in the case of sustainability business. Company Deloitte (2013) conducted a survey aimed on this topic, his results are follows:

■ 1 (Most significant) ■2 ■4 (Least significant) 34% 33% 30% 20% 28% 28% 27% 26% 24% 24% 22% 22% 22% 21% 18% 12% The investment fails to payback The business case benefits are The benefits are too small Lack of buy-in from the compared to other potential with in two years not properly quantified Executive committee

Figure 3Barriers of investment into initiatives of sustainability business

Source: DELOITTE. (2013). CFOs and Sustainability: Shaping their roles in an evolving environment.

For successful implementation of the sustainability business strategy it is important not only identify obstacles, but mainly overcome them. As part of survey realized by company Sustainability4SMEs (2014) the selected enterprises responded to the question about the overcoming their problems with implementation of sustainability business strategy. Their responses can serve for other enterprises as a recommendations. Most frequent answers are follows (Young, 2015):

projects

- Maintain endurance and tenacity.
- Constant process of education employees (organize internal training).
- Intensive communication about the sustainability business (organize many workshops).
- Restructure the strategic plan with aim to create more time.
- Monitor the cost and availability of products on the market due to business objectives.
- Create a portfolio of planned projects that will be implemented when their necessary funds will be available and market will be ready.

Further in this survey, CFOs that had experiences with the implementation of sustainability business initiatives should identify what would help them in this process from the external environment. Their responses are mainly related to the better availability of information which warn them from potential errors and more sources of recommendations for successful practices. Individual replies can be seen in the table below, sorted from most frequent to least.

Figure 4 External sources supporting the implementation of sustainability business strategy

EXTERNAL SOURCES	%	
More information sources about the process of implementation the sustainability business initiatives (steps and methods).		
Consistent and reliable financial incentives at all levels of government.	60,5%	
Consistent and reliable financial incentives from producers and providers of public services.	59,2%	
Information / advice how to overcome obstacles.	54,0%	
Success stories - description the ways and opportunities of other enterprises.	57,9%	
Case studies from vertical market environments.	46,1%	

Source: DELOITTE. 2013. CFOs and Sustainability: Shaping their roles in an evolving environment.

5. Conclusions and policy implications

Sustainability business is often discussed topic because of its impact on various field of enterprises. The extent and intensity of this influence as well as its type (positive or negative) is explained differently. Article is based on the assumption that sustainability business strategy has positive impact on the enterprise performance, especially on the financial performance what is proven by many foreign studies and researches.

To achieve the advantages of sustainability business initiatives is necessary to integrate it into the strategic level. But it is a long and difficult process during which enterprises face various obstacles. First, it is important overcome rejecting sustainability and pass other standard stages of acceptance the importance of sustainability business with aim to create unique document - the strategy of sustainability business.

A lot of enterprises which want to integrate sustainability business into their strategic level encounter a number of problems that discourage them from this idea. A lot of foreign survey and studies were conducted on this topic, but in Slovakia we didn't find relevant one, so we did own research. Its partial aim was identifying the sustainability business impact on the financial performance in order to examine the relevance of the fear of possible negative relationship between these two variable as one chosen barrier of sustainability business strategy. The vast majority foreign researches demonstrated a positive correlation, but results of our research weren't so clear because the selected industry reported different results. Someone reported positive correlation but other one negative. It confirms the relevance of the fear of possible negative impact of the sustainability business initiatives in Slovak enterprises on their financial field. Because of some enterprises actually reported this effect.

This is only one of a many various barriers of starting the sustainability business. After them enterprises faced more obstacles during the implementation, while the most common are lack of information how to implement and too much costliness of sustainability business activities.

The most helpful stimulus from external environment for better implementation the sustainability business strategy are more information sources about the this process and consistent as well as reliable financial incentives at all levels of government. There are big scope for improvement external environment aimed to support this area.

Acknowledgement

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Discrimination of Young People on the Labour Market

Milena Bugárová

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: milena.bugarova@gmail.com

Abstract

The causes of unemployment vary. Unemployment may arise as a result of the market economy or discrimination against certain groups, which we can call as disadvantaged or risk groups. Disadvantages of these groups may be due to differences in gender, age, national identity, or a lack of work experience, etc. Vulnerable groups on the labour market are mainly graduates and young people with limited experience. Unemployment of graduates and young people is a major problem across the EU. Denmark among the first countries prepared a guarantee for young people and it is a very inspiring example for other countries in the EU.

Keywords: risk groups, unemployment, young people, economic explanation of discrimination, differences in productivity, labour market

JEL classification codes: J21, J24, J71

1. Introduction

Unemployment is a problem not only economic but mainly social. A long time out of work results in people losing their working habits, knowledge and skills. Much more difficult to then go back to the labour market. Unemployment as an economic problem related to the lack of funds. The subsequent lowering of the standard of living leads to other adverse sociopathological phenomena.

Unemployment rate of graduates is relatively sensitive to changes in the business cycle. Unfavourable economic development is most affected low-skilled labour with low education or graduates with a lack of work experience. Young people are particularly vulnerable and due to the absent of training and lack of education are facing precarious working conditions, low wages and discrimination. Youth unemployment often results in long-term unemployment.

1.1. Characteristics of risk groups in the labour market

Disadvantage in the labour market can take various forms. The most common manifestation is a high risk of long-term and repeated unemployment. Another important manifestation of segregation into low-wage, temporary and non-standard employment, which are characterized not only lower wages but also lower protection. Such workers are usually among the first, when put on the other hand, they are pushed to the end of the imaginary advice when it comes to hiring new workers. These phenomena emerge to the fore during the economic recession, when declining demand for labour and a large number of people competing for a limited number of vacancies.

The long-term disadvantage in the labour market is also a major factor in poverty and social exclusion. Risk groups are thus in different situations - for example in the selection process, rating or dismissal - getting in a disadvantaged position compared to low-risk groups. If such position result of objective characteristics such as lack of experience and low levels of educational attainment on the part of individuals may be deemed to constitute a market assessment of lower productivity. If the unequal position due to personal characteristics of a person unrelated to its productivity may amount to discrimination.

1.2. Economic explanation of discrimination in the labour market

The understanding of discrimination is necessary to answer two principal questions. First, to what extent does the observation that, on average, some groups in society fare worse than others in the labour market actually reflect differences in productivity arising from differences in such things as education and training, and how much represents the unequal treatment of equally productive workers (i.e. discrimination)?

Secondly, if discrimination in the labour market exists, what explanations are proposed to explain why it takes place? These two questions are, of course, not unrelated. The educational and training opportunities available to some groups in society may themselves reflect discrimination.

As a result, labour market outcomes, which may or may not be discriminatory, may arise from discrimination that exists outside the labour market. In this section we consider those explanations usually grouped under the neoclassical label, which build upon human capital theory.

No attempt is made here to provide an exhaustive coverage of all the neoclassical models and their variations, rather, we present two examples of neoclassically-based explanations. The first, Becker's 'employer taste' model, is based on the standard utility maximising model and emphasises the importance of market forces and competition; the second focuses on how imperfect information in the labour market can give rise to wage differentials even among comparable workers.

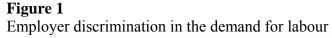
1.2.1 Becker's 'employer taste' model

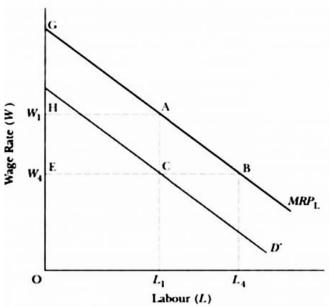
The most prominent neoclassical explanation of discrimination is based on the work of Gary Becker and develops the idea that some workers, employers or customers do not want to work with or come into contact with members of other racial groups or with women (Becker, 1971).

No explanation is given as to why this prejudice exists, rather it is simply assumed that there is a 'taste' or preference against people from disadvantaged groups and that this taste can be treated in exactly the same way that economists would analyse individual preferences between goods and services.

Suppose that an employer does not want to employ members of a particular group even though these workers are as productive as any others. If the firm has to pay all workers the same wage it will simply not employ members of the disadvantaged group.

However, if it is possible to pay these workers less than those from other groups the firm then faces a trade-off: it can employ members of the disadvantaged group at lower wages and thus increase its profitability, or it can discriminate and employ only workers from the high wage group even though this will mean lower profits. Discrimination in the latter case therefore imposes a cost on the firm. (Saylor Academy, 2016)





Source: Saylor Academy. (2016). *Economics explains discrimination in the labor market*. [online]. Available at the URL: http://www.saylor.org/site/wp-content/uploads/2012/06/ECON303-8.2.1.pdf, [accessed 21.02. 2017].

Figure 1 can be used to show what happens in these circumstances. Let us assume for the sake of simplicity that there are no differences in productivity between different groups of workers. Since all workers have the same level of productivity, the marginal revenue product (MRP) curve faced by the firm is the same, irrespective of which workers they employ. This is shown as MRP_L , the demand for labour curve. In a competitive labour market, a firm will employ labour up to the point where the wage equals the marginal revenue product of labour (which is why the MRP_L curve is also the firm's demand curve for labour). So, if the wage rate is W_1 the firm will employ L_1 workers. If the firm discriminates against members of a particular group, no workers from this group will be employed at W_1 . This employer will simply exercise prejudice against them and, if this is a common practice amongst firms, the disadvantaged group will face unemployment. What would happen if these workers were prepared to work at wages below W_1 ? Clearly, this will depend upon the extent to which the firm is prepared to discriminate since by employing disadvantaged workers at lower wages, the firm can lower its costs and thus increase its profits. Suppose that the firm is prepared to pay to L_1 workers from the disadvantaged group. (Saylor Academy, 2016)

Use Figure 1 to identify the volume of total profits which the firm would make from this discrimination. The problem, however, is that other firms may not hold the same prejudices. There could be another firm which has only one demand curve for all workers, as represented by MRP_L. Assume that a non-prejudiced employer hires labour at a wage rate of W₄. Using Figure 2, identify the following: 1. the total profits made by this firm; 2. any additional profits made in comparison to the prejudiced firm.

Although we have only considered a simple variant of the Becker approach to labour market discrimination, it is sufficient to highlight the most important conclusion. This is that discrimination can persist only if there are factors which limit the amount of competition in the labour market or in the product market. If these markets are competitive, the increased profitability of non-discriminating firms compared to discriminating ones will encourage nondiscriminators to enter the market. This will put downward pressure on the price level and

eventually force the higher-cost discriminating firms out of business. The extent of the inefficiency faced by discriminating firms is shown by the fact that, at wage W_4 discriminating firms employ L_1 workers, whereas a non-discriminating firm would employ L_4 workers and produce more output as a result. If, however, there are substantial barriers to entry which make it difficult for new firms to enter the market, competition will not erode discrimination. The 'employer taste' model predicts that discrimination exists because employers do not want to employ certain groups of workers and will only do so if these workers are paid lower wages than those paid to workers in general. It thus provides an explanation of wage discrimination – equally productive workers being paid different wages. (Saylor Academy, 2016)

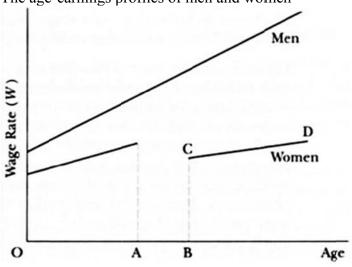
1.2.2 Statistical discrimination –investment in education and training

Human capital theory has been used to show how investments in education and training lead to higher levels of earning. One reason why education and training are referred to as investments is because their benefits accrue over time and because training early in a career leads to higher earnings over the rest of an individual's working life. An important consideration, therefore, in the decision about whether to invest in additional human capital is the potential length of working life over which the benefits will be received. This would suggest that if certain groups of workers — most notably married women with family responsibilities — expect to have interruptions in their careers they will invest less time and energy in acquiring human capital.

They thus face lower earnings as a result of having less training and lower skills. Because women themselves choose not to invest in skills and training, their lower earnings would not represent discrimination according to the definition used in this unit. Of course, it could be argued that some women decide to focus on their family and domestic activities precisely because they perceive poor career prospects for women, prospects which are themselves a reflection of discrimination. This is an example of reverse causation.

The impact that career interruptions can have on the earnings profile of women can be shown using Figure 2.

Figure 2
The age-earnings profiles of men and women



Source: Saylor Academy. (2016). *Economics explains discrimination in the labor market*. [online]. Available at the URL: http://www.saylor.org/site/wp-content/uploads/2012/06/ECON303-8.2.1.pdf>., [accessed 21.02. 2017].

We shall initially assume that men come to the labour market with a certain amount of human capital and this determines their initial earnings. Subsequent training and promotion then result in their earnings increasing each year which is reflected in an upward sloping age-earnings profile (this shows how an individual's or group of individuals' earnings change over time).

On the other hand, we shall also initially assume that all women expect to drop out of the labour force because of family responsibilities and, as a result, undertake less education and training before entering the labour market. (Saylor Academy, 2016)

Hence, their age-earnings profile is lower than that for men. For example, women may choose education and training courses, such as those providing clerical, secretarial or nursing skills, that enable them to enter occupations in which breaks from work incur the smallest penalty. Once they enter these occupations they receive less training than men because expected career interruptions reduce the returns from such investments and consequently their earnings profile rises at a lower rate than that for men. This is shown by the segment of the age-earnings profile up to age A. At age A, we assume that women drop out of the labour force and that when they enter the labour market again at age B, depreciation of their skills has resulted in a reduction in their potential earnings. In addition, the interruption has also resulted in a loss of seniority which has depressed their scope for earnings growth even further. This is shown by the segment CD.

Human capital theory therefore predicts that women will earn less than men because they do not expect to spend as long in the labour force. Intermittent work histories will also influence career choice. Fewer women will pursue skilled occupations and the professions, and more will be attracted to those jobs that enable them to more easily combine family responsibilities and labour market activity. Women are less likely to be promoted to higher level grades where these involve additional training since the monetary gains to the firm will, on average, be lower for women. The result is that promotions will be biased in favour of men.

We have, of course, made some very strong assumptions in painting the above picture of participation and occupational choice. Women now account for about half the total UK workforce (though women as a whole work shorter hours in employed labour and a larger proportion are part-time) and many women have as strong a commitment to their careers as men. The ability to combine family responsibilities and a career depends upon a number of different factors, not least of which will be the nature of the job and the availability and cost of such things as crèche and childcare facilities. (Saylor Academy, 2016)

1.2.3 Productivity of difference

The preceding discussion has only considered what would happen if all women undertake less investment in human capital than men. If men and women invest to the same extent, human capital theory suggests that no wage differences would be observed. What happens, however, if there are differences in skill levels both between genders and within gender groups? To consider this we will also make the additional assumption that firms do not know when recruiting workers who are the most productive. However, employers do know that, on average, women spend less time in the labour market than men because of career interruptions.

Since firms do not know each individual's potential productivity when hiring – both men and women may leave or may not be very productive once trained – they will set wages on the basis of what they do know, and that is the average level of productivity of each group.

Since women have less training and work experience, their average level of productivity will be lower than men's. The two distributions show that there are variations in productivity among men and women. The fact that they overlap indicates that some women are more productive than some men. Let α be the average productivity of men and β the average productivity of women ($\alpha > \beta$).

For a man, individual productivity is equal to:

$$\alpha i = \alpha + ui$$

whereas for a woman, it is likewise equal to:

$$\beta i = \beta + ui$$

where ui represents the individual difference between actual productivity and the average for all men (women).

The average level of human capital investment, and thus productivity, differs between men and women and this is reflected in the average earnings differential. On these assumptions, there is no discrimination, on average, against women. However, there is discrimination against individual women. Specifically, those women who have a productivity level to the right of the line above point C are being paid less than comparable men. It is also evident that the greater the variation in productivity within the female group, the more women will be underpaid compared with men who may be less productive. The curve showing the distribution of productivity would be wider, and, hence, there would be more overlap with the distribution curve for men. Discrimination here involves the unequal treatment of individuals on the basis of actual or perceived differences in the average characteristics of the groups to which they belong.

An additional point about potential productivity concerns the methods used by firms to try and identify which applicants are potentially the best employees. Firms use a variety of 'screening devices' when recruiting in order to establish the best potential employees. One such device is psychometric testing which many firms are now using to test applicants. However, it is possible that the very nature of these tests may be biased against women or ethnic minorities, adding further to the discrimination faced by individual workers. (Saylor Academy, 2016)

2. Unemployment of graduates and young people in Denmark

According to Eurostat, the level of education has a significant impact on youth unemployment in Denmark. In 2013 the unemployment rate of young people in the age group (15-24 years) 12.60% EU28 average was 22.60%. In the age group (25-29 years) unemployment rate was at 8.90%, EU28 average was 14.20%. In the age group (25-29 years) with lower secondary education 15.50%. In the same age group with upper secondary education, the unemployment rate was only 8.0%. The unemployment rate of university graduates was slightly higher, reflecting the difficulties in applying the new graduates.

Denmark for a long time prepared a legislation to ensure youth unemployment. Measures aimed at graduates and young people are regulated by the reform of social assistance and measures of active labour market policy. Nearly 40% of social assistance recipients are aged 16-29 years. A recent study shows that most young people who are not in employment, education or training have been unemployed for more than six months.

The aim of Denmark in 2015 was to reach 95% of young people resulted in higher secondary education and 60% of young people resulted in tertiary education. Despite these ambitious goals Denmark recorded a very low level of upper secondary education.

Approximately 82% of young people under 25 years prematurely ended higher secondary education. Ten years after the end of compulsory schooling 16% of young people has finished no higher secondary education. These factors could hinder the future Denmark in achieving national educational goals. (European Commission, 2016, p. 7).

2.1. Implementation of the youth guarantee scheme for young people in Denmark

According guarantee for young people, all young people aged up to 25 years should receive a good quality offer of employment, further education, training or internships within four months after the end of formal education or job loss. Definition of safeguards for youth (Youth Guarantee) is the same for all member countries.

Implementation of the scheme guarantees for young people in Denmark should be based on a partnership approach involving all relevant public authorities, social partners, educational institutions, guidance centres, etc. The system should ensure a timely intervention and offer support measures for successful integration in the labour market.

The priority objective of Denmark in implementation of safeguards for the young is:

- engage young people not in education once again in the learning process;
- integrate graduate education and young people into the labour market;
- provide an opportunity for retraining, different courses for young people with no education, who are absent preconditions for opening and closing the standard of education;

A prerequisite for the implementation of safeguards for young people in Denmark, it is necessary that young people were registered with labour offices. Within seven days from registration with the competent authority must complete the assessment interview. If you have not completed education, have the right to obtain graduate practice during the first month. If they already have a completed education, but they do not succeed in finding employment within three months of receiving a quality offer relevant to their qualifications. Duration of unemployment is calculated from the date of registration at the labour office. Graduates and young people who are not in education are contacted counselling centres. For all young people is set up personal learning plan. The Danish labour market is a reflection of the strong and active participation of the social partners and public authorities. Special attention is paid to the unemployed in 29 years.

The central element of the Danish labour market policy oriented to young people is early intervention and activation, which in recent years has undergone several reforms, for example. Reform of cash benefits in 2014. The reform of cash benefits to be fundamental reform with many aspects. The reform consisted of two parts. The first part of the reform concerned the unemployed in the age group over 30 years. The second part focused on unemployed 18 to 29 years. Both of the reforms focus on early intervention and activation taking into account the individual needs of young people. The main objective of the reform was to support and help young people get the education standards and permanent employment. (Ministry of Employment in Denmark, 2014, p. 3-4)

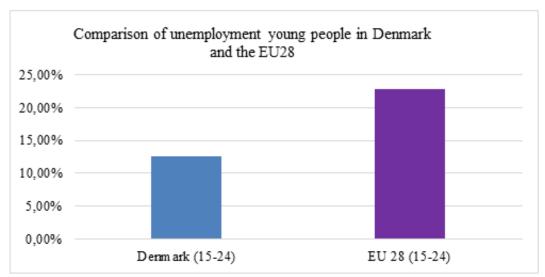
The results of the implementation of guarantees for young people in Denmark are not available on the website of the Ministry of Labour in Denmark is therefore not possible to compare the results of the implementation of safeguards in whole EU. Shown in the following subsection compare unemployment rates of graduates and young people by age group obtained from the Eurostat database.

2.2. Comparison of unemployment graduates and young people in Denmark and EU

Reporting unemployment of graduates and young people, we determined the methodology as reported by Eurostat. European Survey recorded unemployment of graduates than the unemployment rate of young people in the age group (15-24 years) which includes both the unemployment of graduates and those with early school leaving. Data for comparison purposes are derived from Eurostat for 2013 for Denmark and the whole of the EU.

In Denmark was in 2013, the youth unemployment rate in the age group (15-24 years) 12.60% and average in EU28 was 22.80%. The following chart shows the unemployment of graduates and young people in Denmark and the EU28. Comparison unemployment rate covers the age group (15-24 years) as possible the criteria for comparison Graduate unemployment rates between Denmark and the EU for the period. (Eurostat, 2013).

Graph 1Comparison of unemployment young people in Denmark and EU28



Source: own processing according by EUROSTAT. (2013). *Unemployment rate by age group 2013*. http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Unemployment_rate_by_age_ group_2013.png , [accessed 21.02.2017].

3. Conclusion

The Danish welfare system is an important guarantee of the protection and security of graduates and young people from unemployment. Denmark is across the EU28 countries with the lowest unemployment rate of graduates and young people. The problem of Denmark is a high proportion of low-skilled labour. The reason for the early termination of the study. Thus, insufficient number of graduates. Many European countries solve different problems than Denmark. The problem of a large number of unplaced graduates in the labour market. However, despite the differences in Denmark is very inspiring example for many countries in EU, because mainly due to successfully implemented active labour market policy.

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The Startup Environment in the Slovak Republic

Ján Bukoven

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: jan.bukoven@gmail.com

Abstract

Currently, growth of developed countries is driven not only by the traditional sectors of the economy; new technologies, innovation and scientific research increasingly come to the fore and become the key to long-term economic growth. Investments in startups have recently become trendy. It is not just "a matter of fashion" for one year, as it might seem. In Slovakia the amount of startups that become businesses and attract major international investors and private investors because of its high growth and innovation potential who can kick-start and support smart and inclusive economic growth in long-term. At the same time they contribute to the development of industries with high added value; regional and global competitiveness, as well as creating employment for highly skilled workforce. Some successful startups constitute a significant contribution in building the image of the Slovak Republic abroad as a country with innovation potential.

Keywords: venture capital, Slovak Republic, startup environment, business angels, simple joint-stock company

JEL classification codes: G23, G24, G32

1. Introduction

In order to fully utilize the potential of startups in Slovakia it is necessary to create a favorable legislative and regulatory environment and the creation of an appropriate ecosystem and financial schemes to fund critical phases of the life of the startups.

The Aim and Methodology

The aim of this paper is to evaluate the current state of start-up environment in Slovakia and on this basis to propose changes in the economic and legislative activities that will contribute to creating more optimal conditions for this form of business. With the term of Venture Capital we can first time meet in research work of J. Witter, which he delivered in his speech at the conference Investment Bankers Association of America in 1939 (Kenney, 2000).

Micro, small and medium-sized enterprises make up 99% of all companies in the European Union (hereinafter referred to as "EU"). Their total number is about 21 million and employs about 33 million people and are an essential source of entrepreneurial spirit and innovation (Malé a střední podniky – Věcné informace o EU – Evropský parlament, 2017).

The vision of the Slovak Government and the competent Ministries is encouraging startup ecosystem in the Slovak Republic (hereinafter referred to as "SR") by stimulating business environment and the system of state support, which can activate the Slovak entities and individuals with unique ideas or attract foreign entities with innovative ideas and thus more attractive investing into startups in SR (Rokovanie Vlády Slovenskej republiky, 2015).

Slovak business environment is formed mainly of small and medium-sized businesses, representing 99% of all companies; startups are a part of this category too. Small and medium enterprises (hereinafter referred to as "SME") provide employment, in a corporate economy, for nearly 75% of the active labor force and contributes to more than 50% of the gross production and the creation of added value (Slovak Business Agency, 2017).

SME in SR make up only 1.8% of the total number of SMEs in the EU. Added value of the total value added of SMEs in the EU is 0.6% and also creates 1.2% jobs of all SMEs in the EU. The effectiveness of Slovak SMEs in comparison with some other countries in Europe is low (Muller, 2014).

2. The startup environment in Slovakia

Startups ecosystem in Slovakia began to develop between 2010 and 2011 through private sector initiatives. The public sector took notice of the startups from 2013 onwards, through the project of the National Business Center (hereinafter referred to as "NPC"), the development of national support schemes of the Startups and Operational Program Research and Innovation (hereinafter referred to as "OPVaI") and other initiatives of the European Commission aimed towards business support (Action plan 2020 Small Business Act). In 2015, the Government of the SR approved the "Concept to support the Startups and development of the Startups ecosystem in the SR".

On the basis of the existing estimates there are about 600 startups in Slovakia employing more than 3,000 employees. 85% of Slovak Startups are in the early stages of their development: 41% in the beta phase (phase following the creation of the prototype) and 55% startups generate of revenues.

The main sources of financing of the Startups consists primarily of personal savings (71%), support of friends and family (21%) or bank loan (4%).

Number of employees in startups in Slovakia is still low:

- 22% have no employees,
- 14% has 1 employee,
- 11% have 10 employees,
- 9% have 5 employees,
- 7% have 3 employees,
- 5% have 15 employees,
- 4% have 20 or more employees.

In the near future, only 46% of Slovak startups plan to employ 2-3 people, 19% of startups 4-9 people and 17% 10 or more. Startups have a special interest in employing highly qualified personnel, with 85% of staff in the Startups having a university degree or professional qualifications, 37% have managerial and economic education and 25% have IT education (Prieskum Startup Ecosystem Survey, 2016).

The current status of startups in Slovakia is characterized by:

- Limited range (offer) of financial and non-financial tools.
- Insufficient connection between startup community at universities or scientific institutions.
- Low level of cooperation between individual members of the Slovak startups ecosystem.

- Low entrepreneurial skills and generally low interest in entrepreneurship as a career choice.
- Regulatory environment which does not motivate enough towards activity of the startups.
- Strengths of the Slovak startups environment are mainly:
- Price affordability of products and services.
- Labor force who is educated, skilled and has great linguistic skills.
- Relatively good availability of staff / team members (except the IT sector) (Prieskum Startup Ecosystem Survey, 2016).

The absence of a comprehensive system of state support for startups in the Slovak Republic could also affect the efforts of the Slovak Startups to find their use abroad, for example in Prague, Budapest and Warsaw, where already there are programs to support startups (a phenomenon referred to as "brain drain"). 57% of companies consider relocation to another country of which:

- 80% is due to new markets and customers,
- 48% is due to an access to finance and
- 32% is due to the tax and legal environment (Startup Survey, 2014).

Choice of instruments to support the Startups will vary between countries

In the United States, which is the global center of innovation and research and development activities, the "Startup New York" provides startups tax exemptions during the first ten years of business.

In Israel, which is also considered a leader in the Startups operates today more than 5 000 Startups, every year 700 new are created, and Tel Aviv is considered the capital of the Startups (Černý, 2015). The result is that for every dollar invested in Israel, the Israeli government is prepared to support investment with another six dollars (Financial Times, 2014).

And what are the reasons for success of startups of Israel? The success is not random, Israel's development and research is mainly dependent on the environment in which they are located. The basic reasons for the success of startups in Israel can be included in the following points:

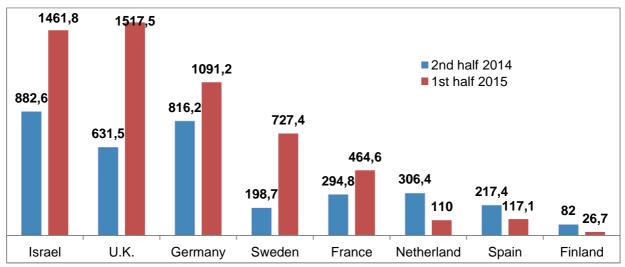
- State program to support research and development of the business,
- Network of institutions aimed at supporting startups,
- Research linked with the industrial business practice,
- Financing of startups through venture capital (Rezáková, 2016).

In the EU, UK and Germany stand out, in particular through incentives for angel investors, whose role is irreplaceable in the startups system. The angel investors fund the riskiest of the initial phase of business.

Likewise, the regional grouping of the Visegrad Four (Czech Republic, Poland, Hungary, the Slovak Republic is a member) is also very active in supporting of the Startups in various national programs. These countries from Visegrad Four have a lot of special measures designed to promote the internationalization of startups in global startup centers, especially in Silicon Valley.

Interest in startups in Israel is documented by the fact where investors send their money.

Figure 1 Where do investors sent their money (in billions U.S. Dollars currency)



Source: Venture Capital in Europe and Israel

3. System of supporting solutions for startups

Support for innovation and innovation projects in Slovakia is implemented through various state institutions and agencies (Ministry of Finance, Ministry of Economy, Ministry of Education, Science, Research and Sport, Slovak Business Agency - SBA, Slovak Innovation and Energy Agency - SIEA, Slovak Center of Scientific and Technical Information - SCSTI). Currently, in terms of support of Startups, the individual institutions are not sufficiently coordinated. Presented concept proposes some coordination and synergy between the main actors. The solutions to support the business of the startups and strengthen the ecosystem in Slovakia are comprehensively designed for all phases of the development of Startups (for the phase before the foundation and also for the growth-stage of the startups) (Research: EBAN, 2014).

Measures that should stimulate the startups in various fields:

Foundation of startups companies - for the development of startups in Slovakia it is
most effective to introduce a new legal form of business company which allows flexible
adjustment of property relations, the possibility of entering a new investor or exit from
the investment. The solution is to introduce a hybrid form of Capital Company that
combines elements of limited liability companies and joint stock companies.

Likewise, the company's capital should also be addressed and it should be as low as possible. Furthermore, split of shares and whether they will be or not publicly traded, should be discussed. It should be allowed to issue different classes of shares that will be associated with different rights, for example: the right to add to the allot of shares under the same conditions as the majority shareholder, the right to request the transfer of shares, employee shares, warrants and other rights.

A new form of Business Company should suitably reflect the environment in which Slovak Startups are founded. Options for further flexible setting of community relations and the establishment of various mechanisms for the protection of investments should help this type of investment in Startups, and reduce the aversion to risky investments. In this new company, both parties would be able to agree on the overall strategy of the

company in a legally binding non-public shareholder agreement, so that sensitive information remains confidential.

- Tax measures Ministry of Finance proposed exemption from the obligation to pay the tax license for a period of three years for companies that qualify as startup under predefined criteria. In the first year of business the obligation to pay the tax license exempts all companies in the Slovak Republic. The proposal is therefore to extend this period for an additional two years for startups. It is also necessary that managers and members of the startup business are allowed to run business according to legislation and are not debtors to the tax authorities, social insurance or any of the health insurance companies.
- An incentive for angel investors long-term problem of startups in Slovakia is insufficient activity of angel investors. Amount of investments that are invested in startups in their early phase of the operation is up to 100 000 €, which is a problem. Investments of angel investors are generally not public and therefore it is very difficult to get accurate statistics on the amount or size. This is due to the fact that there are no associations (clubs) of angel investors in Slovakia. Abroad, such organizations operate and monitor the investment activities in startups, they are helping in connecting startups with angel investors, analyze investment activity of angel investors, promote the interests of those investors and so on. The importance of angel investors for the economy is confirmed by statistics, for example the European Business Angel Network (hereinafter referred to as "EBAN") (Research: EBAN, 2014), which states that the impact of angel investors can bring up to an average of 231% growth in employment and 150% growth of income for businesses. The Investors of venture capitalists are mainly primary investors of various types such as:
 - Business angels,
 - Independent investors,
 - Dependent investors,
 - Semidependent investors,
 - Government supported organizations (Chovancová et al., 2008).

Motivation of angel investors and financial support of startups could also take place in Slovakia through an additional increase in investment of angel investors in the startup subsidy (grant) from public funds within a predetermined percentage of the amount of investment from angel investors (matching grant). Startup will be able to get co-financing and grant more times, but up to a specified amount cumulatively, regardless of the number of investors. The measure will be financed from funds allocated in OPVaI (Rokovanie Vlády Slovenskej republiky, 2015).

This measure will be direct support the funding of the startup, as well as activities of angel investors, whose investments will be able to recover more quickly on a basis of co-financing of startup projects together with the state, without the state interfering in any way to the decision-making processes within the startup.

The conditions for a grant from public funds into startup will be:

- The investment into a company that meets the criteria of the Startup,
- The equity stake in the startup that investors can obtain through this investment can reach a maximum of 49%,
- The grant awarded to Startup will not be subject to taxation,

- Predetermined lower limit of the amount of investment of angel investors for qualification of a startup to gain a grant from public sources,
- The maximum grant that the startup could accumulate from a number of investors may be limited to a predetermined amount.

Criteria for qualification for the angel investors, in particular:

- The angel investor is not in legal, commercial, family and working relationship with one of the founders, owners or employees of startup,
- Investor acquires equity stake in the startup for the first time and thus under this
 program, it will not be allowed toge get further grants, when the investor increases his
 share in the startup.

One solution could be to create and support such associations that would improve connecting processes between startups and investors. Financial backing of such activities could be through OPVaI. The conditions for the support will be membership in EBAN, which covers European platforms of angel investors and was set up by the European Commission.

The tasks of the association of angel investors will be to create a database of investors and startups operating in Slovakia, make quantitative analysis of investment activity of angel investors, organize training events and workshops and establish the mechanism for evaluating of the startups (rating), for example, through a group of private domestic and foreign investors. This assessment may serve as a factor in decision-making for angel investors and could also be used for purposes of additional forms of state support.

- Provision of various non-financial services for startups People who opt for business, or for founding of a startup have little or no business experience. For these reasons, in many European countries, state institutions try to overlap this gap through various complex services. These are primarily for assistance in drawing up business plans, assistance in strategic planning, technology consulting, providing long-term consulting services including legal services, and many other financial and non-financial services. In negotiations with the investor, it is appropriate from outset to clarify key points in the contract documents in particular the following:
 - Conditions precedent,
 - Liquidation preference,
 - Lock ups,
 - Representations and warranties,
 - Consets rights,
 - Information rights,
 - Vesting (good leaver/bad leaver),
 - Fees (Balík Belko et al., 2015).

To support startups, a project, that is to be set up by NPC, was prepared, whose role it will be to:

 Prepare comprehensive solution of services to support the startups, working with existing centers to support the startup community (the concept of one-stop-shop spaces - incubator, accelerator, co-working and long-term provision of advisory services) within the NPC,

- Create a dedicated space for the promotion of creativity called "CreativePoint",
- Cooperate with partners oriented to business support,
- Support the linking of academic environment (universities, scientific research institutes) with the needs of the business environment.

The improvement of funding of startups

Financing of the startups substantially determines the overall success of startups, as startups in Slovakia have only limited possibilities to attract investors. In case of startup it is the risk capital which is essential for its development and growth. The capital market has long been broken. The equity financing in Slovakia is characterized by low levels of demand and supply, as well as a low level of awareness of the benefits of equity financing and the resulting lack of experience in dealing with equity investors in general. The Stock Exchange in Slovakia did not come up with an initiative on the financing of startups through the stock exchange or by creating the conditions for startups.

Other forms of funding are also important for the startups, such as in the form of a convertible loan, a combination of long-term advisory services startup (which guarantees the startup a better chance of staying on the market) and so on. These forms of support should be established in the work of the NPC and financed by the OPVaI (Rokovanie Vlády Slovenskej republiky, 2015).

The aim is for the bank sources to be gradually replaced by equity financing, which is especially true for startups that are at the beginning of the business essentially dependent on external financing (limited history of cash flow, any assets that could serve as collateral, etc.). Access to the capital market, however, is expensive for most startups, primarily because of the fixed costs in the due diligence and property matters (equity issues). The key is also the cooperation of banks and various institutions by following the rejection of applications for loans to startups. The banks should be able to provide a quality feedback and at the same time inform the client about the possibilities of financing in the Capital Market.

Another important aspect is the need to improve access to financing for startups (including Venture Capital). But there are other barriers that stem from a lack of interconnection of EU Capital Markets (absence of a single Capital Market) and limited access to financing options offered. Priority should therefore be to increase the efficiency of the internal market, in particular:

- greater competition on the market,
- bigger number of market players,
- new products (securitization, etc.),
- reducing of prices for market entry both for investors and for applicants,
- better distribution and diversification of risk,
- sharing of risk among investors across the EU.

Support of universities, training centers and research and development institutions

In Slovakia, there is apredominant tendency towards the labor relationship, meaning that young people in Slovakia are not very interested in undergoing entrepreneurial risk and thus undergo a possible business failure. Young people / students therefore often leave their ideas after the study and also because of the uncertainty of longer-term income.

The breakdown of age group of the startups people is shown in the Chart 1.

Chart 1
The breakdown of age group of the startups people in %

Source: Startup Ecosystem Survey 2016, KPMG

This problem can be solved by establishing of certain principles that would be a combination of financial and non-financial support for a limited period for the target group - students (including doctoral students) at universities or educational institutions. The grants would be given to those students who wish to develop their innovative ideas and business plans in schools, in cooperation with schools, with centers of excellence and incubator. The aim of this measure is to encourage youth entrepreneurship and assume part of the risk in the initial phase of business development. The grant amount and length of time for which the grant would be provided should be pre-determined.

Abroad there are schemes under which selected types of companies - such as startups and spin-offs have the opportunity to collaborate with research institutions on preferential terms. Traditional university education system abroad is complemented by a model of "The Entrepreneurial University". Its aim is to transfer scientific and research activities into the commercial sector and support the entrepreneurship of students during their studies. The students acquire practical skills and motivation to carry out business activity (Rokovanie Vlády Slovenskej republiky, 2015).

A concrete step in strengthening of the Slovak startups presentation abroad is the establishment of a permanent foreign representation of the Slovak Republic in Silicon Valley with a local agent who would have to primarily carry out the role of a representative of the Slovak Republic for the area of support of the Slovak startups in the US (Rokovanie Vlády Slovenskej republiky, 2015).

4. New conditions for the establishment of the Startups in Slovakia in 2017

From January 1, 2017 there is a new new Act. 290/2016 in SR regarding support of small and medium enterprises and the amendment of Act no. 71/2013 about the provision of subsidies of the Ministry of Economy of the Slovak Republic (hereinafter referred to as "Act about the Startup").

The startups are business initiatives with high growth and innovation potential that can kick-start and in long-term support smart and inclusive growth and also attract foreign investment. They contribute to the development of industries with high added value, regional

and global competitiveness and job creation for the skilled labor (Rokovanie Vlády Slovenskej republiky, 2015). Their added value is a breakthrough or significantly improved product or service for the relevant market.

According to the Act no. 513/1991 as amended - Commercial Code, a new type of company exists, the simple joint-stock company (hereinafter referred to as "J.s.a."), which was created especially to support the startups and keeping them on the market. In practice it introduces a number of measures:

J.s.a. should solve the problems of frequent extinction of startup due to a lack of capital at the establishment, but will be of interest to investors. J.s.a., is a hybrid form of capital company that combines elements of a limited liability company (hereinafter referred to as "s.r.o.") together with the elements of a joint stock company (hereinafter referred to as "J.s.c"). The efforts have been made to combine the benefits Ltd. (low initial capital requirements and simple structure of the company) and joint stock companies (the share capital represented by the shares and the liability for breach of obligations) into a single unit.

The main advantage of such society is mainly the amount of capital that may no longer be a minimum of $\leq 5,000$ as in the establishment s.ro. In J.s.a., the amount of capital is ≤ 1 and shareholders are not liable for the obligations of the company as is the case of joint stock companies.

- J.s.a. value of shares will be expressed in euro cents and also in combination or euros and cents. However, unlike public limited company, the lists of shareholders J.s.a., published in the register of shareholders maintained by the Central Securities Depository of the Slovak Republic (hereinafter referred to as "CDCP"), means less anonymity for shareholders of J.s.a. It will be in addition to ordinary shares issued and shares, i.e. special rights to be included in the articles of association, which will determine the scope of the right to a share of the profits or liquidation or determine the number of votes a shareholder. Furthermore, the criteria will be simplified for the transfer of shares, which may ultimately be interesting for financial investors. The subscription of shares for employees will also be easier.
- J.s.a. can be set up either by one or even several persons through a Founder's document or Founder's agreement as is the case when setting up a joint stock company. However, contracts must be in the form of a notarial deed. Furthermore, the founders may enter into a Shareholders' Agreement in which it is possible to arrange special rights such as the right to join a transfer of shares (ie. Tag-along), the right to require the transfer of shares (ie. Drag-along) and the right to acquisition of shares (ie. Shootout). Moreover, J.s.a. has the possibility to determine the specific conditions of the termination of her organs in its Founder's document (Brehová, 2016).

Comparison between different legal forms of selected types of the companies (Brehová, 2016) is in the Table 1.

Table 1Comparison between different legal forms of selected types of the companies in the Slovak Republic

	J.s.a. (easy company into shares)	s.r.o. (limited liability company)	J.s.c. (joint-stock company)
The minimum amount of registered capital	1 €	5 000 €	25 000 €
Minimum number of founders	1 person / legal entity	1 person / legal entity	2 people / 1 legal entity
Constituent document	Founder's document / Founder's agreement	Social contract	Founder's document / Founder's agreement
Liability of shareholders / shareholders of the company	Shareholders are not liable for the debts of the company	Partners responsible for the debts of the company up to the amount of their unpaid contributions	Shareholders are not liable for the debts of the company
Anonymity Companions / shareholders	Public register of shareholders CDCP	The list of shareholders published in the Commercial Register	Non-public list of shareholders
Company authorities	General Meeting / Board / Optional - Supervisory Board	General Meeting / Managing director / Optional - Supervisory Board	General Meeting / Board / Mandatory - The Supervisory Board
The fees for registration of a company	Amount not established	Electronically: € 150 Physically: € 300	Electronically: € 375 Physically: € 700
Notary fees	Copy of a notarial record - about € 70	Verification of signatures - from € 1.50 per signature Copy of a notarial recombination about € 250	

Source: Processing by the Author of the paper with BREHOVÁ, N. (2016). Dobrá správa pre startupy: Ich zakladanie bude od nového roka jednoduchšie! [Published on 15 September 2016]. [online]. Available at the URL: https://www.startitup.sk/dobra-sprava-startupy-zakladanie-noveho-roka-jednoduchsie/

Conclusion

Despite the fact that a number of measures have been adopted, whether in the form of various concepts of government proposals and actions, in the context of the above we can conclude that the issue of development and support of the Startups in Slovakia is still not completely solved, whether from a point of view of the founders themselves, the angel investors and institutions that deal with this area. The positive of this ongoing process is that investing in new ideas and technologies has a growing trend. A range of measures were adopted, whether in legislation or taxation.

The aim of all concerned is to continue to improve the business environment, support new startups as well as the existing startups, not only in financial terms but also by consulting, technology and education. The development of our society will also depend on the success of the startups not only in Slovakia, but also abroad.

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Agile Way of Working and its Impact on Business Performance

Andrea Čambalíková

University of Economics in Bratislava Faculty of Business Management Dolnozemska cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: andrea.cambalikova@euba.sk

Abstract

The paper is dedicated to the new trend of workforce organisation – an agile way of working and its influence on business performance. As a reaction to the constantly changing environment businesses need to be more flexible and capable to adapt to changes very quickly. The paper presents a definition of the term "agility", a characterisation of an agile enterprise, as well as benefits and barriers related to its implementation. Best practices and data from surveys are included, too.

Keywords: agile, collaboration, flexible workforce

JEL classification codes: M12, M54

1. Introduction

Development of world management is influenced by globalisation, which currently stresses importance of intellectual assets in a company as a tool to increase competitive advantage of the company on a market. Businesses need to rethink the way they operate. In doing so, they need to look to reduce organizational complexity and to create more flexible, scalable operating models that are capable of quickly responding to new market opportunities and operate at lower costs (Gubova and Richnak, 2016). To maintain competitive advantage and to be successful in the future, businesses need to become more 'agile'.

There are a couple of new challenges enterprises are facing to, such as changing economic conditions, coupled with decreasing trust in markets, increasing pressures on natural resources and significant changes in customer and employee demographics. On account of that businesses will need to react to meet these new challenges in order to be successful. In our fast-moving world, the winners will be companies that can sense change and respond accordingly. Agile initially emerged in reaction to waterfall methods which are characterized by heavy regulation and regimentation and an overly incremental approach.

1.1 The Term of Agility

The need for flexibility, customer focus and more efficient use of resources is going to require greater mobility, adaptability and collaboration. Multifunctional teams would be quickly assembled to meet specific customer needs and capitalise on emerging opportunities, then swiftly disassembled ready to move on to the next opening as part of an agile and cost-effective 'plug and play' model. A new and more realistic bargain with staff is also going to be needed to bring pay rates into line with today's more modest returns (PwC, 2014).

Agile development alone cannot make your business more successful, because success in today's dynamic, competitive markets requires agility across all dimensions of your business, not just software development. There is no one thing or set of things you can do. That's

because agility by its very nature requires you to do different things at different times in response to different conditions. This may seem such obvious as to be trivial, but it is not. Agility is not about changing for change's sake, but it is about making the right change but only when there's a legitimate reason to change. **Agility isn't something you buy or do. It's something you become** (Information Week, 2016).

Agility is a term that is nowadays applied to everything. Agile has been making big progress since it evolved in the middle of 1990s. More recently, agility has been used to describe engineering methods, including software. In the middle of 1990s, "lightweight" software methods gained some traction, aided in part to the growth of object oriented analysis and design (Curran, 2009). In 1991, a group of researchers came up with the idea of agility when industries saw the environment changing, rapidly and identified that their traditional style would not help them survive in the turbulent environment (Alavi and Wahab, 2013). Agility helps enterprises to adapt to the dynamic environment and act on it quickly. Finally in 2001, the term agile was ratified as a software development approach and described in the Agile Manifesto.

Agile innovation methods have been revolutionized by information technology. Over the past 25 to 30 years they have greatly increased success rates in software development, improved quality and speed to market, and boosted the motivation and productivity of IT teams. Innovation is what agile is all about (Rigby et al., 2016).

Referring to FOW Community (2015) the term **Agile** means to adapt to change and take an action. There are no doubts that an agile approach is designed for flexibility (PwC, 2014). The Agile Alliance defines agile similarly as an ability to create and respond to change in order to succeed in an uncertain and turbulent environment (Agile Alliance, 2017).

Agile is an approach for software development that delivers potentially shippable working code in short iterations following business priorities, while providing the ability to deal with uncertainty and adapt to changing requirements (PwC, 2016).

Business Dictionary (2017) provides a definition of an **Agile Enterprise** as fast moving, flexible and robust firm capable of rapid response to unexpected challenges, events, and opportunities. Built on policies and processes that facilitate speed and change, it aims to achieve continuous competitive advantage in serving its customers. Agile enterprises use diffused authority and flat organizational structure to speed up information flows among different departments, and develop close, trust-based relationships with their customers and suppliers.

Becoming an agile enterprise is an ongoing process, and it must be carried on one step at a time. Indeed, paradoxical as it may sound, perhaps the best description of the truly agile enterprise is one that never stops trying to become agile. The most essential success factor for increasing agility, while achieving sustainable cost reductions, is decisive and strong leadership. Leaders that are to be successful in this environment must be adaptable, innovative and collaborative (PwC, 2015). An agile enterprise is one in which the corporate structure, channels, processes, systems, organisation and data are simplified, standardised and aligned in an operating model designed to deliver the strategy and respond efficiently and effectively to market changes. Today, truly agile organisations are a rare breed. In fact, it is hard to name a single company that embodies all the characteristics of an agile enterprise at all the requisite levels, from its strategic foundations to its operational infrastructure and management philosophy. (PwC, 2012).

Agile manager is, above all, a manager. Only that he has to perform his job in an agile environment. That means he has to deal with self-organizing teams of knowledge workers

creating complex products in an iterative and incremental approach, which calls for special structures, motivation schemes, client relationships, workload management styles, and corporate culture. But becoming an **Agile leader** means that you will represent the agile concept to your people. You must understand and embrace agile values and principles, being the first to evangelize, teach, implement, and defend them (Medinilla, 2012).

Agile is both **behaviour** and **engineering practices** (PwC, 2016):

- Agile is a way of working. It is an umbrella term for various iterative and incremental delivery methodologies.
- Agile focusses on common values and shared principles, not which methodology is the best.

1.1.1 Agile Manifesto and Agile principles

The base of all is the Agile Manifesto which was developed in 2001 by 17 software developers. It serves as a formal proclamation of four key values and 12 principles to guide an iterative and people-centric approach to software development.

Figure 1The Four Values of Agile Manifesto



Source: Agilemanigesto.org

While there is value in the items on the bottom, items on the top are valued more. According to the first statement, one of the first considerations that should be taken into account, is the influence of the decision's outcome on the people who are part of the development environment as well as on their relationships and communication. The second statement delivers the message that the main target of software projects is to produce quality software products trying to avoid unnecessary paper documentation. This statement changes the perception of the customer role in software development processes, while it guides agile software development methods to base the development process on an on-going and on a daily basis contact with the customer. This principle guides agile software development methods to establish a development process that copes successfully with changes that are introduced during the development process, without compromising the high quality of the developed product (Hazzan and Dubinsky, 2014).

Underlying the specific practices and artefacts of agile development, there is a number of general **principles** (Figure 2) that represent the methodological rules expressing a general view of how software should be developed. the Agile Manifesto itself lists twelve principles which represent the official view.

Figure 2
The Twelve Principles of Agile Manifesto

Our highest priority is to Satisfy the Customer through early and continuous delivery of valuable software.	Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.	Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.	Business people and developers must work together daily throughout the project.	
Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.	The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.	Working software is the primary measure of progress.	Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.	
Continuous attention to technical excellence and good design enhances agility.	Simplicity the art of maximizing the amount of work not doneis essential.	The best architectures, requirements, and designs emerge from self-organizing teams.	At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.	

Source: Agilemanifesto.org

For an organization wishing to be more agile it is not enough to just start learning and implementing new ways of working. There must be a parallel activity, at least equally important, of dealing with the **organizational culture changes** required to support this transformation (Rosenberg, 2015).

2. Benefits and Barriers of an Agile Adoption

Based on the literature review, as well as the results of the surveys there can be identified the following advantages and barriers of introducing an agile system of work. Reported benefits correspond with the motivation of companies to the implementation.

As the main **benefits** of an agile adoption are considered:

- faster response to changing market conditions,
- overall improved organisational efficiency,
- enhanced collaboration,
- improved customer satisfaction,
- more profitable business results,
- organisational changes made more efficiently or quickly,
- faster completion of projects,
- improved employee satisfaction,
- cost savings,
- shortened time to market,
- improved risk identification and mitigation.

On the other hand, the most serious **barriers** while implementing agile are:

- company philosophy or culture in conflict with agile values,
- general resistance to change,
- lack of experience with agile methods,
- lack of management support,

- inconsistent agile practices and process,
- external pressure to follow traditional processes,
- ineffective management collaboration,
- organizational and communication problems,
- the resistance of employees to adapt agile,
- insufficient training of the employees,
- ineffective collaboration.

There exists an old acquaintance in professional circles that just doing agile is not enough. To get the full benefits of it, managers need to recognize that agile is a mindset, not just a methodology and therefore they must learn to be agile.

3. Enterprises Advanced in Agile Application

This chapter deals with the illustration of best practices regarding agile way of working. There can be found a couple of firms being excellent in the implementation of agile, as well as charts containing the ranked lists of firms. Based on the literature review and relevant sources research, the three of agile companies are introduced below.

At ING are keen to ensure that they always respond relevantly to their customers' questions and needs and to market developments. It is important to stay at the forefront of the market and to help the customers to stay ahead too, whether they are business clients or consumers. That goal demands rapid innovation, not only in terms of products and services and the way they approach and help customers, but also in terms of the way they work. In the 2015 they adopted agile way of working and ING is the first bank to have embraced this way of working. It is a revolutionary step that has had a considerable impact on the company, but it was a very conscious decision to make this change. They have chosen to work in line with the agile methodology for three important reasons: they are more efficient and more flexible, they can innovate faster with shorter time to market, and they are a more attractive employer (ING, 2017).

Spotify, the popular music-streaming company, has geared its entire business model, including everything from product development to marketing and general management, to support agile innovation. It allows them to be faster, better, and cheaper than industry rivals like Google, Amazon, and Apple. They are very interesting because they have done a very elegant, agile implementation, mainly because they insist that the scrum masters be actually Agile coaches, experienced Agile coaches, many of whom they hire from outside the company. Some of the leading trainers in the world have been brought into Spotify to fill that kind of scrum master job (Southerland, 2014).

The corporate culture at **Valve**, the video game company, has clearly taken a lot from agile ideas. Employees are separated into groups which are separated not by cubicle walls, but simply open air, meaning that ideas often mingle and groups can merge or split apart. Employees follow loose roles and operate with their strengths and weaknesses, as opposed to being held to rigid roles. Different workers do different roles based on their ideas and previous experience, but are allowed to be a jack of all trades if they so desire. This loose and informal work environment means that teams naturally form and people fall into roles discussed in agile training (Pyrodragonfin, 2013).

4. Agile Data and Benchmarking

Many of the consulting firms are dealing with an agile topic as a new management trend. According to PwC's Digital IQ survey (2014), businesses that use agile are twice as likely to outperform other companies. This refers to top performers, those that achieved at least 5% revenue growth and reside in the top quartile of margin growth, revenue growth and innovation. Based on surveys realized there is evidently a positive link between agile way of working and business performance. One of the most cited journal articles in the academic literature on organizational agility found a direct link to financial performance, an effect that was even more pronounced in turbulent business environments (Tallon and Pinsonneault, 2011).

Today's workforces are designed for speed and flexibility. To achieve these goals, organizations are using more part-time, project-based freelancers to supplement their internal staff. Regarding to findings from Accenture and other consulting and research firms the use of freelancers (called also agile talents) is growing, and for reasons that go well beyond cost efficiency. HR leaders consistently report that, in their judgment, full-time permanent employees will account for only about 50% of their staff (Younger, 2016).

According to Accenture (2015), as organizations reconfigure their businesses to make agility a top priority, this process will create a new role and set of responsibilities for HR. This in turn will reshape the way HR is structured and how talent management and HR services are delivered. In many organizations, existing HR systems are currently impeding efforts to create agile workforces. A new McKinsey analysis (2015) suggests that the healthiest and most profitable organizations are the most agile ones and have the most decisive leaders. Agility Index turns out to be a surprisingly strong predictor of organizational health and, ultimately, performance.

4. Conclusions and Policy Implications

It is not easy to define agile as it means different things to different people. That fact might be source of confusion in many organizations as they think they are agile when they are not. The most common definition of agile is the Agile Manifesto consisting of agile values and principles. As software itself becomes a critical driver in almost all businesses, agile is now spreading to every kind of organization and every aspect of work. For over a decade, agile has been seen as something happening just in IT department, but gradually it came to agile is something significant for management generally.

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The "Resource Curse" Theory and Possible Way to Decrease Negative Consequences for Economic Development

Michelle Chmelová

Slovak Academy of Sciences Institute of Economic Research Šancová 56 Bratislava, 811 05 Slovak Republic

E-mail: michchmelova@gmail.com

Abstract

Before 1950 economists believed that abundance of natural resources can lead to economic development. Abundance of a natural resource can be for some countries more of a "resource curse" than a "blessing", especially for oil and gas exporting countries. Thus, some countries with abundance of natural resources can experience a slower growth. The research focus is on the Dutch disease and institutional quality, which could lead to negative economic development. The main purpose of this research is to emphasise factors, which could lead to a "resource curse". The aim of this paper is to identify measures to decrease negative consequences of a natural resource on economic growth and, consequently, to suggest recommendations for policy makers.

Keywords: resource curse, Dutch disease, institutional quality

JEL classification codes: N50, O13, Q49

1. Introduction

Before 1950 economists believe that abundance of natural resources can lead to economic development Ross (2012). Unfortunately, available studies and most of researches in this area show that abundance of natural resources can be for some countries more "resource curse" than "blessing", especially for developing countries with oil or gas. According to this was created Theory of resource curse". In the follow parts of the research we pay attention in the "resource curse" theory. In past was specify several type of model which explore negative relationships between economic growth and abundance of natural resources. The research is divided to two parts. First part of article is focused on the Dutch disease as first systematic documents in area of exploring negative relationships between economic growth and abundance of natural resource. This field contains describing the mechanism of the Dutch disease also two main effects of model and possible consequences and government measures to prevent negative economic development. Second part of research belongs to institutional model as the possible channel of "resource curse". Generally speaking, institutional quality could lead to decreasing negative effects of abundance of natural resources. At the end of article we summarize several recommendations for political makers.

2. The resource curse theory

The term "resource curse" is an empirical documented by a number of studies, starting with the seminal work of Sachs and Warner (1997). The Natural resource curse refers that country with an abundance of natural resources specifically with mineral and oils tend to reach less economic growth and worse development outcomes than countries with fewer natural resources. This theory is link with negative development of economic growth and

natural resource abundance. Auty (1993) first time used the term of resource curse to describe how countries with abundance of natural resources did not be able to use their potential for economic development. The main aim Sachs's and Warner's (1999) empirical study was explored relationship between economic growth and the amount of natural resources. They found out negative link between economic growth and natural resources. They also found that boom in natural resources can lead to decrease income per capita in some cases.

More studies which focus on negative relationships between mentioned variable we can find in research Mikesell (1997). They found out that such countries can rise slowly than other countries with lower amount of natural resources.

In general speaking, we recognize different type of channel how abundance of natural resource can lead to resource course. Mehrara et al. (2008) are focus on five main variables which can be identified as factors which influate resource curse namely: Dutch disease, education and crowding out of human capital, reduction in savings and crowding out of physical capital, fluctuation in price of natural resources and structural disorders, governance and institutional quality.

Mobatak and Karhenasan (2012) recognize factor like Dutch disease problem, institutional quality, rent-seeking model, volatility of world prices.

In next part of research we focus on Dutch disease and institutional quality as rising consensus of role institutions in exploring resource curse especially for developing countries with oil and gas sector. We focus on actions how oil exporting countries can decrease the risk of Dutch disease and how political makers can react and confirm action to rise institutional quality as a factor of lowering resource curse.

2.1. Dutch disease

Economic term the Dutch disease was first time appeared in article of The Economist in November 1977. This theory was created by Corden and Neary (1982). These study offer first systematic researches in sense how boom in crude oil or gas sector can cause structural move in economic. Nature of this model is in Netherlands, where was found huge gas field. In the process, important part of export belongs to export. As consequences, domestic currency is appreciated. The result was that country was deindustrialised which contained direct and indirect form of deindustrialisation. The direct deindustrialisation is well known as effect of transferring resources. This process contains fact that labour being redirected from the traditional exporting sector to the booming resource sector. Profitable export sector increase demand for labour force, which cause that labour transfer from traditional export sector. Indirect deindustrialisation (spending effect) means that boom in profitable sector lead to higher revenue for country. Thus demand for domestic goods is rising. Both effects lead to lower employment rate in traditional export sector and in link with losing competitiveness as consequence of appreciation of real currency, meanwhile total production is lower Grančay (2012). In term of this case there are several issues. Revenue from profitable oil export sector is joined with slight diversification. Also such countries have problem with total productivity. In other cases the Dutch disease is linked with corruption, bureaucracy and military conflicts.

Hausmann and Rigobon (2003) mechanism of "resource curse" is based on the interaction between two building blocks: specialization in non-tradables and financial market imperfection.

Sala-i-Martin and Subramanian (2003) find empirical evidence that some natural resources, exert a robust negative and nonlinear impact on growth via their deleterious impact on institutional quality.

Oomes and Kalcheva (2007) pay attention on symptoms of Dutch Disease, which include real exchange rate appreciation, slower manufacturing growth, faster service sector growth, and higher overall wages.

Bakwena et al. (2010) Where the natural resources discovered are oil or minerals, a contraction or stagnation of manufacturing and agriculture could accompany the positive effects of the shock, according to theory.

Ismail (2010) found that permanent increases in oil price negatively impact output in manufacturing as consistent with the Dutch disease. Also he focused on implication for countries with abundance of natural resources. This research is focused on diversifying manufacturing sectors in capital intensity that helps cushion the volatility in price of oil.

2.1.1. How to prevent the Dutch disease

Stiglitz (2004) sees prevention from Dutch disease in stabilization funds which set aside money earned from oil and gas sector when prices are high that can help reduce the economic volatility associated with resource prices. Also he recommends transparency in payments and keeping the foreign exchange earned from oil exports out the country.

The most important in prevent Dutch disease is to decrease resource movement effect and spending effect Gurbanov and Merkel (2010).

Resource movement effect can be decreased by coordination of revenue. The resource curse in such countries according to resource movements effect cause that rise of wages lead to transfer in labour force. Successful case we can find in Norway or in Indonesia. For instance in Norway, there design centralized wage formation.

Spending effect can lead to higher income for country. When country try to prevent the Dutch disease invest in abroad. However, excess supply of foreign currency could lead to negative development of exchange rate. In this case Norway use "the oil fund" (Government pension fund) which is reserved for the future of Norway's citizens. The fund can hold a maximum of 3 percent of the shares in any company. Rest of fund is invested in bonds around the world.

Government Pension Fund Global the oil companies handed over 78 per cent of their profit to the Government Pension Fund, also known as "the oil fund", which is reserved for the future of Norway's citizens. The Pension Fund invests in a wide array of companies following strict ethical investment guidelines which keeps the level of risk relatively low. The fund can hold a maximum of 3 percent of the shares in any company. A fundamental principle of Norwegian fiscal policy is the so-called budgetary rule. It states that over the course of a business cycle, the government may only spend the expected real return on the fund, estimated at 4 percent per year. This helps to gradually phase oil revenue into the economy. Spending just the return on the fund rather than eating into its capital means that the fund will also benefit future generations. Actually, the fund's market value is 7 506 billion of Norway crown (The fund, 2017).

On the Table 1 we can see how Norway and Indonesia can decrease effects which is linked with Dutch disease, especially: resource movement effect, spending effect and real exchange rate appreciation.

Table 1Successful case of Norway and Indonesia

Resource Movement	Centralized wage formation system
Effect	Neutral Agency to compute productivity increases in the manufacturing sector
Spending Effect	Fiscal discipline and investing abroad Pay back foreign debts when possible Channel resources into education, research and development. Stimulate scholarships for visits abroad.
Real Exchange Rate Appreciation	Establish a Petroleum Fund abroad Social contract

Resource Movement Effect	Booming sector is an 'enclave' in the economy
Spending Effect	Sterilization of the oil revenues Inter-temporal allocation of the oil revenues Avoided "boom based borrowing capacity" Budget surplus accumulated
Real Exchange Rate Appreciation	Official borrowing in short- term market was prohibited External loans was obliged to permission by the Bank of Indonesia and the Ministry of Finance Implementing appropriate demand management policies together with devaluation

Source: GURBANOV, S. – MERKEL, E. (2010). Avoiding the Dutch Disease: A Comparative Study of three successful Countries. [Online]. Avaiblable at the URL: http://journal.qu.edu.az/ article_pdf/1044_595.pdf>. [Accessed 07.02.2017].

2.1.2. Diversification, investion process.

Successful case is Indonesia throughout oil shocks invested in infrastructure, agriculture, science. Government managed to increase competitiveness Rosser (2007). Another successful case we can find in Botswana. Government of Botswana also invest in infrastructure, education, health care and managed to prevent Dutch disease.

2.2. Institutional quality

In recent years, most economists give rising role of institution in exploring resource curse of natural resources. Main purpose of institutional studies is how natural resources react on quality of institutions.

In general, there are two possible ways how natural resources can react on quality of institutions. First one is that institutional quality is "blessing" for countries or in case of lower institutional quality it could means "resource curse" Mehlum et al. (2005).

Iimi (2005) according to cross-country data from 59 developing countries for the period 1998 - 2002 found out that if a government has sufficient ability to formulate and implement sound and effective policies for managing natural resources, natural resource richness is conducive to economic growth. Developing countries endowed with abundant natural resources tend to grow more slowly than resource-scarce countries.

Kolstad (2007) empirically test the impact of the private and public sector institutions on the resource curse by using cross-country data from Sachs and Warner (1997). The main result of his study is that only private sector institutions matter empirically.

Collier (2007) explore six different channels by which the curse may manifest itself:

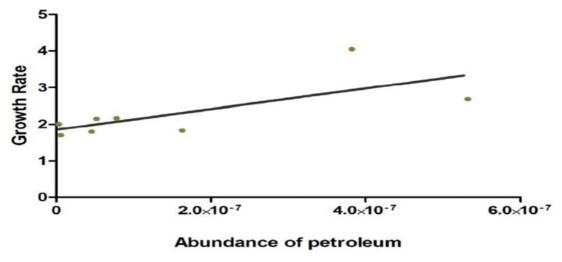
a) Dutch Disease effects, b) institutions conformation, c) conflict of interests and political economy, d) excessive public debt, e) income inequality, f) commodity price volatility.

Arezki and Ploeg (2007) state that institutions generated by natural resource-abundance come from previous institutional weaknesses (when strong weak institutions exist before the boom of natural resources affects the economy, the effect is negative or positive).

Mehrara et al. (2008) found out that in group of countries with the lower institution quality could leads to more negative effect of oil revenues on the economic growth. They take 30 year average growth of 42 oil-dependent countries (that is their average growth rates of GDP per capita between 1976 to 2006 as an index of their growth rate) and then they assume index of abundance of petroleum as average potential oil revenue index divided by GDP. They identify two groups of oil-dependent countries according to empirical results. First group of countries contains fact that there exists a positive relationship between growth rate and petroleum abundance index. In line with the theory, in countries whose institutions have acceptable capacities, the relationship between mentioned variables is positive.

Bakwena et al. (2009) confirmed the important role of institutional quality in economy focus on natural resources. They found out positive effect of democratic system on economic performance and parliamentary democracy on economic performance rather than presidential regime.

Chart 1Relationship between economic growth and abundance of petroleum in countries with good institutions



Source: MEHRARA, M. – ALHOSSEINI, S. –BAHRAMID, D. (2008). Resource Curse and Institutional Quality in Oil Countries. [Online]. Available at:https://mpra.ub.uni-muenchen.de/16456/1/MPRA_paper_16456.pdf>. [Accessed 07.02.2017].

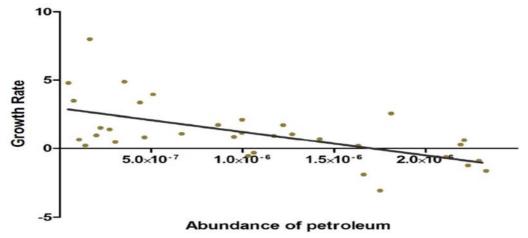
In such countries they class with Italy, Malaysia, Netherlands, Norway, United Kingdom, United States, Canada and Denmark.

The Chart 2 that shows the relationship between economic growth and petroleum abundance in countries with bad institutions is quite different from chart 1. In chart 2, petroleum abundance is shown to have a negative and inverse relationship with economic growth. In other words, as potential oil revenues of a country increase, its economic growth declines.

The chart belongs to countries with negative relationships between economic growth and abundance of petroleum with bad institutions. It means that as potential oil revenues of a country increase, its economic growth declines. As is it is evident from the charts, in a cross country perspective, institutions are very vital and important, so that they can lead to good or bad performance of oil resources in different countries.

The findings from this research shows that oil, as on the most important natural resources, constitutes a major source of income for many countries, and depending on the institutions of the country, can contribute to the long term economic growth of that country or lead to the poor long run economic performance.

Chart 2 Relationship between economic growth and abundance of petroleum in countries with bad institutions



Source: MEHRARA, M. – ALHOSSEINI, S. –BAHRAMID, D. (2008). Resource Curse and Institutional Quality in Oil Countries. [Online]. Available at:https://mpra.ub.uni-muenchen.de/16456/1/MPRA_paper_16456.pdf>. [Accessed 07.02.2017].

Countries with bad institutions included: Algeria, Argentina, Azerbaijan, Bahrain, Brunei, Cameroon, China, Colombia, Congo, Ecuador, Egypt, Gabon, India, Indonesia, Iran, Kazakhstan, Kuwait, Mexico, Nigeria, Oman, Peru, Romania, Russian Federation, Saudi Arabia, Sudan, Syrian Arab Republic, Thailand, Trinidad and Tobago, Turkmenistan, United Arab Emirates, Uzbekistan, Venezuela, Vietnam and Yemen.

Mobatak and Karshenasan (2012) investigates the impact of institutional quality on relation between resource abundance and economic growth in major oil exporting countries by using panel data during period of 1996-2007. The main result of their research is that institutional quality has a positive impact on economic growth, but resource abundance affected economic growth inversely but natural resource abundance cause economic growth to be decreased.

Abounoori and Mahbobian (2015) focused on the effect of good governance on economic growth in the number of oil producing countries of MENA during 1996-2010. Their main result is that indicators of good governance have a significant and positive effect on the economic growth. Their result is that oil revenues have a negative effect on economic growth also democracy has a significant and positive effect on the economic growth. In their model, dependent variable was GDP as fixed prices of America's dollars in 2005 and independent variable was the size of government, oil revenues, rule of law, democracy, quality of law regulation, government effectiveness, and economic freedom. According to this variable, they conclude that oil revenues have a negative effect on economic growth. Democracy has a significant and positive effect on economic growth. Good governance has a significant and positive effect on the economic growth. Therefore, with improvement of the institutions, also the economic growth will increase. The economic freedom has not any significant effect on the economic growth in their research.

Several studies pay attention to formulating recommendations for policy makers. Such researches focus on following policy actions:

- to pay attention to the quality of institutional setting (as corruption levels, law and order, and bureaucracy. Good institutional setting could diminish rent seeking activities.
- be democratic because democratic countries give to citizens adequate civil and economic liberties, hence economic growth will occur,
- to adopt a majoritarian rather than proportional electoral system. Any system that requires backing by the majority of the population ensures less rent seeking tendencies.
- to adopt a parliamentary, rather than a presidential regime. A parliamentary regime is better than a presidential regime, where a president can still be in power without parliamentary backing. A parliamentary regime reduces rent seeking.
 - monetary policy try to nominal GDP targeting Frankel (2014)
- fiscal policy avoid over-spending in boom times, allow deviations from target surplus only in response to permanent commodity price rises, Frankel (2014).

3. Conclusions and policy implications

In recent years, researches show that abundance of natural resources is for several countries "resource curse" more than "blessing". It is very important for such countries identify factors which could lead to decrease possible negative consequences on their economic growth and development. As studies show, it is necessary to pay attention in diversification of economic. Also it is important to create mechanism how foreign currencies from boom oil or gas sector convert to domestic currency. Successful countries focus on special fund to prevent appreciation of exchange rate. Meanwhile low institutional quality could deepen negative effect on economic growth and development. Generally speaking, it is supposed that high institutional quality could decrease risk of "resource curse". Several studies of institutional model belong to recommendation for political makers. We summarize these recommendations for necessary to prevent "curse".

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Comparison of Competitiveness of Slovakia and Austria according to Chosen International Indices

Michaela Čiefová

University of Economics in Bratislava Faculty of International Relations Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: michaela.ciefova@euba.sk

Abstract

The concept of national competitiveness has become a popular topic in the field of economic science. However, there is no single definition of this phenomenon. The main objective of this paper is to compare national competitiveness of Slovakia and Austria using predominantly the Global Competitiveness Index: individual components of the index are analysed; the most successful areas and the most problematic factors are highlighted. Next, another index is added, namely the World Competitiveness Index. Finally, recommendations are stated in order to help improve the most problematic areas.

Keywords: national competitiveness, Slovakia, Austria

JEL classification codes: O57, P52

1. Introduction

National competitiveness belongs nowadays to frequently discussed topics in economics. This paper is targeted firstly at clarifying the term national competitiveness. Secondly, the Global Competitiveness Index and its structure, which creates the basis of our comparative analysis, is described. The index is a part of the Global Competitiveness Report that is annually published by the World Economic Forum. The use of this index allows for detailed analysis of Slovak and Austrian national competitiveness, whereby the most positive as well as the most negative attributes or areas can be identified.

As there are various indices and means of competitiveness comparison whose methodology might differ, we briefly compare the competitiveness of both countries using the World Competitiveness Index as well. This allows us to get a more objective insight into the current state. Eventually, the rankings of other Slovakia's neighbouring countries are added into the comparison, as it is generally common to compare these countries among themselves.

It needs to be mentioned that we do not take the development of national competitiveness into account; we only focus on the actual situation. Therefore, we refer exclusively to the latest issues of the respective reports, i.e. to the most current indices calculations. In conclusion we attempt to summarize the most important ideas, as well as to suggest improvement measures for the most problematic fields.

2. Defining national competitiveness

It can be said that the concept of national competitiveness is a relatively new topic on the field of economic science, as competitiveness was originally studied on a corporate level. Only in the beginning of the 90s it started to be studied on a national level (Dudáš, 2012). When discussing the concept of national competitiveness, Dudáš (2013) frequently refers to

the work of Michal Porter, who can be considered to be the pioneer on this particular research field.

Due to the fact that there is a number of institutions and individuals dealing with this concept, it is fairly difficult to determine one generally accepted definition of national competitiveness. However, Dudáš (2012) finds several common features and ideas occurring in individual definitions. Many definitions connect the concept of national competitiveness with the ability to succeed in the global economy, as well as with the objective to increase the standard of living of some nation's citizens (Dudáš, 2012). As already mentioned, there are also several institutions or think tanks measuring competitiveness among countries. One of them is the World Economic Forum (hereinafter WEF), according to which the concept of competitiveness can be defined as follows: "the set of institutions, policies and factors that determine the level of productivity of a country" (Cann, 2016). We consider this definition to be sufficient enough to get familiar with the main principles of the competitiveness phenomenon for the purpose of this paper.

3. Comparison of Slovakia's and Austria's competitiveness on the basis of the Global Competitiveness Index

3.1 Structure of the Global Competitiveness Index

In this paper we decided to compare the national competitiveness of Slovakia and Austria according to the Global Competitiveness Index (hereinafter as GCI), which is a part of the Global Competitiveness Report published on annual basis by the WEF. As we do not focus on the development of competitiveness of both nations within a certain period of time but on the actual state, the basis of our comparison represents solely the Global Competitiveness Report 2016-2017, in which altogether 138 countries are compared (World Economic Forum, 2016).

Before we start with the analysis, it seems to be needed to briefly explain the composition of the index. At the very first sight it is clear that the GCI consists of 3 subindices (A, B and C), which are further divided into so called pillars. The Subindex A is called Basic requirements and includes following factors: Institutions, Infrastructure, Macroeconomic environment and Health and primary education (together 4 pillars). The Subindex B – Efficiency enhancers – involves 6 pillars, in concrete Higher education and training, Goods market efficiency, Labor market efficiency, Financial market development, Technological readiness and Market size. Eventually, the Subindex C – Innovation and sophistication factors – consists of two pillars, namely Business sophistication and Innovation. We can thus say that the index takes a variety of factors into account, because each pillar again sums up a number of components (for instance, the pillar Infrastructure mirrors the Quality of roads, Quality of electricity supply, the pillar Market size includes the Domestic market size index or Exports % GDP).

On the grounds of the index, the most problematic factors for each included national economy can be summarized. This may be helpful when deciding on an appropriate economic policy. On the other hand, also the most favourable spots of an economy are revealed, which can indicate a successful policy implication in that particular sphere of national economy. It is thus necessary not to only focus on the results of a country's competitiveness as a whole, but on individual constituents of an index, as well.

In spite of the fact that competitiveness indices are frequently cited, they have their opponents, too. They are sometimes found to be oriented only to a limited set of aspects (Dudáš, 2012).

3.2 Score of Slovakia and Austria in the 2016-2017 GCI

As far as the Slovakia's and Austria's results are concerned, the Slovak Republic reached the 65th position out of 138 economies compared, whereas the position of Austria according to the GCI is much more satisfactory; it was placed on the position 19. Table 1 shows the rankings of both countries within all the 12 pillars.

Table 1Ranking of Slovakia and Austria in the Global Competitiveness Index 2016

	Slovakia	Austria
Global Competitiveness Index	65	19
A. Basic requirements	54	18
1 Institutions	102	20
2. Infrastructure	61	14
3. Macroeconomic environment	37	31
4. Health and primary education	55	20
B. Efficiency enhancers	47	22
5. Higher education and training	61	12
6. Goods market efficiency	53	25
7. Labor market efficiency	93	40
8. Financial market development	33	34
9. Technological readiness	44	23
10. Market size	61	43
C. Innovation and sophistication factors	57	11
11. Business sophistication	55	8
12. Innovation	68	14

Source: Global Competitiveness Report 2016-2017.

The numbers indicate that not only the overall competitiveness of Austria is higher, but also its competitiveness within individual Subindices or pillars, respectively. The only exception is the pillar Financial market development, even though the difference is only one place in the rankings. Slovakia achieved the best placement on the field of the already emphasized Financial market development (score 33). On the contrary, the worst area are Slovak Institutions (score 102). As for Austria, its results are very positive in the Business sophistication (score 8) and the least satisfactory factor is the Labor market efficiency (40). However, we dare to say that this placement is still relatively good, as Slovakia's scores are mostly even worse than 40 (the exception is again the Financial market development and the Macroeconomic environment).

If we wanted to go even more into detail, we could analyse individual pillars and their components as shown in the following Table 2. The first stated factor always stands for the best achieved position within the particular pillar and the factor underneath represents the most problematic zone.

Table 2 Slovakia's and Austria's strengths and weaknesses

_	Slovakia	Austria
1. Institutions	Strength of auditing and	Efficacy of corporate boards
	reporting standards (27) (6)	
	Efficiency of legal Wastefulness of gov	
	framework in settling	spending (54)
	disputes (137)	
2. Infrastructure	Quality of railroad	Quality of roads (8)

	infrastructure (21)		
	Quality of air transport infrastructure (112)	Quality of port infrastructure (74)	
3. Macroeconomic environment	Country credit rating 0-100 (best) (30)	Inflation annual % change (1)	
	Government debt % GDP (76)	Government debt % GDP (116)	
4. Health and primary education	HIV prevalence % adult pop. (1)	Business impact of tuberculosis (5)	
	Primary education enrollment rate net % (80)	HIV prevalence % adult. pop. (76)	
5. Higher education and training	Internet access in schools (32)	Local availability of specialized training services (7)	
	Quality of the education system (117)	Secondary education enrollment rate gross % (52)	
6. Goods market efficiency	Trade tariffs % duty (5)	Trade tariffs % duty (5), Degree of customer orientation (5)	
	Total tax rate % profits (112)	Effect of taxation on incentives to invest (120)	
7. Labor market efficiency	Pay and productivity (43)	Redundancy costs weeks of salary (3)	
	Effect of taxation on incentives to work (136)	Flexibility of wage determination (137)	
8. Financial market development	Soundness of banks (15)	Affordability of financial services (7)	
	Financing through local equity market (74)	Legal rights index 0-10 (best) (68)	
9. Technological readiness	FDI and technology transfer (15)	Availability of latest technologies (18)	
	Internet bandwidth kb/s/user (95)	FDI and technology transfer (46)	
10. Market size	Exports % GDP (10) Domestic market size index	Exports % GDP (26) Domestic market size index	
	(67)	(45), GDP (PPP) PPP \$ billions (45)	
11. Business sophistication	Production process sophistication (30)	Local supplier quality (3)	
	Willingness to delegate authority (92)	Willingness to delegate authority (22)	
12. Innovation	PCT patent applications applications/million pop. (37)	Capacity for innovation (7)	
	Availability of scientists and engineers (98)	Gov't procurement of advanced tech. products (61)	
Source: Global Competitiveness Report 201			

After the data analysis, several interesting facts emerge. Firstly, even within single pillar significant discrepancies may occur. Just for illustration, individual factors within the Labor market efficiency pillar in Austria move from 3 up to 137. Secondly, several parameters are on the very same level, such as Trade tariffs (5). Within the pillar Market size both national economies scored the most in the Exports, although the numbers differ. Thirdly, perhaps the most interesting finding is that whereas some factors represent no significant challenge in one country, they may be a (relatively) serious problem in the second one, the example of which is the FDI and technology transfer.

As emphasized earlier, the index reveals also the most problematic and challenging areas for doing business. Based on the GCI, the most serious problem in Slovakia is the functioning of institutions (e.g. the efficiency of legal framework), the efficiency of the labor market (e.g. the effect of taxation on incentives to work, or the country capacity to attract talent), as well as the field of innovations (predominantly the availability of scientists and engineers). Karelová (2016) considers business environment a crucial factor for sustainable growth, development and a functioning and healthy economy.

Although the Global Competitiveness Index belongs to the most cited and well known ways of comparing national competitiveness, it is not the only one. Another competitiveness comparison possibility represents the World Competitiveness Index (hereinafter WCI) that is a part of the World Competitiveness Yearbook. In the latest 2016 edition, 61 economies were ranked, with Austria being in the 24th place and Slovakia on the 40th.

3.3 Brief comparison of Slovakia with its other neighbouring countries

It is common to compare the economic situation in Slovakia with its neighbouring countries, too. We therefore offer a very short insight into the state of competitiveness in the relevant national economies using both international indices (Table 3). As stated earlier, in the 2016-2017 Global Competitiveness Report 138 countries and their competitiveness level were compared; the World Competitiveness Yearbook includes 61 economies (IMD World Competitiveness Center, 2016).

Table 3Rankings of Slovakia and its neighbouring countries

Country	Ranking GCI	Ranking WCI
Austria	19.	24.
Czech Republic	31.	27.
Poland	36.	33.
Slovak Republic	65.	40.
Hungary	69.	46.
Ukraine	85.	59.

Source: Global Competitiveness Report 2016-2017 and the World Competitiveness Yearbook 2016 (own elaboration).

We can see that Austria achieved the best results also in comparison with other Central European national economies, and thus according to both indexes. We find it interesting that despite the fact that Slovakia and the Czech Republic used to be one country, according to the GCI there is a relatively significant difference in their overall national competitiveness. In this context it could be interesting to analyse also individual pillars and their components in the same way as in this volume. The most important, however, is the observation that both indexes ranked the countries in the same order, with Austria being the most competitive national economy and Ukraine the least competitive one.

4. Conclusions and policy implications

In this paper we attempted for a brief comparison of Austria's and Slovakia's national competitiveness in 2016. The base of our comparison represented the Global Competitiveness Index, issued by the World Economic Forum, although in the final part of the chapter also the World Competitiveness Index was added for the purpose of higher objectiveness. At that

point, also other Slovakia's neighbouring countries were included, just for additional information.

Upon the analysis and comparison of concrete numbers of the GCI and its constituents we can conclude, that not only the total competitiveness of Austria is much higher than that of Slovakia, but also the partial factors of the index are in favor of Austria. The only exception was the pillar Financial market development. Even within other Central European national economies Slovakia did not achieve the best position. Taking Austria, Slovakia, the Czech Republic, Ukraine, Hungary and Poland into account, Slovakia ended on the 4th position according to both international indices.

We recommend taking measures to improve the functioning of Slovakia's institutions, predominantly to focus on the legal framework. In comparison to Austria, also the quality of infrastructure deserves attention of competent authorities. A serious problem represents also the quality of education in Slovakia, as well as tax-related issues. The indices should be understood as guidelines or indicators of problematic areas of a national economy, which state bodies should follow. One of the reasons may by the impact of the indices on foreign investors when deciding on potential expansion into the respective national economy.

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Re-engineering Procedures of Financial Statement Audit and Risk of Material Misstatement Formed by Fraud

Denisa Domaracká

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: denisa.domaracka@gmail.com

Katarina Hunyady

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: katarina.hunyady@yahoo.com

Abstract

Audit of financial statements shall be performed in accordance with International Standards on Auditing (ISA), issued by the International Auditing and Assurance Standards Board (IAASB). Auditors should obtain a reasonable assurance that financial statements do not contain any material misstatement caused either by a fraud, or by an error. In other words, audit procedures are designed to detect only material misstatement, and thus auditors might not be able to detect all fraud even if they apply reasonable procedures when determining if fraud was committed. Audit procedures would be designed to make optimal use of today's technology in order to enable auditors to provide the most effective service. This will involve how data science and related technology can extend auditing theory to associate new approaches. It is the technological elements that can provide opportunities for improving audit effectiveness and efficiency, too. The main objective of this article is to illustrate and summarise the reasons why auditors of financial statements can be expected to detect only a very small percentage of fraud as well as to describe what future reporting and auditing systems might look like. It is also important to know how technology could be used in order to transform auditing procedures.

Keywords: audit of financial statement, fraud, re-engineering procedures

JEL classification code: M42

1. Introduction

Audit of financial statements is in European terms including Slovakia conducted in accordance with the ISA, issued by the IAASB. Conducting an audit of financial statements in accordance with the ISA is in Slovakia a legal obligation pursuant to Act No. 423/2015 Coll. on Statutory Audit and on Amendments and Supplements to Act. No. 431/2002 Coll. on Accounting, as amended, para. 19 (1). In literature, many authors divide the objective of an audit into primary and secondary objective.

1.1 Primary and secondary objective of an audit of financial statements

The primary objective of an audit of financial statements is to allow the auditor to express an opinion whether the financial statements are prepared, in all material aspects, in accordance with the applicable financial reporting framework. (Kareš, 2010)

It applies for both entities that are obligated to have their financial statements audited in accordance with Act. No. 431/2002 Coll. on Accounting, as amended, para. 19 (1) or para. 22 (10) as well as entities that have decided to have the financial statements audited voluntarily.

The secondary objective refers to detection and prevention of fraud and errors. The auditor's role is to make ensure users of the financial statements that there are no material misstatements resulting from an either unintentional error, or intentional error or a fraud.

The final opinion shall provide a reasonable assurance that no material misstatement of financial statements (regardless of the reason) has been identified by auditor. The term "misstatement" is defined in the ISA 450 - Evaluation of Misstatements Identified During the Audit as a difference between the amount, classification, presentation or disclosure of a reported financial statement item and the amount, classification, presentation or disclosure that is required for the item to be in accordance with the applicable financial reporting framework. This means that auditors are responsible for provision of a certain degree of assurance (reasonable assurance), accuracy and legality of the operations and accounts of an entity as well as the proper functioning of the system in accordance with specified requirements.

Generally, misstatements might arise from a fraud or an error caused by a difference between the actually reported figures, and figures that are expected to be reported in order to financial statements be truly and fairly presented. Misstatements are considered "material" if they are significant enough to make a difference to a user of the financial statements. The question of materiality of disclosures in financial statements has been discussed as well as at the international level. (Mokošová, 2013)

It is important for the users of information stated in financial statements to know whether the financial statements contain any misstatements or not. If the users find out inconsistencies, confidentiality to other reported items fell proportionally. (Juhászová et al., 2015) The level of materiality is determined in the context of a risk assessment and auditor's professional judgment.

1.2 Audit of Financial Statements and Risk Assessment

With respect to the significant issues relating to detection of a fraud, the IAASB issued the relatively straightforward process for auditors to assess a fraud whilst performing an audit of the financial statements.

Table 1ISA Standards for Assessing Fraud

ISA Standard	Title of ISA Standard
240	THE AUDITOR'S RESPONSIBILITIES RELATING TO FRAUD
315	IDENTIFYING AND ASSESSING THE RISKS OF MATERIAL MISSTATEMENT THROUGH UNDERSTANDING THE ENTITY AND ITS ENVIRONMENT
330	THE AUDITOR'S RESPONSES TO ASSESSED RISKS

Source: own processing

According to the ISA so called "risk-based audit" we can differ the approach that is in audit of financial statements from the subject as well as time. In terms of time, it is ultimately

a comprehensive identification and assessment of individual types of risk before accepting the audit engagement, upon receipt of the audit engagement and during the conducting an audit. Risk-based audit forms the point of gravity field of the auditor's examination and consideration, which also directly affects the scope, complexity, delay and final auditor's opinion presented in the auditor's report.

Components of audit risk are (i) inherent risk, (ii) control risk and (iii) detection risk. Inherent risk is a measure of the likelihood that there are material misstatements caused either by an error or fraud in a segment before considering the effectiveness of internal controls. Auditor should assess the factors that make up the inherent risk and take them into consideration.

Control risk is the assessment of the likelihood that a misstatement that could occur and that could be material will not be avoided or detected by the internal control system.

Detection risk shows a measure of the risk that audit evidence will fail to detect misstatements that could be material. Audit evidence fulfil the role of persuasion about a certain state of facts so that they cannot be considered as absolute. For this reason, the auditor is in a risk that some irregularities will not be detected.

Auditors should pay attention, mainly to audit evidence that contradict other audit evidence already obtained, information that may challenge the reliability of documents used as audit evidence and circumstances that could indicate a fraud. This risk needs to be reduced on the minimum level (the minimum acceptable level of audit risk) especially by observation, recalculation, testing of internal controls, substantive testing, independent qualified estimation, collecting evidence, analytical procedures and other additional methods.

From a range of risks defined by relevant ISA, the auditor is unable to affect the inherent risk and control risk. Part of those risks are usually also the potential risks of a fraud. Auditors are able to affect only their audit risk by adequate identification and recording important findings in standardized audit documentation. The importance of principle of professional scepticism should not be overlooked. Through the application of this principle, the risk that material misstatements will remain undetected is indirectly reduced.

The auditor's role in context of detecting the potential fraud cases is limited to findings and recording suspicious circumstances through the facts identified by audit. For this reason, the auditor needs to:

- identify and understand the entity and its environment;
- follow up on the recommendations from previous auditors;
- evaluate the entity's internal control system and
- identify and evaluate risks including fraud.

Figure 1



Non-mathematical solutions could possibly be the matrix of relationships among the various types of risk.

Table 2Matrix of Overall Audit Risk

Assessment of inherent risk	A	Assessment of control ris	sk
	High	Medium	Low
High	Low	Low	Medium
Medium	Low	Medium	High
Low	Medium	High	High

Source: own processing

1.3 Auditor's Professional Judgment

If the auditor considers that there are some indicators of a suspected fraud, he has to decide for proper action to be taken. It is important to evaluate all circumstances of the case. Particular attention according to auditor's professional judgment must be paid to the circumstances indicating the intention.

He can decide for additional testing and inspection as well as expansion of the segment. In case a potential fraud is related to a whole system or its part, the auditor's responsibility is to inform the competent authorities.

Auditors should be able to determine the limit between audit and investigation. At that point, the fraud case should be transferred to competent authorities in accordance with national rules and practices.

2. Audit Transformation by using Technology

Regarding the audit procedures, it is important to realize that the methods auditors used and still often use are based on traditional audit procedures like statistical sampling, spot checking, and control totals. But technology provides opportunities for significantly improving audit effectiveness and their implications for profession.

Data science and related technologies have advanced enormously in recent year, including data analysis, mathematics and probability, statistical learning, big data analytics, and text and process mining. These applications can be applied also by auditors to perform more effective audit and to provide new forms of audit evidence as well.

Audit Data Analytics is the science of identifying and analysing anomalies in client's data. Audit Data Analytics includes the dimensions for the purpose of focusing the audit on risk and analytical procedures used for planning (ISA 315 - *Identifying and Assessing the Risks of Material Misstatement through Understanding the Entity and its Environment*), substantive analytical procedures used for substantive testing (ISA 520 – *Analytical Procedures*), and analytical procedures performed near the end of the audit to assist the auditor when forming an opinion whether the financial statements are prepared, in all material aspects, in accordance with the applicable financial reporting framework.

As mentioned previously, Audit Data Analytics is most useful in audit planning that means understanding the entity and its environment, identifying and assessing the risks of material misstatement, and designing further audit procedures. On the other hand, it is used to provide the auditor with substantive assurance whether the financial statements are without any material misstatement.

To summarize, in the audit of financial statements, there are numerous opportunities for using Audit Data Analytics, for example:

- Identifying and assessing the risks of material misstatement by understanding the entity and its environment (including performing preliminary analytical procedures and implementation of internal controls and testing their operating effectiveness);
- Performing substantive analytical procedures in response to the assessment of risks of material misstatement;
- Performing analytical procedures near the end of the audit to assist the auditor when forming an opinion about financial statements;
- Identifying and assessing the risks associated with accepting (or continuing) and audit engagement;
- Identifying and assessing the risks of material misstatements due to fraud, and testing for fraud having regard to these risks. (AICPA White Paper, 2014)

The auditor's objective is to obtain a reasonably high level of assurance even if is not defined. It is commonly understood as no less than 95 percent of confidence. The degree of confidence is a measure of the auditor's subjective judgment.

With technology of Audit Data Analytics can be achieve the same level of assurance but more efficiently at a lower cost. Of course, it can be achieved a higher level at similar cost.

Regarding the identifying and assessing the risks of material misstatements due to fraud, the Audit Data Analytics should be used to increase assurance in detailed test of transactions and balances. Traditionally, such test are performed on a small sample of items. With computerized data, the testing can be performed on 100 percent of the items in order to reveal unexpected patterns. For some procedures, of course, sampling is still necessary. Unexpected patterns that might have been never discovered in the past can be with Audit Data Analytics much more easily identified and analysed.

With technology is possible to continuously monitor an entity's transactions in close to real time. It could be used to assess the effectiveness of internal controls, or perform substantive tests. Commonly, there are two ways in which continuous monitoring can be directly useful for external auditors. Firstly, it can alert the potential problems as early as possible with effect on audit quality. Secondly, it can help spread the work effort within the whole year.

Audit profession has not realized the potential of technologies around to improve audit effectiveness. Generally, there are two things (at least) the audit profession could do in order to adopt better technologies:

- Encourage audit development and research how data science can improve the quality of audit profession
- Update auditing standards for adoption of new technologies review current standards with a view to remove barriers and encourage the optimal usage of technology and improve audit effectiveness.

Auditors usually require the participation of specialists from different areas, for instance information technologies, statistics, tax, etc. Unfortunately, if auditors start using the Audit Data Analytics, they will be much more obliged to require participation of specialists.

3. Conclusions and policy implications

This article follows on financial statement audit and risk of a material misstatement formed mostly by a fraud. As it is stated also in the ISA 240 – The Auditor's Responsibilities

Relating to Fraud in an Audit of Financial Statements, the primary responsibility for implementation of an internal control system and detection of a fraud has the entity's management.

It is in line with auditor's objective: to conduct an audit in accordance with the ISA and obtain a reasonable assurance that the financial statements are taken as a whole and are free from material misstatement caused by a fraud or an error.

Because of the inherent limitations of an audit, there is an unavoidable risk that material misstatements in the financial statements will not be detected, even though the audit was planned properly and performed in accordance with the ISA.

Today, many audit processes are unchanged from those performed years ago even though technology can be used to perform them more efficiently. There are clearly confidential, private, and independent challenges that would be overcome and the profession should take the lead in doing so.

Information technology development has a huge impact on third-party verification. Traditional statutory audit provides a retrospective response to the latest fact that has limited value in modern business environment. These issues lead to a reassessment of the audit work axiom with an impact on its external and internal functions. Therefore, the auditor should consider the use of automation and analytical sampling methods. Auditing automation is progressive, but not complete. This means that the statutory audit testing can be shifted from transactions testing to policy testing.

Audit re-engineering is a systematic review and streamlining of audit processes in order to improve these practices. Current tools and technologies enable the audit automation which changes the scope and timing of audit procedures. In addition, auditors have greater access to data and are able to perform detailed breakdowns, in particular through the use of audit methods of data analysis.

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Specifics of a Business-Sport Unit: Sources, Flows, Processes and Opportunities

Gabriela Dubcová¹, Gabriel Adamek², Jozef Wallner³

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: gabriela.dubcova@euba.sk¹, gabriel.adamek@euba.sk², jozef.wallner@euba.sk³

Abstract

The aim of this paper was to reveal general cash-flow structures and opportunities of a sport unit performing as a business entity with its own activities within the competition on the market. A sport unit stands in this paper for a sport club with business activities. From the management point of view the main goal was to research the possibilities of potential financing, an improvement in internal processes and an analysis of spending for sport activities since this is considered to be a complex problem in managing the development of economics and management in a sustainable way.

Keywords: sport unit, sport unit microeconomics, cash flow, sport subsidy, expenditures, sport management, planning

JEL classification codes: L83, M29, Z23

Introduction

Sport units meant in this paper have a long tradition in nearly all European countries. They play an important role in the sporting activities of the population, not only for elite and competitive sport but also for sport for all. During the period of over a century in which sport units have been existent in Europe, the world around them has been changing continuously. Changes in society, in politics, in population, in economy, in leisure culture and in lifestyles have undoubtedly had an impact on sport and sport clubs all over Europe. (Breuer et al., 2015)

Sport as a subject of business activity connected with mutual relations and economy of the state. These relationships are multiple levels and often not directly, but rather mediated. Sport also affects the economy indirectly, for example, already mentioned by reducing health costs, crime reduction saves money in the judiciary, production of sports equipment and tools helps to develop the economy and vice versa technology helps to better outcomes athletes (Leška, 2007). An important economic factor as well as bets on various sporting events that can already now generate significant sales channels, many funding bodies of sport. Focus of this paper is to bring review and actual problematics of sport unit life circle (business microeconomics point of view) with special attention to European environment.

1. Recent Overview

Literature on the topic of sport financing is, to say the least, scarce. The majority of scholars' research into the connection between the sporting success of a country measured by the number of medals won at international competitions. In the survey of grassroots

(Waelbroeck-Rocha – Avice –Poupaux, 2011)¹ units which complements the views expressed in the e-consultation, the contribution of volunteers was mentioned more frequently as an important source of "in-kind" revenue than the availability, free of charge or at a low cost, of public or privately owned sport facilities. In most member states of the European Union lotteries finance sport. Most money is derived from betting on football results. Football feels that it is entitled to more of the money than other sports. There is a problem of how the money should be spent. The existing sports federations in Europe receive money from the state and also receive revenues from the sale of television rights. (European Commission, 2007)

At present, public money allocated to sport comes from national sport ministries or from the budget for sport and culture of local authorities. Recognising sport as a service to society would justify funding sport from other budgets, such as education, health or even small and medium sized enterprises. Contributions to sport funding from other budget lines could help clubs to diversify their offer and reach out to new categories of members, to the benefit of all, and would contribute to creating new types of partnerships as previously mentioned. Sports units who are successful in the long term are built on sustainable finances. Finances are often a challenge for sports clubs, which is why offer support in this area. Whatever in situation, to manage finances effectively as a sports unit. Some studies deal with financing sport rather focus on sport funding flows through indicators such as GDP (the most commonly used variables are GDP, GDP per capita, hosting the competition, is it a neighbouring country or not, political system of a country, population, climate, expenditure for health services, etc.). (Andreff – Szymanski, 2006)

Although none of the previously mentioned research has taken into account the variable *expenditure for sport*, some of them refer to it indirectly through the level of GDP. For example, Matros and Namoro (2004) state in their research that they use the variable GDP to capture sport budgets in a certain country. Other researchers assume that the countries with higher standard measured by GDP or GDP per capita, can have greater expenses for top-level sport (Škorić – Hodak, 2011; Roberts, 2006).

2. Sources of Financing

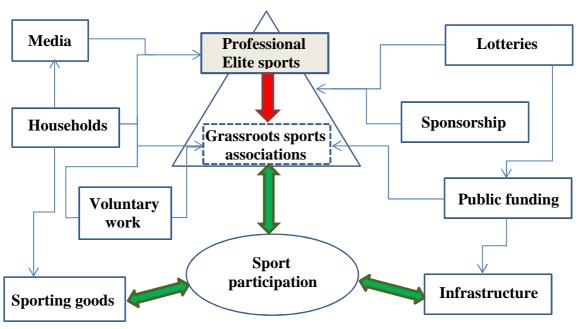
Five funding sources account for the bulk of resources going into the sport system. These are:

- Household expenditures;
- Public sector subventions coming from the national, regional and local levels (e.g. subsidy);
- Sponsorship, patronage and donations;
- Revenue from levies and charges on state lotteries, betting and gambling operators, often channelled via the state or regional authorities' budgets, or via special funds set up to finance general interest activities, among which sport;
- Revenue from media rights to sport event organisers, part of which can be channelled to grassroots clubs via top-down solidarity within the sport movement (Waelbroeck-Rocha – Avice – Poupaux, 2011).

¹ In this study, "grassroots sport" covers all sport disciplines practiced by non-professionals and organised on a national level through national sport. The definition thus excludes individuals who spend the bulk of their time practising sport, or who take the bulk of their revenue from the practice of sport.

The main flows of sport finance in EU 27 countries (see the Figure 1) show that the needs of amateur sports (grassroots sports associations) are mostly financed by public funds.

Figure 1 Main funding flows in sport in EU 27 countries



Source: MONTEL, J. – WAELBROECK-ROCHA, E. (2010). The different funding models for grassroot sports in the EU. [Online]. Available at the URL: http://ec.europa.eu/DocsRoom/documents/9681/attachments/4/translations/en/renditions/pdf. [Accessed 07.02.2017].

These funds are generally used to finance the development of infrastructure (stadiums, sport halls, etc.), while other needs are financed through voluntary work and household spending. Professional sport generates its funds from various private sources such as sponsors, media, but also household spending, i.e. buying tickets, paying membership fees, etc. (Škorić – Hodak, 2011). Regulations Impacting Sport Financing in Europe: in different European legal environments different non-direct regulatory incentives are applied in order to support increase of cash flow of entities providing sport activities, respectively reduction of their costs, such as:

- Tax reduction for non-profit organisations or activities serving the general Interest² (Germany, Finland, Italy),
- Tax reduction (Lithuania, United Kingdom),
- Reduced social contributions (France and Sweden),
- Reduced VAT rate (Cyprus, Slovenia),
- Payment to the sports organisations of the VAT on infrastructure improvement,
- and equipment purchase (Malta),
- Fiscal measures when buying cars and buildings (Portugal),

² Services of general interest are services that public authorities of the EU member countries classify as being of general interest and, therefore, subject to specific public service obligations. They can be provided either by the state or by the private sector.

- Sport clubs are allowed to provide a tax-free compensation) for their volunteers (Netherlands),
- Sports centres and other sports facilities may be exempt from land rental (Lithuania 2nd different grassroots sports),
- Direct contribution from paid corporate tax (Slovak Republic).

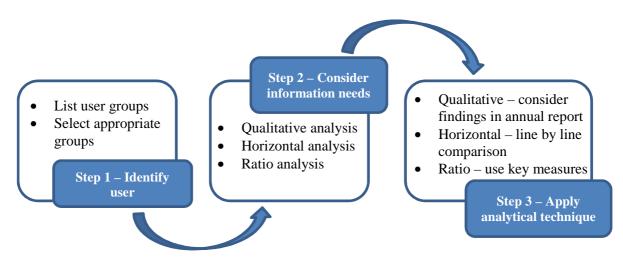
3. Internal Processes

The process of sport organizing results into the organizational structure. For practical application there is no single optimal organizational structure, but a large number of models that are available for specific solutions. Furthermore, the tendency to promote simplicity and flexibility methods and forms of organization, striving for the autonomy of behaviour organizational units (Čáslavová, 2009, p. 60). With increasingly significant penetration into a market economy in sport the sports organizations are recognizing the increasing role of organizing and organizational structures. Organize so that they can meet sports institutions its objectives, a science and an art (Čáslavová, 2009, p. 63).

In various countries, an analysis of structure is carried out at regular intervals (often through a system of monitoring the clubs). Panel data can provide a differentiated picture of the current situation of sport units, and enables changes and developments over the course of time to be observed. This provides a greater understanding of sport units (subjects) problems and challenges and is essential for initiating strategic decisions or specific measures by sport political actors (e.g. sport governing bodies, sport federations) (Breuer et al., 2015).

Organisational change – an inevitable feature of all organisations – has become another major area of sport unit research. The need for sport units to change is caused externally by the dynamics and uncertainties of the environment in which sport units are embedded, or from inside the organisation itself (e.g. changing interests of members). In the context of such pressures for change, structural barriers that explain the resistances to modify sport units are also put into place (e.g. Slack – Parent, 2005; Thiel – Mayer, 2009). In this context, a number of different approaches for studying change processes in sport clubs have been used and developed.

Figure 2
Flow diagram for analysis of organisational processes



Source: WILSON, R. (2011). Managing Sport Finance. London: Routledge, Taylor & Francis group publishing. 271 p. ISBN 978-0-203-85000-8.

4. Activities

A special Eurobarometer study (European Commission, 2014, p. 75) published in 2014 also analysed activities undertaken by voluntary workers in sport organisations as shows in the Table 1.

Table 1Types of activities undertaken in sport organisations

Type of activity	EU (in %)
Being a member of board or a committee	22
Administrative tasks	16
Being a coach or a trainer	29
Being a referee or other official	9
Organising or helping to conduct a sport event	35
Supporting day-to-day club activities (bar, food or	20
merchandising)	
Providing transport	15
Maintaining sport facilities	10
Maintaining sport equipment	8
Other	10
Respondent does not know	1

Source: BREUER, CH. – HOEKMAN, R. – NAGEL, S. – WERFF, H. (2015). Sport Clubs in Europe: A Cross-National Comparative Perspective. Springer International Publishing Switzerland. 434 p. DOI 10.1007/978-3-319-17635-2. ISBN 978-3-319-17635-2.

5. Opportunities and Challenges

Although sport units are non-profit organisations that do not pursue the goal of profit maximisation and are restricted by the non-distribution constraint where profit cannot be distributed to the members, financial health is nevertheless important to their sustenance and longevity. Associated with healthy finances is the concept of revenue diversification and the basic ideas stemming from financial portfolio theory, which has also been applied to nonprofit organisations outside the sporting context and within sports. Generally speaking, sport units have to choose a risk or revenue package similar to standard for-profit businesses that choose a risk/return package. In doing so, relying on revenues of different risk levels is considered advantageous. For example, revenues from membership fees are considered lowrisk revenues because they are projectable and split into smaller units (each member pays a fee), while revenues from government subsidies are more risky because they are typically allor-nothing in nature and likely to be cut from one year to the next. An organisation's level of revenue diversification (or concentration) is typically measured with the Herfindahl Index³ which considers both the number of different income sources and the percentage contribution of each income source to the total revenues (Breuer et al., 2015). Research shows that a sport unit's mission affects its level of revenue diversification: units that are more commercially oriented have more concentrated revenues than sport clubs with traditional orientations. It is assumed that organisations can improve their financial situation by diversifying their income

³ The *Herfindahl index* (also known as *Herfindahl-Hirschman Index*, or *HHI*) is a measure of the size of firms in relation to the industry and an indicator of the amount of competition among them. Named after economists Orris C. Herfindahl and Albert O. Hirschman, it is an economic concept widely applied in competition law, antitrust and also technology management. It is defined as the sum of the squares of the market shares of the firms within the industry (sometimes limited to the 50 largest firms), where the market shares are expressed as fractions. The result is proportional to the average market share, weighted by market share.

portfolio. Existing research supports this assumption and reports that sport clubs with more diversified revenues were in a better overall financial condition.

Sport units within their planning should take into consideration demographic trends and their impact on volunteer work, public sector financial situation in the EU with trends in individual countries, regulatory framework and the future orientation of public policies, future trends in sponsorship and other private revenue sources, etc.

Sustainability of sport unit business activities is a complex problematics and should comply with the legal, tax and voluntary environment in individual region/country.

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Statistical Analysis of the Tax and Fiscal Disparities in Slovakia on the Regional and Local Level

Nadiya Dubrovina

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: nadija@mail.ru

Abstract

Features of financial decentralisation are closely connected with the public administration and self-governance systems. Weakness of the local economic and financial potential requires additional financial resources as subsidies, state grants, loans, etc., for an enhancement of initial conditions of the social and economic development in some poorest regions. One of the possible approaches how to reduce the significant regional and local disparities in Slovakia is to optimise the mechanism of taxes and transfers between different levels of governance. The purpose of this research is to analyse the regional and local fiscal disparities in Slovakia as a problem for the improvement of the taxes-transfers mechanism in this country on different levels (state, regional and local), and to develop mathematical models and algorithms for the decision making how to reduce the existing regional and local fiscal disparities in the Slovak Republic.

Keywords: statistical methods, fiscal disparities, cluster analysis

JEL classification codes: H20, H53, C50

1. Introduction

One of the important problems of the fiscal policy of EU countries is to improve the transparency and efficiency of the taxes and budget systems as the means of the realization of the main social and economic functions of the state and self-governing units. Idea of the financial decentralization in the EU countries is popular and it is gradually realized in some countries where the former financial and administrative systems were centralized (Alcidi et al., 2014). The features of the financial decentralization are closely connected with the public administration and self-governance systems in the separated countries (Mahler – Jesuit, 2006). It means that if the number of self-governing regions is bigger the opportunity to introduce the financial decentralization mechanism is more (Alcidi et al., 2014). Nevertheless, taxation mechanism and budget systems differ in EU countries and it reflects the historical traditions and different structure of administrative systems (Swianiewicz, 2004; Owsiak, 2005). The differences in the structure of the public and local finance mechanisms are described in the works of S. Owsiak (2005), P. Swianiewicz (2004), E. Neubauerová (2003), A. Maaytová et al. (2015). The reforms of the administrative systems and implementation of the tools for the financial decentralization are realized in many countries of EU and these tendencies reflect the idea of the tax harmonization and convergence of the social and economic development within EU countries (Zubal'ová et al., 2008; Schultzová et al., 2009; Sivák, 2015).

The weakness of the local economic and financial potentials requires the additional financial resources as subsidies, state grants, loans, etc. for the enhancement of the initial conditions of the social and economic development in some poorest regions (Swianiewicz, 2004; Owsiak, 2005; Maaytová et al., 2015). It leads to the problem of the collection of the

financial flows and their redistribution for the support of less developed regions. Another problem is to efficiently allocate the financial resources between the different social and economic institutions supported from the state and local budgets (Mahler – Jesuit, 2006; Alcidi et al., 2014). It should be mentioned that the problem of efficient allocation of the financial resources between social and economic institutions from the different territorial levels is not clearly solved in many EU countries (Swianiewicz, 2004; Alcidi et al., 2014; Maaytová et al., 2015). In Slovakia this problem is also actual, this is highlighted in many domestic reports and research papers (Neubauerová, 2003; Buček et al., 2010). In addition, it is should be noted that there are significant regional and local disparities in Slovakia. The reasons of this problem and possible solutions are discussed in some research papers and books (Tiruneh – Radvanský, 2009; Buček et al., 2010; Nižňanský et al., 2014). One of the possible approach, how to reduce the significant regional and local disparities in Slovakia, is to optimize the taxes-transfers mechanism between different levels of governance. Nevertheless, this problem is very complicated and needs the study with application of the system approach, quantitative and qualitative methods, experts' opinion and wide public discussion.

2. The purposes

The purpose of this research is to analyse the regional and local fiscal disparities in Slovakia such as one problem for the improvement of the taxes-transfers mechanism in this country on the different levels (state, regional and local) and to develop the mathematical models and algorithms for the decision making how to reduce the existing regional and local fiscal disparities in SR.

3. Data and methods

For the statistical analysis, modelling and prediction the data from the Statistical Office of the Slovak Republic were used, as well as data presented in research provided by V. Nižňanský et al.(2014). Due to the application of the descriptive statistical analysis we revealed the existing fiscal disproportions on the regional (NUTS 3) and local levels in Slovakia. As basic data for the comparative analysis we took some of indicators such as: fiscal power (FS), tax power (DS) and their components, presented in Niznansky et al. (2014) for 2011. Then using these data the cluster analysis (k-means method) was used. Due to cluster analysis we are grouping the local districts to the clusters or homogeneous groups according to the indicators – elements of the fiscal power of local districts. The application of the cluster analysis and classification function, their mathematical descriptions are given in many books (Dostál, 2008). For the scenario analysis we built econometric models and some of the data were predicted for 2017. For the modelling the linear trends and stochastic residuals simulation were used. Based on the predicted data we analysed the possible distributions to clusters the local districts in Slovakia according their components of fiscal power for 2017. For the quantitative analysis and modelling Excel and Statistica were used.

4. Main results and discussions of the results

In Slovakia the territorial and administrative reforms are gradually implemented since 1993 and these processes require adequate financial, economic, human resources and institutional capacities. New financial system was introduced in Slovakia in 2005 and the main idea of this reform was to deep the financial decentralization (Nižňanský et al., 2014). Due to this reform the original competences were given from upper level to local communities. Nevertheless some of the solutions were not successful, financial potentials of local communities were very sensitive to the negative consequences of the crisis (reduction of

the local incomes as basis for the taxes, shrinking economic activities, unfavourable conditions for the entrepreneurship, growth of unemployment, etc.) and local communities suffered from lack of own financial resources, they need subsidies and state transfers for the fulfilment of their basic social, economic and administrative competences (Neubauerová, 2003; Tiruneh – Radvanský, 2009; Nižňanský et al., 2014; Slavík et al., 2016). Otherwise the financial decentralization should be developed in Slovakia and the local communities should be motivated to the more rational realization of their competences and more efficient exploitation of the internal and external financial resources. That is why the problems of the existing regional and local disproportions in SR should be studied more detail.

Let to consider the some indicators forming the fiscal power. Fiscal power (FS) of certain territorial unit can calculated as sum of tax power and received transfers:

$$FS = DS + D , (1)$$

where FS – fiscal power, DS – tax power, D - received transfers.

Tax power is defined as:

$$DS = MD + PD, (2)$$

where MD are the local taxes collected in certain territorial unit and PD are proportion of the personal income taxes remained in this territorial unit.

Thus, fiscal power FS of certain territorial unit consist of such components as: MD (local taxes), PD (proportion of the personal income taxes remained in this territorial unit) and D (received transfers). It is shown in formula (3):

$$FS = DS + D = MD + PD + D. \tag{3}$$

Usually fiscal power is counted as ratio to the number of inhabitants lived in the certain territorial unit. Due to this it is possible to carry out the comparative analysis of the fiscal power for the different territorial units.

In the Table 1 the essential disproportions in the components of the distribution of the fiscal power of districts is shown.

Table 1The characteristics of the distribution of the fiscal power and its components for 79 Districts in SR (2011)

Slovak Republic	Indicators	MD	PD	D	DS	FS
Slovak Republic	marcators	MID	rυ	D	טט	гэ
79 Districts	min	10.7	197.7	129	220	427
for 8 NUTS III Regions	max	117.2	315.1	459	365	744
	mean	45.92	239.64	261.86	285.56	547.42
	std.	22.08	25.96	79.53	36.37	69.97
	coef.var.	48.09	10.83	30.37	12.74	12.78
	max/min	10.95	1.59	3.56	1.66	1.74

Source: own elaboration of the data in Excel

It is should be noted that ratio of the highest and lowest value of the local taxes (MD) exceeds 10, ratio of the highest and lowest value of the proportional income taxes (PD) is more than 1.5 and ratio of the highest and lowest value of transfers (D) is more than 3.5. Nevertheless, differences in tax power and fiscal power are much less due to the special tax policy and received transfers. The ratios of the highest and lowest value of the tax power and fiscal power are 1.66 and 1.74.

In the Tables A.1 and A.2 the descriptive statistics for the distribution of fiscal power and its components are presented (in the Appendix 1).

In the Table 2 the characteristics of the distribution of the fiscal power and its components in the regions are given.

Table 2The characteristics of the distribution of the fiscal power and its components for regions in SR (2011)

No.	Region NUTS III	Indicators	MD	PD	D	DS	FS
1	Bratislava (BA)	min	50.5	237.9	129	309	464
	, ,	max	88.8	284.6	167	349	490
		mean	72.2	259.05	146.25	331.25	477.5
		std.	18.02	19.28	17.84	18.63	11.39
		coef.var.	24.95	7.44	12.2	5.62	2.38
		max/min	1.76	1.2	1.29	1.13	1.06
2	Trnava (TA)	min	55.5	218.5	196	274	498
		max	117.2	265.9	312	365	645
		mean	74.94	239.91	237.29	314.86	552.14
		std.	21.44	16.92	44.45	32.44	56.13
		coef.var.	28.6	7.05	18.73	10.3	10.17
		max/min	2.11	1.22	1.59	1.33	1.3
3	Trencin (TN)	min	33.3	223.7	163	257	442
		max	97.8	246.5	318	326	632
		mean	56.64	233.47	224.89	290.11	515
		std.	19.36	8.06	57.62	22.35	64.76
		coef.var.	34.19	3.45	25.62	7.7	12.57
		max/min	2.94	1.1	1.95	1.27	1.43
4	Nitra (NI)	min	33.7	210	172	255	427
		max	85.2	238	285	317	602
		mean	54.94	223.06	230.86	278	508.86
		std.	19.3	10.1	38.16	26.44	58.11
		coef.var.	35.12	4.53	16.53	9.51	11.42
		max/min	2.53	1.13	1.66	1.24	1.41
5	Zilina (ZI)	min	16	238	160	254	494
		max	72.6	313.4	321	359	581
		mean	37.95	268.15	229.45	306.09	535.55
		std.	17.62	21.52	51.86	31.68	32.39
		coef.var.	46.43	8.02	22.6	10.35	6.05
		max/min	4.54	1.32	2.01	1.41	1.18
6	Banska Bystrica (BB)	min	22.8	203.3	147	235	441
		max	70	275.5	392	345	680
		mean	42.72	229.51	269.38	272.23	541.62
		std.	13.86	22.95	88.39	33.53	86.69
		coef.var.	32.45	10	32.81	12.32	16.01
		max/min	3.07	1.36	2.67	1.47	1.54
7	Presov (PO)	min	16.5	210.6	235	236	520
		max	47.3	315.1	459	339	744
		mean	26.29	244.55	339.23	270.85	610.08
		std.	9.28	29.76	71.91	31.95	72.93
		coef.var.	35.29	12.17	21.2	11.8	11.95
	TT (TTC)	max/min	2.87	1.5	1.95	1.44	1.43
8	Kosice (KO)	min	10.7	197.7	181	220	524
		max	69.4	273.6	376	343	635
		mean	35.48	220.4	316.5	255.88	572.38
		std.	17.89	26.64	62.71	39.37	42.2
		coef.var.	50.42	12.09	19.81	15.39	7.37
		max/min	6.49	1.38	2.08	1.56	1.21

Source: own elaboration of the data in Excel

As it is seen from this table, the significant disproportions in the components of the distribution of the fiscal power exist between the regions in SR and between districts inside mentioned regions. Especially this fact is visible between Bratislava regions and other regions located in the east part of Slovakia, such as Prešov and Košice regions. But due to the transfers the existing disparities of the fiscal power between districts inside regions are reduced.

Transfers (D) are depended on local taxes (MD) and proportional income taxes (PD). The dependence between these variables can be approximated by quadratic surface.

This model is given below:

$$D = c_0 + c_1 \cdot MD + c_2 \cdot PD + c_3 \cdot MD^2 + c_4 \cdot MD \cdot PD + c_5 \cdot PD^2,$$
(4)

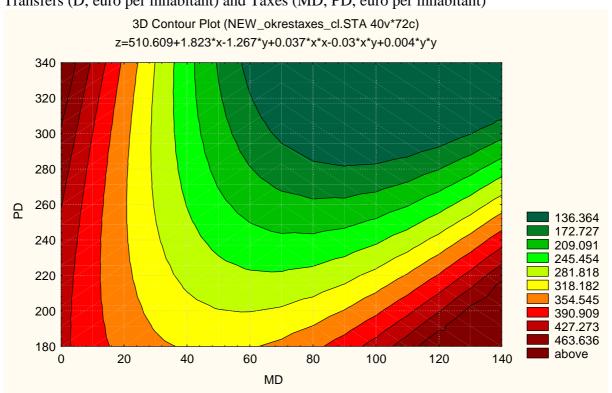
where $c_0, c_1, c_2, c_3, c_4, c_5$ are parameters for estimation.

In Fig. 1 the empirical model and the contour plot for the dependence of transfers (z=D), local taxes (x=MD) and proportional income taxes (y=PD) are shown. Thus, the empirical model is:

$$D = 510.609 + 1.823 \cdot MD - 1.267 \cdot PD + 0.037 \cdot MD^{2} - 0.03 \cdot MD \cdot PD + 0.004 \cdot PD^{2}.$$
 (5)

The correlation for this model equals 0.605. It means that we can use this model as normative model for the analysis, without the consideration of the impact of the random factors and other reasons (for example, regional features). But for the prediction these factors should be taken into account.

Figure 1The Contour Plot for the Quadratic Surface of the Empirical Dependence of the Received Transfers (D, euro per inhabitant) and Taxes (MD, PD, euro per inhabitant)



Source: own elaboration of the data in statistical package Statistica

This model (Figure 1) can be used for the calculation of the possible normative transfers for the each districts, if we define the future values for local taxes (MD) and proportional income taxes (PD). It is should be noted that function z allows to determine area for variables

MD and PD, where transfers D can be decreased. Later this model will be used in our research for the calculation of the normative transfers for alternative scenario in 2017.

Using basic data for 2011 presented in Nižňanský et al. (2014), we applied cluster analysis (k-means method) and reveal five clusters. The descriptive statistics of each cluster are given in the Table 3.

Table 3The Descriptive Statistics for the Clusters

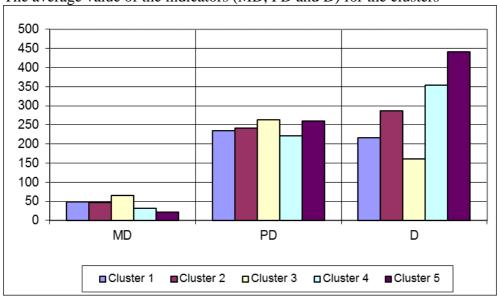
Indicators	MD		P	D	D	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Cluster 1	47.77	16.37	234.48	17.58	216.67	21.87
Cluster 2	46.52	27.2	242.17	29.36	286.81	19.66
Cluster 3	65.55	17.53	263.83	24.16	160.92	18.46
Cluster 4	31.14	14.82	221.49	18.93	353.06	19.18
Cluster 5	21.7	3.56	259.3	17.81	441.33	27.21

Source: own elaboration of the data in statistical package Statistica

The grouping to clusters allows create the homogeneous groups of districts with similar characteristics of the components of fiscal power.

For the better interpretation of the features of each cluster the diagram of the average values of the indicators MD, PD and D are presented for the clusters (Figure 2).

Figure 2
The average value of the indicators (MD, PD and D) for the clusters



Source: own elaboration

For example, it is clear seen that Cluster 3 has the highest average values for local taxes (MD) and proportional income taxes (PD), but the lowest average value for transfers (D). In opposite, Cluster 5 is characterized the lowest average local taxes, very high average values for proportional income taxes and highest average values for transfers.

In the same way it is possible to give the description of the characteristics for other clusters.

In the Table 4 the distributions of districts into clusters according the components of fiscal power are given for regions.

Table 4The distribution of districts into clusters according the components of fiscal power in regions (2011)

No.	Region NUTS III	Cluster	Cluster 2	Cluster 3	Cluster	Cluster
		1(Cl1)	(Cl2)	(Cl3)	4(Cl4)	5(Cl5)
1	Bratislava (BA)	1	-	8	-	-
2	Trnava (TA)	4	2	1	-	-
3	Trencin (TN)	5	2	2	-	-
4	Nitra (NI)	5	2	1	-	-
5	Zilina (ZI)	3	4	3	1	-
6	Banska Bystrica (BB)	5	1	2	5	-
7	Presov (PO)	2	3	-	5	3
8	Kosice (KO)	-	2	4	5	-

Source: own elaboration of the data

As we can see in this table the Bratislava region is distinct in comparison with other regions, all districts are located in one cluster, i.e. Cluster 3, where we observe the highest average values for local taxes (MD) and proportional income taxes (PD), but the lowest average value for transfers (D). For regions in east part in the SR we observed the significant part of districts belonged to Cluster 4 and Cluster 5, where receivable transfers are very high. For the recognition of the possible division to the clusters for the new cases we used the linear classification functions (Table 5). The proportions of the cases for each cluster (p) are given.

Table 5The Estimations of the Parameters for the Classification Functions

	Grouping variable: CLUSTER									
Variable	Cluster 1(Cl1)	Cluster 2 (Cl2)	Cluster 3 (Cl3)	Cluster 4(Cl4)	Cluster 5(Cl5)					
	p=0.33333	p=0.22222	p=0.18056	p=0.22222	p=0.04167					
MD	0.104087	0.070145	0.189576	-0.01081	-0.06815					
PD	0.468408	0.474847	0.541067	0.419362	0.483138					
D	0.485121	0.65871	0.334821	0.83284	1.051312					
Constant	-111.056	-155.095	-106.241	-194.8	-297.067					

Source: own elaboration of the data in statistical package Statistica

For decision making and harmonization of fiscal mechanism in the local districts and regions in Slovakia we should develop tools for forecasting and analysis of the possible values of components of fiscal power. These tools are very important, when we have with the problem of lack or delay of statistical data, incomplete information or when we create the future scenario for the possible dynamics for studied indicators.

For this reason we analysed the dynamics of the development of the tax power in districts during period 2005-2012 and built the linear trend model describing the common tendency of the development of average tax power in districts. This model is given in the Table A.3 (Appendix 1). In this model the regional and local differences were not included and only general trajectory of the development of tax power is presented.

Thus, general model for the prediction of tax power over time is given as:

$$DS_{t}^{real} = a_{0} + a_{1} \cdot t + \xi_{t} = DS_{t}^{pred} + \xi_{t},$$
(6)

where DS_t^{real} - real general values for tax power in time t (t=1 for 2005, 2 for 2006, ..., etc.), a_0, a_1 - estimations of the parameters in linear trend model, DS_t^{pred} - predicted values of tax power according linear trend, ξ_t - irregular stochastic residuals.

If we applied the general formula (6) to each district, we obtain the next expression:

$$DS_{t,j}^{real} = a_0 + a_1 \cdot t + \xi_{t,j}. \tag{7}$$

Based on the real data for 2011 and related predicted values of tax power for each district for this year, we can estimate ξ_t - irregular stochastic residuals:

$$\xi_{t=2011,j} = DS_{t=2011,j}^{real} - DS_{t=2011,j}^{pred}$$
(8)

It is should be noted that these irregular stochastic residuals are varied for the districts and can be presented as:

$$\xi_{t,i} = \varepsilon_{t,i} + \gamma_{t,i}, \tag{9}$$

where $\varepsilon_{t,j}$ is error terms normal distributed with such conditions as $\varepsilon = 0$, $\sigma_{\varepsilon}^2 = const$ (Hatrak, 2007), but $\gamma_{t,j}$ is stochastic residual characterized the possible deviations in local tax power explained by former and current social, economic, historical, institutional factors.

Thus, for simulation of the possible future values of tax power for each district we can take into account the predicted value by linear trend and random generated irregular stochastic residuals:

$$DS_{t,j}^{sim} = DS_t^{pred} + \xi_{t,j}^{sim} \quad . \tag{10}$$

In our research we generate irregular stochastic residuals $\xi_{t,j}^{sim}$ for each district as random value with uniform distribution on intervals $[0; \xi_{t=2011,j}]$, if $\xi_{t=2011,j} \ge 0$ and intervals $[\xi_{t=2011,j}; 0]$, if $\xi_{t=2011,j} \le 0$. It is should be noted that for some districts the intervals for generating random values $\xi_{t,j}^{sim}$ were relatively narrow, for other – relatively wide. It means that we take into account the existing heteroscedasticity for the $\xi_{t,j}$.

Then we get the predicted values for tax power of each district for 2017 according to baseline scenario, i.e. with existing tendency and possible proportions in the components for fiscal power specified by the features of districts. These data were used for the classification function (Table 5) and possible distribution of the districts into clusters according the components of fiscal power in 2017 (baseline scenario) are given for regions (Table 6).

Table 6The distribution of districts into clusters according the components of fiscal power in regions (baseline scenario, 2017)

No.	Region NUTS III	Cluster	Cluster 2	Cluster 3	Cluster	Cluster
		1(Cl1)	(Cl2)	(Cl3)	4(Cl4)	5(Cl5)
1	Bratislava (BA)	-	1	8	1	-
2	Trnava (TA)	4	2	-	1	-
3	Trencin (TN)	2	3	2	2	-
4	Nitra (NI)	2	5	-	-	-
5	Zilina (ZI)	3	4	3	ı	1
6	Banska Bystrica (BB)	1	4	2	1	5
7	Presov (PO)	2	1	-	2	8
8	Kosice (KO)	-	-	4	1	6

Source: own elaboration of the data

As it is seen, the number of districts located in Cluster 4 and Cluster 5, where the highest level of received transfers, is increasing. Taking into account the problems with state budget, factors for the own motivation of the development of poor regions and other reasons, such scenario is not good and can be rejected.

For change of this situation we can use model (5) presented in the Figure 1 and define the normative values for transfers. These data we will use for the alternative scenario for 2017.

In the Table 7 the possible distribution of the districts into clusters according the components of fiscal power in regions are shown for alternative scenario in 2017.

Table 7The distribution of districts into clusters according the components of fiscal power in regions (alternative scenario, 2017)

No.	Region NUTS III	Cluster	Cluster 2	Cluster 3	Cluster	Cluster
		1(Cl1)	(Cl2)	(Cl3)	4(Cl4)	5(Cl5)
1	Bratislava (BA)	-	-	8	-	-
2	Trnava (TA)	1	-	6	-	-
3	Trencin (TN)	-	-	9	-	-
4	Nitra (NI)	3	-	4	-	-
5	Zilina (ZI)	-	5	6	-	-
6	Banska Bystrica (BB)	4	1	8	-	-
7	Presov (PO)	1	10	2	-	-
8	Kosice (KO)	2	2	6	1	-

Source: own elaboration of the data

It is clear seen, that here most of the districts are located in Cluster 3 and interregional diversity of fiscal power was decreased. It means that alternative scenario is better in comparison with baseline scenario. Thus, due to the increase of the local taxes and proportional income taxes, in one hand, and gradually decrease the receivable transfers, in other hand, it is possible to support the internal motivation for poorer regions to efficiently explore own resources and look for investments for the development of local economy.

Conclusions

Taking into account the complexity of the problems for the consideration of the analysis of budget systems in the different territorial level, its structure and functioning, assessment of its performance, we should use advanced methodology for the study of the taxes-transfers mechanism in Slovakia. The application of the cluster analysis allowed study the homogeneous groups of districts with similar structure of fiscal power. Using the econometric approach, simulation and the experts' opinion the possible scenarios the components of fiscal power can be defined for districts and the best solution under socio-economic and financial criteria and designed scenarios will be found. Thus, due to the combination of the qualitative and quantitative methods it is possible to develop some recommendations for the optimization of taxes-transfers mechanism in the Slovak Republic.

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Appendix 1

Table A.1The Descriptive Statistics of the Distributions of the Indicators (MD, PD, D)

Indicators	Mean	Confid.	Confid.	Median Minimum N		Maximum	Lower	Upper	Std.Dev.	Standard
mulcators	Mean	-95.000%	+95.000%	Median	WIIIIIIIIIIII	Waxiiiuiii	Quartile	Quartile	Stu.Dev.	Error
MD	45.92	40.73	51.11	43.65	10.7	117.2	27.05	62.6	22.08	2.6
PD	239.64	233.54	245.74	236	197.7	315.1	219.2	255.45	25.96	3.06
D	261.86	243.17	280.55	248	129	459	197	322	79.53	9.37

Source: own elaboration of the data in statistical package Statistica

Table A.2The Descriptive Statistics of the Distributions of the Indicators (DS, FS)

Indicators	Mean	Confid.	Confid.	Median Minimum M	Movimum	Lower	Upper	Std.Dev.	Standard	
indicators	Mean	-95.000%	+95.000%		Willillillillilli	Maximum	Quartile	Quartile	Stu.Dev.	Error
DS	285.56	277.01	294.1	281	220	365	256	312.5	36.37	4.29
FS	547.42	530.97	563.86	531.5	427	744	497	591.5	69.97	8.25

Source: own elaboration of the data in statistical package Statistica

Table A.3The characteristics of the econometric model for the prediction of tax power

Regression Summary for Dependent Variable: DS_OBCE										
$R = 0.76854138$ $R_c = 0.59065585$ Adjusted $R_c = 0.52243183$										
F(1,6)=8.6576 p<0.02587 Std.Error of estimate: 21.315										
			St. Err.		St. Err.					
		BETA	of BETA	В	of B	t(6)	p-level			
Intercpt				233.7393	16.60846	14.07351	8.03E-06			
Т		0.768541	0.261197	9.677381	3.288965	2.942379	0.025868			

Source: own elaboration of the data in statistical package Statistica

Globalisation and its Critics

Marianna Dudášová

University of Economics in Bratislava Faculty of International Relations Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: marianna.dudasova@euba.sk

Abstract

Globalisation is a highly contentious phenomenon and it continues to spark controversies among policymakers, academics, business leaders, activists, and non-governmental organisations. Globalisation opponents have many faces, but their unifying feature is scepticism towards the key tenets of globalisation – trade and immigration. Once seen as a typical feature of the (radical) left movements, trade unions, farmers or environmentalist groups, scepticism towards globalisation has spread even to unexpected spheres of the political spectrum. The article identifies specific features of the different types of globalisation critique and explores how public concerns related to globalisation are translated into political phenomena.

Keywords: globalisation, globalisation critique, global capitalism, globalisation opponents

JEL classification codes: F52, F68

1. Introduction

We live in the age of rapid globalization that manifests itself on an economic, political, and cultural level. Globalization is deeply controversial, however. As a highly contentious phenomenon, it continues to spark controversies among policymakers, academics, business leaders, activists, and non-governmental organizations. A growing body of literature deals with societal conflicts associated with the benefits and costs of globalization. The drawbacks related to globalization call into question the widespread belief that it is a historic inevitability that has no alternative.

The evaluation of the consequences of globalization constitutes one of the most salient controversies of our time. The pro-globalists state that globalization promotes economic growth and has the potential to solve poverty. It makes companies more competitive and lowers prices for consumers. Globalization is supposed to foster tolerance and respect for cultural diversity and universal human rights through increased communication, speedy travel, and openness. Shortly, it enables transferring positive economic goods (economic growth, employment, technological progress) and social goods (democratization, human rights) and promotes diversity and cultural enrichment through increased contact among nations. The critics of globalization disagree with these assertions. They are sceptical of the claimed benefits of globalization and see them outweighed by the downsides of this development. The unifying feature of the very heterogeneous group of globalization opponents is scepticism towards the key tenets of globalization - trade and immigration. Nevertheless, globalization opponents have many faces. Once seen as a typical feature of the (radical) left movements, trade unions, farmers or environmentalist groups, scepticism towards globalization has spread even to unexpected spheres of the political spectrum.

Across the globe, economic nationalism and calls for more protectionism are on the rise, aiming at limiting the pace of globalization, which is increasingly perceived as a threat to national economies, cultures, and political institutions. However, it would be oversimplifying to frame this revolt as a conflict between the cosmopolitan pro-globalist and the communitarian anti-globalists. The criticism of globalization is as varied and multifaceted as the phenomenon of globalization itself. While public opinion surveys can help us to understand the sources of the current backlash against globalization, a more in-depth analysis is necessary to explain how the public concerns related to globalizations are translated into political phenomena. Thus, this article sets out to identify and compare the different types of globalization critique and to assess their potential to be politically exploited.

The article is organized as follows: First, a very brief theoretical background on the concept of globalization is provided, with the aim to insinuate the complexity of the phenomenon. Second, the heterogeneous group of globalization opponents is divided into groups with the aim to identify key differences in terms of aspects that are criticized and solutions that are proposed. Subsequently, a link is established between the specific form of critique and its political relevance as well as public resonance.

2. A word on terminology

Due to its conceptual stretching, globalization has become the buzzword of our era, entering almost every controversy concerning the modern world. The dynamics and implications of globalization have become a major political issue as well. Despite the fact that globalization is such a highly salient issue, the term itself is often employed imprecisely and carelessly (Jones, 2000, p. 58) and remains a slippery and elusive concept (Heywood, 2013, p. 141). As Jones (2000, p. 58) suggests, far greater precision in definition and usage is necessary to investigate profoundly the sources, implications, management, and even restraints of advancing globalization.

As it is not our intention to enter the troubling waters of definitions, concepts, and alternative terms, for the purpose of this article we understand the term globalization straightforwardly as the process of growing global interconnectedness and interdependence (Heywood, 2011, p. 11). It is not a new phenomenon. However, in recent decades, globalization has accelerated significantly. We have observed a substantial growth in cross-border and/or transnational flows – movements of people, goods, money, information, and ideas (Heywood, 2013, p. 23). However, globalization is more than increases of these interactions – the qualitative character of globalization lies in the changing perception of the actors themselves and their interests (Woods, 2000, p. 2). Additionally, globalization creates new types of actors – transnational, non-state actors that do not follow specific national interests or do not feel obliged by the notion of universal human rights or environmental norms.

Since it is difficult to reduce globalization to a single process, it should rather be seen as a complex of processes, sometimes overlapping and interlocking but sometimes also contradictory ones (Heywood, 2013, p. 141). What these processes have in common is the continuing decline in the relevance of national borders – a development which has been described by Kenichi Ohmae (1991) as an idea of "borderless world". Leggewie (2003, p. 16-17) suggest a similar concept and describes globalization by identifying three key trends:

- *Debordering* (blurring of borders)¹ denotes that the relevance of national borders has changed, thus new mechanisms of global governance are required and new means of democratic legitimation must be introduced.
- Glocalization is defined by Leggewie as a permanent and systematic interplay of global and local factors which is sometimes described by popular slogans such as "one world" or "global village".

¹ The original expression in German, used by Leggewie, is *Entgrenzung*.

• Hybridization as the consequence of the "borderless world" is described as the process in which the national cultures are losing the status of a dominant political "we" group – that means that the collective identity of a nation is based on a mixture of cultural identities.

Considering the implications of these trends, it seems obvious that these can be positive, negative, or ambivalent. While the dominant narrative on the part of the globalization proponents was based on the famous TINA (There Is No Alternative) argument, current developments in world politics and economics challenge the view of globalization as a "strategic inevitability" (Bloom, 2016, p. 38) or a "capitalist utopia" (Leggewie, 2003, p. 50). As the opportunities and threats resulting from globalization are unequally distributed among citizens, a new division of winners and losers is generated in the wake (Teney et al., 2013). As the losers of globalization become a more vocal group, they do not restrict their activities to supporting street protests and anti- or alter-globalization NGOs. They represent a potential which can be successfully mobilized by political actors. Recent electoral fortunes of globalization critics have shown that this development can bring about far-reaching changes in the global environment – economic and political alike.²

3. Types of globalization critique

When assessing the heterogeneous group of globalization sceptics, critics and opponents, various criteria for differentiation can be applied. The aim of this part is to present a brief but systemic overview of the various types of criticism. The main inspiration for our overview is drawn from Leggewie's categorization (2003), who distinguishes five types of criticism: nationalist critique, critique by the street, insider critique, left-intellectual critique, catholic critique (inspired by neo-Marxist ideology). Based on this categorization, we suggest three broader defined categories.³

- Critique by the street
- Intellectual critique
- Politically institutionalized critique

Globalization critique from the street

Anti-globalization demonstrations became the public face of the anti-globalization movement (Buckman, 2004, p. 116). Activists opposing globalization use meetings of international monetary, trade and environmental organizations to draw media attention and to promote their cause. Although mass demonstrations against globalization are neither left nor right, earlier in the 1980s they were perceived as actions of "autonomous chaots" (Leggewie, 2003, p. 58). According to the Canadian Security Intelligence Service (2000, Paragraph 17), diversity is a major characteristic of anti-globalization protests and demonstrations, which are often described as "multigenerational, multi-class, and multi-issue". The protesters represent a broad spectrum of groups, lobbyists, NGOs and networks but all share a mutual antipathy towards multinational corporate power and multinational economic institutions who are viewed as the servants of corporate interests (CSIS, Paragraph 7). The criticism of the capitalist philosophy as such is an underlying theme, promoted mainly by left activists and militant anarchists. Nevertheless, there are also participants from the right fringe of the ideological spectrum, e. g. from the White supremacist milieu (CSIS, Paragraph 19). The

² The election of Donald Trump for the president of the US or the success of the Leave campaign in Great Britain.

³ Of course, the categorization is only intended for analytical purposes, as there are overlappings and transfers of ideas and methods between these categories.

more militant and violent protesters belong to extremist elements associated especially with environmentalist, animal-rights, and anti-abortion activists (CSIS, Paragraph 21).

WTO negotiations held in Seattle in 1999 sparked the first high-profile mass protests against economic globalization (Buckman, 2004, p. 45). The "Battle of Seattle" was followed by protests in Prague (Summit of IMF and World Bank in 2000), Genoa (G8 Summit in 2001), Melbourne (World Economic Forum in 2000), Washington (anti-capitalist and anti-war protests in 2001) and others. These meetings became a popular motive for mobilization of the disparate groups and individuals opposing globalization and the way how it is "managed" through "summit diplomacy" which has become the preferred form of global governance in the recent decades.

It is certainly not easy maintaining the cohesiveness of such a broad "movement of movements" for a long time, especially when some groups are distancing themselves from other ones. The solution may be in organizing protests against more specific issues. The latest example is the demonstration against TTIP in Berlin in 2016. In this case, TTIP became a convenient vehicle for a wide range of concerns (Mayer, 2015, p. 55) a perfect mobilizing tool to raise awareness towards a broader formulated criticism of capitalism, globalization, and the perceived economic and political hegemony of the USA (Dudáš – Dudášová, 2016, p. 1048).

The anti-globalization movement has been inspired by influential critical works of (predominantly) left intellectuals, authors or journalists who represent the second type of globalization critique as we have defined it – the critique by elites.

Globalization critique by elites

The critique against globalization comes from different intellectual and ideological directions that do not all share the same ideas, concerns, or sentiments (Bhagwati, 2004: 440). In this section, we deal with the intellectual critique which comes overwhelmingly (but not solely) from the left. Globalization critique played a major role in revitalizing the international left in the post-Cold War era. It developed into a postmodern variation of the Marxist capitalism critique and became an important part of the agenda of new social movements. The critical thinkers on the left are usually well connected through a net of organizations, journals, magazines, and publishing houses (Leggewie, 2003, p. 65). They cooperate with NGO's and support protests against globalization and its consequences.

One of the most prominent figureheads of the intellectual left addressing the issue of globalization is Noam Chomsky. Chomsky is an American linguist, philosopher, social critic and political activist. In his books (for example Chomsky – McChesney, 1998) and public appearances (Chomsky, 2003), Chomsky criticizes sharply the "imperial ambitions of the USA" that are described by him as the "number one enemy" (Leggewie, 2003, p. 71). He also denounces the neoliberal ideology – the belief in the supremacy of free markets and the fact that public's voice often remains unheard or ignored in public affairs because of the interests of transnational corporations or institutions which do not dispose of the necessary democratic legitimation. His verbal exacerbations are welcomed by a broad audience of supporters but often criticized for a black-and-white way of argumentation that sometimes borders on paranoia (ibid).

Another prominent globalization critic is Naomi Klein, a renowned Canadian author, social activist, and filmmaker known for her political analyses and criticism of corporate capitalism and globalization. She first became known internationally for her book *No Logo* (2000), which put the critique of globalization into pop-historical and clear economic perspective. The book became a bestseller and a manifesto of the anti-corporate globalization movement. In it, Klein attacked the brand-oriented consumer culture and the operations of large corporations. She accused several corporations of unethically exploiting workers in the

world's poorest countries in pursuit of greater profits. While Chomsky's analysis is heavily charged with ideology, the approach of Klein is one of an investigative journalist – fact-filled, well documented and with conclusive reasoning (Leggewie, 2003, p. 74). In her 2007 book *The Shock Doctrine: The Rise of Disaster Capitalism* she argued that capitalism has used cataclysmic events to advance the dominant ideology of our time, the free market ideology. By capitalizing on crises, the disaster capitalism complex now exists as a booming new economy. According to Klein, the victory of capitalism was not a peaceful process but a violent culmination of a radical economic project. In her latest book, *This Changes Everything: Capitalism Vs. The Climate* (2014), Klein explains why the environmental challenges should lead to an abandonment of "free market" ideologies and current political systems, arguing that a massive reduction of greenhouse emissions may offer the best chance for correcting problems of a system that is already flawed in many ways. Klein considers the environmental crisis as an opportunity, which could become a catalyst to transform our broken economic and cultural priorities.

The most prominent figure of the European version of intellectual opposition to globalization was Pierre Bourdieu (until his death in 2002), a leading French sociologist, who assumed a public role in the tradition of Émile Zola and Jean-Paul Sartre becoming "the intellectual reference" for movements opposed to free market orthodoxy and globalization (NY Times, 2002). He challenged the proclaimed inevitability of globalization and considered the current political reality to be a lethal threat to democracy, as it preserves a status in which economic forces were unleashed from all control or constraint (Bourdieu, 2002).

One of the most famous among the contemporary critics is Slavoj Zizek, a controversial Slovenian philosopher and cultural critic known for his Marxian critique of the current global economic and political system. In his 2011 book *Living in the End Times*, he describes the end of the world using the image of "four riders of the apocalypse" (ecological crisis, the consequences of the biogenetic revolution, the imbalances within the system itself, and the explosions of social divisions and exclusions). He argues that the global capitalist system is approaching an apocalyptic zero-point. Zizek expects that the initial societal denial will be followed by anger and depression. Finally, however, after passing through the zero-point, the situation will change and the society will be prepared for a new beginning.

Recently, the intellectual left has become surprisingly strong support from the Head of the Catholic Church, Pope Francis. who frequently attacks inequality and social injustice, condemning the "throw-away culture" of globalization and calling for new ways of thinking about poverty, welfare, employment, and society (Reuters, 2015). In an interview with the daily Vatican Insider (2015) he described his position on globalization as follows:

"I recognize that globalization has helped many people rise out of poverty, but it has also damned many others to starve to death. It is true that global wealth is growing in absolute terms, but inequalities have also grown and new poverty has arisen. What I have noticed is that this system sustains itself through a culture of waste, which I have already discussed various times. There is the politics, the sociology and even the attitude of waste. When money, instead of man, is at the center of the system, when money becomes an idol, men and women are reduced to simple instruments of a social and economic system, which is characterized, better yet dominated, by profound inequalities."

Opposition or outright hostility to capitalism and globalization is said to belong to the Left. On the other hand, as Weigerski (2002) points out, some of the most profound critiques of capitalism, technology, and globalization have historically come from the traditionalist Right. However, there has never been a consensus among conservatives in favour of unrestricted technological development and globalization. There are current-day conservatives

who see technology and globalization as generally good or at least value-neutral. Then there are those who consider technology and globalization as generally "bad" but at least somewhat subject to human control. And there is also a group of extreme pessimistic conservatives who consider technology and globalization as invariably bad and unamenable to human control, leading to a universal, homogeneous world-state (ibid). Theoretical roots of conservative critique can be found in the anti-humanism of Carl Schmitt or anti-Occidentalism of Martin Heidegger (Leggewie, 2003, p. 57). Their ideas were a source of inspiration for the intellectual movement *Nouvelle Droite* (New Right), active in the 1970s through 1990s. The New Right emphasized the incompatibility of cultures and ethnicities and advocated the legitimacy of European resistance to cultural mixing (Minkenberg, 2013, p. 19). The New Right's formulation of the concept of *ethnopluralism* (segregation of cultures and ethnicities according to geographical criteria) offered a counter-model to *multiculturalism* (coexistence of cultures and ethnicities within a certain territory). While the New Right is dead as a movement, its ideas have survived and entered the common political dispute (ibid).

In the USA similar worldview is represented by a group of conservative intellectuals, the self-identified *paleoconservatives* who are anti-modern reactionaries and nativists hostile toward immigration and propose a hierarchical social order in which loyalty to family, tradition and Christianity were paramount (Hague – Sebesta, 2008, p. 25). They oppose neoconservativism on the ground that it is too driven by economic policy, free market ideology and globalism and for its uncritical belief in the expansion of democratic capitalism. They argue that the US should detach itself from global trade and international agreements, withdraw from institutions like the UN, NATO or IMF. One of the most prominent paleoconservatives is Pat Buchanan, a political commentator, author, and politician. (Chomsky, 2003) He proposed building a "sea wall" to stop immigrants from "sweeping over our southern border." (Kazin, 2016). He was the less successful precursor of Trump, condemning the global elites from promoting open borders for immigrants who subsequently take jobs away from U.S. workers. Not surprisingly, Buchanan cheered Donald Trump's run for the president of the USA. Buchanan and Trump also share the hostility towards trade deals which in their eyes deindustrialized America. The election of Donald Trump is the ultimate proof that hostility towards globalization gained ground in mainstream politics.

Globalization critique by political class

As globalization is perceived as a multifaceted enemy (Mudde, 2007, p. 196), its criticism can be accommodated by various political subjects, regardless of their ideological underpinnings. Historically, opposition to globalization has been associated with political actors and activists on the left but as the distinctions between Left and Right are fading in politics generally, globalization is no exception. While the intellectual critique is more developed by the Left, the popular discontent with the consequences of globalization has recently been mobilized by political forces of the Right – by populist radical right or even extreme right parties. The success of these parties has largely been ascribed to the salience of issues such as migration, European integration, national security or deindustrialization in the wake of the liberalization of free trade. What is typical for the party family of populist radical right parties (especially in Europe), is the fact that they have abandoned their neoliberal credentials and adopted some centrist or even leftist positions in socio-economic policy. This reconfiguration of their programmatic profile must be seen in the context of deep structural changes induced by globalization and especially its two major implications - the rise of international trade and the intensification of migration flows. As these parties aimed at extending their electoral appeal, they found it convenient to adopt some elements of protectionism and welfare chauvinism. The latest example of such a policy is Marine Le Pen's⁴ aggressive rhetoric against globalization which she called "the root causes of French decline" (Politico, 2017). She argues that the decline can only be reserved by "rolling back the tide of globalization and forcefully reasserting French values and authority" (ibid)

At the same time, these parties embrace nativist ideologies and oppose migration from a socio-cultural point of view, exploiting the recent concerns over the impact of the immense inflow of refugees and migrants to Europe. The so-called migration crisis of 2015 has fuelled xenophobic sentiments throughout Europe, even in countries long seen as immune against resurgent nationalism. Some authors argue that as a result of this development a new political divide (cleavage) between cosmopolitanism and insulation can be observed, replacing the fading divide between Left and Right (Inglehart – Norris, 2016). Communitarian dissidents become ever more numerous, vocal and organized and they challenge the cosmopolitan mainstream. The post-war consensus across partisan lines that globalization brought benefits has gone. More and more parties across Europe veer into nationalism and isolationism instead of addressing the grievances of disgruntled voters. By making political capital out of anti-immigrant sentiment, they legitimize xenophobia which is becoming the new normal in world politics. Paradoxically, globalization was originally meant to overcome xenophobia. But today xenophobia has become one of its unintended consequences (Dudášová, 2016).

While the main benefactors of the discontent with the consequences of globalization are among populist (radical) right parties, the once main voice of protest, the (populist) radical left has sunk into oblivion or irrelevance in many countries, such as France, Italy or the UK. Nevertheless, there are some exemptions, such as Syriza in Greece, Podemos in Spain or Die Linke in Germany. As traditional voters of social democrats are feeling increasingly homeless because of the programmatic reconfiguration of the social democratic agenda, these parties present themselves as the only defenders of the traditionally left values.

According to Fukuyama, the reason for the lack of left-wing mobilization can be attributed to the absence of a plausible progressive counter-narrative to the dominant ideology of the economic libertarian right (Fukuyama, 2012). Instead of developing an ideological as well as a realistic alternative to globalized capitalism, the left returned to the old-fashioned and unaffordable form of social-democracy. The Left simply does not have a remedy for the erosion of the middle-class social base that is a prerequisite of a functioning and stable liberal democracy (ibid). According to Fukuyama, the fact that in the aftermath of the financial crisis, populism has taken primarily a right-wing form, is one of the most puzzling features of our time. His explanation is that left intellectuals replaced Marxism with fragmented intellectual trends that are more cultural than economic in nature, such as multiculturalism, feminism, postmodernism or critical theory. It is impossible to generate a mass progressive movement on the basis of such ideological underpinnings, as most of the working class and the lower-middle class voters are culturally conservative.

4. Conclusions and policy implications

Globalization is a deeply controversial phenomenon because it is an uneven process that does not work for all. Scepticism or downright hostility towards globalization are on the rise. In this article, we identified specific features of the different types of globalization critique and explore how public concerns related to globalization and the intellectual critique are translated into political phenomena. We divide the heterogeneous group of globalization opponents into three main groups (street, elites, political class) with the aim to identify key differences in terms of aspects that are criticized and solutions that are proposed. Subsequently, the political relevance and public resonance of these types of critique were compared.

⁴ Marine Le Pen is the leader of the French populist radical right party Front National.

The globalization critique which manifests itself in public demonstrations and citizens activism is very heterogeneous and thus struggles to preserve some cohesion. Intellectually, the opposition towards globalization has been inspired by influential critical works of (predominantly) left intellectuals. The Left calls for social equality and more legitimate forms of global governance. There is also a strong belief that that the neoliberal economic model is deeply flawed and should be either overturned (the radical version) or replaced by an alternate version (alter-globalization). The thinkers on the right are more concerned with the fading sovereignty of national states. While the intellectual critique is stronger in left milieus, the political mobilization by left-wing parties is weaker than one would expect. Instead the concerns related to globalization are currently exploited mainly by populist (radical) right parties that have adopted leftist rhetoric and program in socio-economic issues and present themselves as advocates of the ignored and forgotten majority. The lack of left-wing mobilization can be attributed to the absence of a plausible progressive counter-narrative to the dominant ideology of the economic libertarian right. On the other hand, the Right successfully combines a socio-culturally toned critique with economic nationalism and welfare chauvinism. While sharing with the Right the criticism of neoliberal capitalism and unrestricted free trade ideology, the Left does not oppose immigration (or at least it does not oppose it from a nativist perspective). This is currently restricting the appeal of left parties which focus on socio-economic dimension of globalization and do not sufficiently address the concerns related to the cultural and political dimensions of globalization.

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Financial Performance of a Company

Katarína Fedorková

University of Economics in Bratislava
Faculty of Business Management
Dolnozemská cesta 1
Bratislava, 852 35
Slovak Republic

E-mail: katarina.fedorkova7@gmail.com

Abstract

Performance of a company. Importance of financial management as a part of corporate management. Evaluation of financial situation in a company as a part of financial management. Financial analysis as a tool of diagnostics of financial situation in a company. Retrospective financial analysis. Prospective financial analysis. Methods of financial performance evaluation. Traditional methods of performance evaluation in a company. Modern methods of performance evaluation in a company. The EVA indicator as one of modern methods of company performance evaluation. The EVA Momentum ratio, its meaning and application. The MVA indicator as the market value added ratio and its application.

Keywords: company performance, financial analysis, EVA ratio

JEL classification codes: G30, G32

1. Introduction

Due to the constantly changing conditions in the business environment, competition is now being steadily increased, making it difficult to achieve greater competitive advantage of companies. Only those that can adapt to the changing conditions, can perform in a long-term. The basic prerequisite for their performance in the long term is the security of their cumulative profits and maximization of their market value where there is needed a certain level of corporate governance, which is also an important part of financial management. This paper is dedicated to the justification of financial management and financial analysis in evaluating the financial performance of companies. We discuss the definition of business performance as well as performance measurement methods with particular emphasis on modern methods that would prefer to increase the market value for the owners. Therefore, in this section we pay attention to the use of indicator EVA - Economic Value Added, which uses economic profit instead of accounting profit.

1.1 Methodology

The content of the analysis of our research is formed by such business results that say a lot about the financial performance of a company and methods of its assessment. Such results include its financial situation through which every business is presented to its surroundings. Among the methods of performance evaluation, we emphasize mainly modern methods, where the focus is put on the indicator EVA in particular. Within the workflows another important step is obtaining data and their sources, which we use data from the scientific literature, technical publications and various annual reports. After receiving the necessary information it is important to select and choose the ones that relate to the given issue, which allows us to characterize the basic theoretical concepts and process status of the issue. Among

the methods used we include analysis and synthesis as a supplement for the purpose of summarizing the given findings, comparison, induction and deduction and scientific method of abstraction, where it is necessary to abstract from certain facts to handle the issue.

2. Company performance

Only businesses that are able to achieve its objectives defined in the strategy, can be considered executive in a long term period. A generally applicable, exact definition of the concept of performance does not exist, because all stakeholders (owners, managers, investors, lenders, banks, business partners and so on) would define it from their own perspective, according to their expectations and requirements. European Foundation for Quality Management (EFQM, 2003) defines performance as a measure of achievement by individuals, groups, organizations and processes. The concept of performance is to be understood as the ability of a company to value the investment in business activities (Frost, 2005). It is the company's ability to be successful and to develop further (Fibrová and Šoljáková, 2005). The most comprehensive business performance can be described as the ability to recover its embedded resources by their activity to produce a profit, increase the value of a company and at the same time it is the ability to ensure the future development (Wagner, 2009). One of the basic business goals of a company is to maximize its market value. Market value is generally a real value, i.e. the amount for which an asset could be exchanged or a liability settled in an arm's length transaction between knowledgeable and willing parties. As reported by Kráľovič and Vlachynský (2011), this term is not equivalent to the term book value (the difference between the amount of company assets and the amount of liabilities measured in accordance with accounting regulations applicable in the country concerned). In this context it is worth mentioning that the value of a company is determined by its performance and is among the preferred measure of business performance, as the only measure that requires full information (Neumaierová, 2005). If we want to increase the value of a company, it is necessary to improve its performance. According to Lesáková (2004), the performance of a company is the company's ability to achieve the desired effects or outcomes, and possibly in measurable units. If we want to measure performance, we must do so in comparison with a defined target value of income (Nenadál, 2004). The objective of measurement is not only to measure, but also to increase the performance. Performance measurement provides a basis for performance management. The purpose of performance management is achieving the stated vision of continuous improvement of all key characteristics of a company, thereby improving performance at all levels of management (Šmída, 2007). From the above mentioned it can be concluded that in any business, it is necessary to measure and evaluate their performance through well-chosen performance indicators. Measuring by certain parameters must therefore always be a part of an ongoing program of analysis, evaluation and improvement of operational performance (Hammer, 2007). According to Marinič (2008), we divide the performance indicators to financial (expressed in monetary units which are an essential source of financial statements) and non-financial (expressed in non-monetary terms). The second aspect divides the indicators to classic (tradition, presenting indicators of financial analysis) and advanced (oriented to create value for owners).

We are able to evaluate the financial performance of a company through its financial situation, which is a summarizing level of expression of all business activities which the company market presents. Its partners perceive it right through it. Usually it transforms into its ability or inability to pay obligations. That is why the evaluation of the financial situation of a company is a substantial part of its financial management. The importance of financial management is to ensure all financial processes in the company (Fetisovová, 2012). It is the process of selecting the optimal alternative of raising money, business capital, and their use in terms of basic financial goals of the company and subject to different restrictive conditions

(Valach, 2003). The basic condition for achieving the financial performance of a company is its financial stability, which is in terms of partial financial goals reflected in securing the required profitability and liquidity. Important role in measuring the financial performance of a company is played by financial analysis of the company, which is the basis of economic analysis of the company results. According to Kislingerová E., et al. (2010), financial analysis can be seen as a set of activities aimed at obtaining and comprehensively assess the financial situation of the company. It serves as a basic mean to diagnose the financial health of a company and prediction of financial distress of the company. It is essential that any financial decision was based on financial analysis (Synek, 2011). Using financial analysis we can uncover the causes that determined the state of corporate finance thus determined the financial situation (Vlachynský, 2009). It is an important area of corporate financial management, for connection between expected results and management decisions and the reality (Královič and Vlachynský, 2011). Financial analysis can be conceived as a retrospective or prospective (Vlachynský, 2009). Retrospective financial analysis (ex post analysis) evaluates the present and the current financial and economic situation of the debtor on the basis of looking into the past. It seeks to clarify the current situation and analyse the current financial situation. In the prevention of financial problems through the forecast financial situation it is appropriate to use prospective financial analysis (ex-ante analysis), which predicts its future development and is able to predict financial distress based on the use of bankruptcy and creditworthy models for the company not to find itself in financial troubles in the future. We can anticipate in which financial position a company should be located, to prosper in the future. The methods of forecasting the financial position must allow a reasonable reliability, positioning the company in the category of prosperous or lame companies (Zalai, 2013).

2.1 Methods of measurement of a company financial performance

One of the basic methods of financial analysis are classic methods for assessing business performance, which include proportional financial indicators. These form a major tool for determining the performance and stability of a company (Kráľovič and Vlachynský, 2011). Within describing the financial situation they help to get information about basic financial characteristics of a business and can tell us much about a company and its current financial situation. These include liquidity ratios (speaking of payment ability of the company where liquidity measures the ability to pay corporate obligations properly, on time and in full amount), profitability indicators (talking about the profitability of a company, on the outcome of its enterprise efforts. They compare profit with the volume of invested capital), debt ratios (talking about capital structure, determine the extent to which company uses foreign resources) and indicators of activity (explaining the extent of use of assets and the efficient use of assets. They complete information on profitability, which is influenced by the use of an asset deal). Indicators of market value are used by rating companies that are listed on a stock exchange, they show a view of the capital market. At the same time it should be borne in mind that it is not enough to calculate various indicators separately and conclude for each indicator, because every business is unique and financial analysis should be taken ultimately comprehensively, taking into account all the results and the relationships between them.

Classic performance indicators are based on displaying the information obtained in the past and do not always have to provide an objective view of potential growth performance of the company in the future. They are based on profit maximization as the basic objective of a business. Main business objective is to maximize the market value of a company's profits. In order to fulfil this objective, it is not enough to focus only on the performance of the company to maximize profit. It is questionable whether those indicators have sufficient explanatory power of business performance. Unless selected indicators are not used properly in a mutually suitable combinations, we can speak about a certain complexity of the analysis. However,

many times it is not enough and it does not entirely give objective conclusions of the financial analysis. It is this lack that is addressed by existence of modern trends in business performance assessments which take into account maximizing value for the owner and are based on value - oriented management. A company must be able to invest capital in a way that would increase its economic benefits and values. This includes indicators MVA - Market Value Added, therefore, market value added and highly preferred indicator of financial analysis, EVA - Economic Value Added.

EVA is the value that is added by operational (economic) activity of the enterprise, i.e. Economic Value Added. It prefers economic profit, which is made up of different yields and capital costs incurred on capital, which includes financial costs and so called alternative costs (costs that represent lost profit - represent income which the owner (investor) would acquire, if they invested their embedded resources elsewhere to comparable investments with the same risk). EVA is the difference between net operating profit after tax and the average cost of total capital, which the profit produces:

$$EVA = NOPAT - WACC \times K^{1}$$

NOPAT in the Slovak conditions does not exist, and therefore it should be calculated. It represents net profit from the economic and financial activities plus interests. When calculating, there is the need to exclude any items that are not related to economic activity, for example proceeds from sale of assets. It's EBIT after tax, i.e. EBIT(1-T)². NOPAT is mainly influenced by the amount of operating result which influences it positively. The reduction of taxes acts positively too. A reason on why it takes into consideration the operating profit is that it is a crucial source of profits, especially in the industrial and commercial enterprises, and therefore its use is highly effective.

WACC - average cost of total capital, the cost of equity and loan capital. Owner's equity costs are the profit sharing or dividends paid and the cost of debt capital consists of interest expense which a company pays for the bank loans. It does not include commercial credit. The amount of WACC is affected by proportion of equity capital to total capital invested.

K - Total invested capital mainly consists of a long-term capital, which results in costs for the company representing the price, which it pays for using the capital. The total amount of capital invested is also a determining factor of EVA indicator. It's multiplying by WACC we obtain the value that the company would pay if it paid costs equal to WACC for the capital.

According to Stewart, a recent innovation taking into account economic profit is EVA Momentum indicator (Stewart, 2009), which represents the ratio of change in economic profit generated by the company for a certain period and the revenues reported for the previous period, namely:

$$EVA\ Momentum = \frac{\Delta EVA}{Sales\ t-1}$$

The indicator should be maximized, and its advantage is that it cannot be manipulatively increased. Many traditional performance indicators can lie about corporate health and new indicator EVA Momentum allows investors and managers to verify and check it (Geoff Colvin on Business, 2010). Its increase can be achieved only if there is real value creation. By indicator referring to the change in economic performance it puts companies to the same level as it abstracts from property amenities of enterprises and focuses only on changing the

¹ Positive evaluation of company performance is only on condition that EVA > 0. A revenue from capital is higher that paid price is for it. Therefore there is creating a value from owners.

 $^{^{2}}$ T = tax rate

performance of businesses. EVA Momentum basic characteristics can be summarized in the following categories (Sivák and Jančovičová Bognárová, 2011):

- it is based on economic rather than accounting earnings based on EVA indicator,
- it is suitable for inter-company comparison, it is based on the year change of the value of EVA indicator and not on the absolute value of EVA in a given year and the change in economic profit is given in proportion to turnover. In this way, the absolute becomes relative indicator, which allows comparison of results with other companies:
 it is suitable for maximization. A company which has a zero value of this indicator nor increases neither diminishes its economic profit. In terms of economic significance the
- positive Eva Momentum is good, negative is bad and zero is a turning point,
 it serves as an early warning system. The decline of the indicator is a warning to
 managers that business performance is declining.

As Sivák (2011) aptly stated further, maximizing EVA Momentum indicator can be a suitable company the development of financial target a in performance. Indicator MVA - Market Value Added, is a value added by market and expresses the difference between the value of a company and the capital invested in it. As long as investors are waiting for the high yield, or low risk, they are buying stocks and their price rises. If they expect a high risk, or low profitability, shares are sold and their value decreases. Thus, if the market value of equity exceeds its carrying amount, the enterprise will create value for the shareholder (Šulák and Vacík, 2004). MVA expresses the internal performance of the company and how the company was accepted and valued by the market. The logical assumption therefore is placing the shares on a publicly traded market. In practice the indicator cannot be used by companies with private equity and other types of companies.

3. Conclusions and policy implications

The paper aimed to provide a comprehensive view on the issue of the financial performance of the company, where the achieving of complexity has been in underlining the importance of corporate financial management as a part of corporate governance, financial analysis as means of diagnosis of financial situation through the use of classical and modern methods for measuring business performance. State of the company solvency at the given moment is reflected by liquidity ratios. An important indicator of business performance is the rate of return that is reflected by indicators of profitability. Values of these indicators should reflect the efforts of the company to maximize efficiency as much as possible and should also testify about whether the investment in a company is an appropriate choice for the investor. Among inconsiderable financial analysis there are included indicators of the debt ratios, activity and market value of a company. What is important is the fact that the actual value of individual financial indicators need to be correctly interpreted, but especially to analyse their interactions that are related. Any analysis must produce a comprehensive picture of the examined object. Depending on the objective of the analysis, sometimes isolated use of indicators does not provide a sufficient picture of the financial situation. Therefore, the financial analysis should be enriched by the application of modern methods of assessing the performance of a company, including EVA indicator that takes into account the economic profit and the improved momentum EVA indicator that takes into account the real value creation of the company.

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European Union and the Republic of Korea – the FTA Sectoral Assessment

Kristína Gardoňová

Slovak Academy of Sciences Institute of Economic Research Šancová 56 Bratislava 811 05 Slovak Republic E-mail: gardonova@gmail.com

Róbert Prno

Slovak Academy of Sciences Institute of Economic Research Šancová 56 Bratislava 811 05 Slovak Republic E-mail: roboprno@gmail.com

Abstract

The Free Trade Area (FTA) agreement between the EU and South Korea is the most ambitious trade agreement negotiated by the EU and simultaneously the first trade deal with an Asian country. Due to the polemic about economic and social benefits of the FTA as well as mismatches in forecasts of future trade development under the FTA, and because of some concerns regarding the development of specific sectors we decided to have a close look at the most discussed and feared sectors of the EU trade, such as the Motor Vehicle, the Textile and the Food Industries, or the Machinery and the Medical Devices Industry. We analysed them with the goal to evaluate the anticipated impact of the EU-South Korea FTA after several years. Although figures reveal evident positive impact in favour of the EU, the long-term results not only from the trade perspective can be, however, more profitable for South Korea.

Keywords: free trade agreement, trade balance, import, export

JEL classification codes: F13, F14, F15

1. Introduction

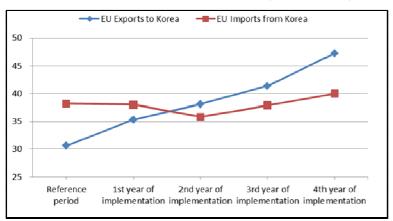
This year (2017) is the 6th anniversary of the EU-South Korea FTA establishment. Although it isn't sufficient time to provide a complex analysis of the deal, such as the FTA, some changes and trends from the economical point of view on both sides has been already observed. The importance of the relationship between the two key world economies is underlined by the fact that it can also be a basis for strengthened cooperation in global or political questions, such as human rights, counter-terrorism, as well as, climate changes or energy security.

Studies are showing that the FTA between South Korea and the EU has been far more beneficial for the EU than South Korea (European Union, 2016). It is also confirmed by the figures which show a significant annual increase in the exports from the EU to South Korea, while the import is more-less stagnating. After one year of the FTA existence, as it is shown

in the Chart 1, even the negative balance between exports and imports has been changed into a positive one, in favour of the EU. The current developments, as well as, economic outlooks show this trend also for the near future. In total, during the first four years of existence of FTA the European export to Korea increased by 55% from 31 billion EUR (2010) to 47 billion in 2015. Although the overall development looks positive, it can be different when we have a look at separate sectors. The biggest uncertainty about the trade development could be felt in the following sectors, which will also become the subject of this study:

- Motor Vehicle Industry,
- Textile Industry,
- Medical Devices and Pharmaceutical Products,
- Machinery,
- Food.

Chart 1
The volume of trade – the EU vs. Korea (2010 - 2015)



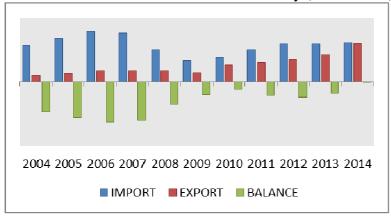
Source: European Union. (2016). Report from the Commission to the European Parliament and the Council: Annual Report on the Implementation of the EU-Korea Free Trade Agreement.

The sectoral analysis is based on Standard International Trade Classification (SITC) maintained by the United Nations (see Appendix 1). Trade statistics have been obtained from the official Eurostat database. Due to the purpose of this study and data availability we have analysed last ten years to see trends before and after FTA establishment.

2. Motor Vehicle Industry (SITC: 78)

The motor vehicle industry, specifically automotive industry, was crucial for the FTA creation. Italy even temporarily blocked the EU-Korea FTA establishment because of fears of the cheap car import and safety standards differences. As we discuss later, it is, however, groundless. Korean cars are characterized by the relatively good performance and popularity in the EU. This is also the reason why Korean leading carmakers such as Hyundai or Kia have established their plants in the EU.

Chart 2
The volume of trade – Motor Vehicle Industry (2004 - 2014)



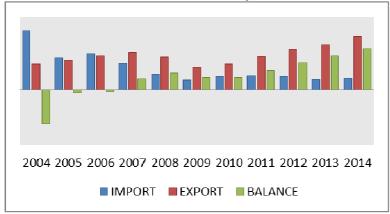
Source: authors

This fact plays an important role in our analysis of FTA agreement and has to be considered. Due to Korean investments in the EU, their cars are not exported, but manufactured directly in the EU. This is the reason why Korean Motor Vehicle Industry trade has not recorded any significant increase. On the other hand, recovery after the global crisis in combination with FTA, raised European exports to new historical records. As it can be seen in 2014, the Exports-Imports difference has been the lowest in the period analysed. It looks like the FTA helped European Motor Vehicle Industry to recover after the financial crisis. It is important to note that the first car was invented in Europe. Since the first car companies are mainly European ones, it means that not only car companies, but a wide framework not of suppliers, as well as, aftermarket services, comes from Europe. Local brands are able to satisfy 85 % of EU car purchases (Needham, 2013). With the respect to all facts mentioned, it is clear that there is relatively small space for Asian (and the US) car producers. On the other hand, focus of Korean brands on medium range cars such as Hyundai and Kia are becoming very popular in the EU. Very good sales figures have been reported also by the European car makers in Korea. Korean people prefer mainly European premium cars (BMW, Mercedes, Porsche, etc.). As the German Association of the Automotive Industry (VDA) has declared, German car brands expand in South Korea faster than the market does (VDA-Verband der Automobilindustrie, 2015). The improvement of business has also been recorded by French automaker Citroen, as well as Italian Fiat. Finally, it is important to remind, again, that although the EU motor vehicle industry sector has benefited from the FTA, the Korean car makers have chosen a different approach to the market – they have built factories in the EU. Such an approach means no impact on the trade market but will enhance their economical position in the EU region.

3. Textile Industry (SITC: 84)

Textile industry was, after the car industry, the second most feared sector regarding EU-Korean FTA. The suspensory was mainly because of possible significant increase in imports from Asia into the EU. The forecast is based on the assumption that Korea will benefit from immediate tariff reductions for textile industry and their comparative advantage. Studies forecast that the impact of the FTA on EU output is minimal, but negative. Some forecasts even talk about the negative impact on the EU sectorial deficit by 1.5 % (Edwards et al., 2007).

Chart 3
The volume of trade – Textile Industry (2004 - 2014)



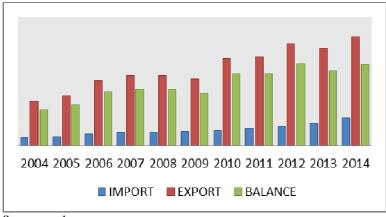
Source: authors

Real figures are, however, a bit different in comparison with expectations. Except the first three years of the decade analysed, the balance between exports and imports is positive in favour of the EU. Chart 3 shows no dramatic change in the development of textile goods shipments from Korea to the EU. On the other hand, the EU has significantly increased the value of goods exported from EU to Korea. Finally, it is possible to see that the difference between the value of textile goods exported and imported has been positive for the EU since 2007. This trend is still running and positive results are expected also for the next decade.

4. Medical Devices and Pharmaceutical Products (SITC: 54+774+872)

Pharmaceutical and medical devices are two of the EU's best performing industries which employ more than million people. The relatively strong positive development of European exports in these sectors is mainly due to the strong focus on R&D. The importance and value of this sector is also confirmed by the Chart 4.

Chart 4
The volume of trade – Medical Devices and Pharmaceutical products (2004 - 2014)



Source: authors

As it can be seen, this industry provides the highest trade surplus for the EU. For example in 2014, the European exports to Korea was roughly three times higher than imports. The trade between the EU and Korea regarding medical and pharmaceutical industries was accompanied by unethical business practices used and weak protection of intellectual property rights. These issues are expected to be removed mainly thanks to cooperation. The EU-Korea

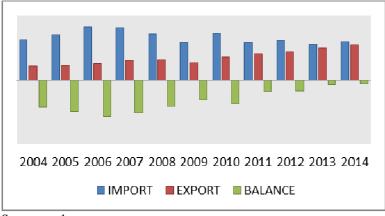
FTA established a single set of stable, permanent principles and rules for the improvement and enhancement of trade with medical and pharmaceutical goods. Finally, the trend should be improving ongoing - year by year. The reason is that Korea should continuously eliminate the duties implied on EU products over the 5 years for medical devices and 3 years for pharmaceuticals.

5. Machinery (SITC: 7)

The mechanical industry is a strategic sector for the EU. However, tracking of this sector is quite complicated since some studies consider machinery to be a separate sector and some of them put it along with transport equipment. Our study follows the second option in line with SITC classification and category No. 7 – Machinery and Transport Equipment.

Chart 5 shows an interesting phenomenon – a gradual increase in the EU exports and simultaneously a decrease in imports from Korea. It means that the balance is slightly improving, but still in favour of South Korea. This industry is strategic for the EU due to a strong comparative advantage. The improvement of balance is an important signal mainly for the SMEs (small and medium enterprises), which represent the majority of exporters in the industry. Indeed, the balance is improving in favour of the EU. Based on expectations of the FTA, one may conclude that progress is not as significant, as expected.

Chart 5
The volume of trade – Machinery (2004 - 2014)

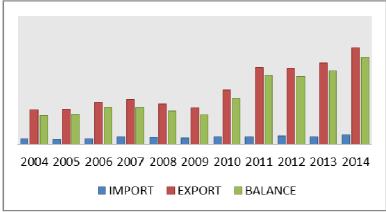


Source: authors

6. Food (SITC: 0)

Food is indispensable for human life. People are not able to live without food. Respecting this fact, food, or agriculture in general, is naturally a very sensitive sector of each economy – from the quantitative, as well as, qualitative point of view. It is clear that food liberalization is in the interest of many people – especially in developed countries, where policy makers are going to sign a trade agreement. For example, when FTA between the US and Japan was discussed 78% of the Japanese people feared of the future food supply (Yamashita, 2015). Moreover, tradition and cultural habits have also a strong impact and, therefore, only minimum change of trade flows was expected. In general, there are two main reasons why agri-food sector expectations were not so significant (Bendini, 2010). The first one is that overall food trade flows, as well as, the importance of agricultural production in each economy is relatively low. The second one has something to do with the diversity of agricultural products. While Korea is focused on exports of rice, the European export is focused on meat and alcohol.

Chart 6
The volume of trade – Food Industry (2004 - 2014)



Source: authors

Actual figures are however different. While imports of food and beverages from Korea stagnates, exports of the EU have increased significantly. The EU is currently the third exporter of food products to Korea (behind US and China), mainly due to the relative good favour of meat-based products, alcoholic beverages, such as wine or whisky, vegetable oils and dairy products.

Finally, it is possible to say that food industry has not matched expectations and, although, minimum trade changes are forecasted, the EU exports to Korea is growing progressively.

7. Conclusion

Although, it is an early stage to access the global benefits for one or another region it is clear and the evidence shows that the EU benefits far more from the FTA in comparison with South Korea. The sectorial analysis shows the positive development of the EU trade in every sector explored. The negative trade balance is seen only in Machinery and Motor Vehicles Industry. The given trend shows, however, that the negative balance should be turned into a positive one in near future. Indeed, the sectorial analysis also declares that fears of the FTA establishment have not been confirmed so far. The massive imports of cheap cars, worsening of safety standards or cheap textile imports have not been observed. Indeed, we have taken into account that the approaches of Europe and Korea is different. It is apparent that while Europe is focused more on exports, the South Korea has decided on foreign direct investments - to build factories in the EU. Although, this approach does not have a direct impact on trade statistics it will enhance the economic importance in the region. From the long-run perspective, this may be considered to be a more important benefit of the FTA.

Table 1Sectoral analysis of the EU and South Korea FTA

Sector	EU trade balance	EU trend	Fears confirmed?
Motor Vehicle Industry	negative	positive	No
Textile Industry	positive	positive	No
Medical Devices and Pharmaceuticals Products	positive	positive	No
Machinery	negative	positive	No
Food	positive	positive	No

Source: authors

Table 1 provides the summarization of our sectoral analysis. As mentioned, we answered three basic issues discussed before the FTA establishment – what the trend is, if there is a change and if fears in particular sectors are confirmed or not.

The intention of this research was to evaluate trade before and after FTA establishment. The article can be also a base for future research. It can be interesting to review turnover of some global corporates or analyse their market share abroad.

Finally, one may conclude that the trade between the EU and South Korea is boosted, although, not all trade barriers has been released yet. The total barriers elimination is expected for the year 2021. In this time it will be possible to evaluate the EU-South Korea FTA in more objective way.

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Appendix 1

Standard International Trade Classification, Rev.3

- 0 Food and live animals
 - 00 Live animals other than animals of division 03
 - <u>01</u> Meat and meat preparations
 - <u>02</u> Dairy products and birds' eggs
 - <u>03</u> Fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof
 - 04 Cereals and cereal preparations
 - 05 Vegetables and fruit
 - <u>06</u> Sugars, sugar preparations and honey
 - <u>07</u> Coffee, tea, cocoa, spices, and manufactures thereof
 - 08 Feeding stuff for animals (not including unmilled cereals)
 - <u>09</u> Miscellaneous edible products and preparations
- <u>1</u> Beverages and tobacco
 - <u>11</u> Beverages
 - 12 Tobacco and tobacco manufactures
- <u>2</u> Crude materials, inedible, except fuels
 - 21 Hides, skins and furskins, raw
 - 22 Oil-seeds and oleaginous fruits
 - 23 Crude rubber (including synthetic and reclaimed)
 - 24 Cork and wood
 - 25 Pulp and waste paper
 - <u>26</u> Textile fibres (other than wool tops and other combed wool) and their wastes (not manufactured into yarn or fabric)
 - <u>27</u> Crude fertilizers, other than those of division 56, and crude minerals (excluding coal, petroleum and precious stones)
 - 28 Metalliferous ores and metal scrap
 - <u>29</u> Crude animal and vegetable materials, n.e.s.
- 3 Mineral fuels, lubricants and related materials
 - 32 Coal, coke and briquettes
 - 33 Petroleum, petroleum products and related materials
 - 34 Gas, natural and manufactured
 - 35 Electric current
- <u>4</u> Animal and vegetable oils, fats and waxes
 - 41 Animal oils and fats
 - 42 Fixed vegetable fats and oils, crude, refined or fractionated
 - <u>43</u> Animal or vegetable fats and oils, processed; waxes of animal or vegetable origin; inedible mixtures or preparations of animal or vegetable fats or oils, n.e.s.
- <u>5</u> Chemicals and related products, n.e.s.
 - <u>51</u> Organic chemicals
 - <u>52</u> Inorganic chemicals
 - 53 Dyeing, tanning and colouring materials
 - 54 Medicinal and pharmaceutical products
 - <u>55</u> Essential oils and resinoids and perfume materials; toilet, polishing and cleansing preparations
 - <u>56</u> Fertilizers (other than those of group 272)
 - <u>57</u> Plastics in primary forms
 - <u>58</u> Plastics in non-primary forms
 - <u>59</u> Chemical materials and products, n.e.s.
- 6 Manufactured goods classified chiefly by material
 - 61 Leather, leather manufactures, n.e.s., and dressed furskins

- 62 Rubber manufactures, n.e.s.
- 63 Cork and wood manufactures (excluding furniture)
- 64 Paper, paperboard and articles of paper pulp, of paper or of paperboard
- 65 Textile yarn, fabrics, made-up articles, n.e.s., and related products
- 66 Non-metallic mineral manufactures, n.e.s.
- 67 Iron and steel
- 68 Non-ferrous metals
- 69 Manufactures of metals, n.e.s.
- <u>7</u> Machinery and transport equipment
 - 71 Power-generating machinery and equipment
 - <u>72</u> Machinery specialized for particular industries
 - 73 Metalworking machinery
 - 74 General industrial machinery and equipment, n.e.s., and machine parts, n.e.s.
 - 75 Office machines and automatic data-processing machines
 - <u>76</u> Telecommunications and sound-recording and reproducing apparatus and equipment
 - <u>77</u> Electrical machinery, apparatus and appliances, n.e.s., and electrical parts thereof (including non-electrical counterparts, n.e.s., of electrical household-type equipment)
 - <u>78</u> Road vehicles (including air-cushion vehicles)
 - <u>79</u> Other transport equipment
- <u>8</u> Miscellaneous manufactured articles
 - <u>81</u> Prefabricated buildings; sanitary, plumbing, heating and lighting fixtures and fittings, n.e.s.
 - <u>82</u> Furniture, and parts thereof; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings
 - 83 Travel goods, handbags and similar containers
 - <u>84</u> Articles of apparel and clothing accessories
 - 85 Footwear
 - <u>87</u> Professional, scientific and controlling instruments and apparatus, n.e.s.
 - <u>88</u> Photographic apparatus, equipment and supplies and optical goods, n.e.s.; watches and clocks
 - 89 Miscellaneous manufactured articles, n.e.s.
- 9 Commodities and transactions not classified elsewhere in the SITC
 - <u>91</u> Postal packages not classified according to kind
 - 93 Special transactions and commodities not classified according to kind
 - 96 Coin (other than gold coin), not being legal tender
 - 97 Gold, non-monetary (excluding gold ores and concentrates)
- <u>I</u> Gold, monetary
- <u>II</u> Gold coin and current coin

Transformation of a Business Model Based on Stages of Development in a Startup

Ráchel Hagarová

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: rachel.matuskova@gmail.com

Abstract

Startups are very attractive nowadays. They are considered as a new kind of business linked with innovations and breaking down barriers. However, startups represent a hot topic, there is very little we know about inner processes and activities. The focus of this article are the metamorphoses of a business model during development of a startup. We would like to see how individual blocks of a business model change in various development stages: which blocks are important in the first phases and which ones in later stages.

Keywords: startup, business model, blocks, development

JEL classification codes: M13

1. Introduction

Startups are new topic in academic world and also in some less developed business environment. In this paper is presented quantitative research of Slovak startup. One of the differences between startup and classic small business is in business model. Classic small business, even in its beginning, has clear business model. Model in this case is not something new, owners can be inspired in business environment. On the other hand, startups are bringing innovation into market. And it concerns business model, as well. Founders need to find out the best model for their idea, or to innovate classic business model. Business model is medium for business idea realization.

One general problem is exact definition of startup. Steve Blank (2012), one of the best known startup author and guru wrote that startup is not a smaller version of a large company. Startup is a temporary organization in search of scalable, repeatable, profitable business model. Research by Harvard Business School shows that 75 % startups fail (Blank, 2013). Thanedar (2012) described the biggest difference between small business and startup. Small businesses have the same goal - profitability and stabile long term position among competitors. Startups are aimed at revenue streams in short term view and growth potential. Thiel (2014) defined startups as life style. He wrote that startups are based on principle of need to work with other people in purpose to achieve something. In purpose of success they need to stay small. In positive light, startup is the biggest group of people, that founder can imagine to build different future with. Thiel also works with atmosphere in startup team, different mindset, youth which bring activity and reactivity into startup. Ljudvigova studied role and importance of team for success of startup. Ljudvigová (2016) wrote that great idea and product is not the only important thing. Important is also to put together great people, which are able to create and run new business. Results of research show the importance of vertical as well as horizontal leadership.

Second issue of article and presented research is importance of business idea in startup. Business idea stays at the beginning of all startups. Founder builds company-startup around idea, which he believes is the best and original. As we know, not only the best idea can guarantee success. This is why business model is so important, especially in case of startups. Zagoršek (2016) studied business model and strategies of startups. In his work, he identified the positive impact that strategy of higher price has on the acquisition of paying customers.

Third matter of article is business model. Research is based on business model Canvas from authors Osterwalder and Pigneur. Model Canvas is built on 9 blocks, which should cover all important parts of business. Model Canvas is used the most in business environment and also among startups. Based on own experiences, founders of startups are familiar just with model Canvas. Investors or incubators often require model Canvas, also.

Model Canvas has nine building blocks – Value Proposition, Customer Segments, Distribution Channels, Customer Relationship, Key Resources, Key Activities, Key Partners, Revenue Streams, Cost Structure (Osterwalder, 2009).

- 1. Customer segment the most important groups of customers to which company constitutes value. Company should define customer segments with same needs, to which company is offering same services or products.
- 2. Value propositions value is the reason why customers buy products or services from specific company. It is solution of customer's problems that satisfy their needs.
- 3. Channels ways by which the value is delivered to customers. This block is about communication between customer and company, how company communicates value to customers.
- 4. Customer relationship direct relationship between business and customer, which occurs in the sales process or in the process of cooperation. This block describes essence of relationship that organization has with various customer segments.
- 5. Revenue streams revenues generated from customer segments
- 6. Key resources represented by the most important inputs that company needs to create and deliver value and also for working all other blocks.
- 7. Key activities key actions needed to make all blocks and whole company work in order to create and deliver value.
- 8. Key partnership key partners which business needs as help from outside, suppliers, purchasers, subscribers.
- 9. Cost structure in this block are represented all costs that business will spend in order to make business model work.

The term business model came to prominence in the 1990s, largely as a result of the emergence of the Internet economy. Muzellec at al. opined that during dot com bubble period, many businesses used inappropriate and incorrect business models. The most important part of business model is value proposition, and authors considered poorly expressed value is often the cause of failure models. Today, issue of business models is more complex and when company has well-constructed business model can easily identify customers, value proposition, and potential profit through revenue and cost structure. Muzellec et. al. claimed that business model is connection between strategic management and marketing theories (Muzellec et al., 2015).

1.1 Objective, methods and research sample

Subject of research is business model in various stages of startup development. The main aim of the article is to research changes of business model through development of startup (development of business idea and financing cycle). The second aim of the article is to identify the most developed block from business model. Presented results are based on the

research from the VEGA project *Podnikateľské modely a podnikateľské stratégie startupov*. The research was divided into 3 phases, in which project team members collected data.

The matter of this article is presentation and interpretation results from first phase of research. This phase took place in October-December 2015. In research sample was included 76 startups founded on Slovakia. Most of the startups worked in Slovakia, but some of them had activities abroad. But all of them were initially founded in Slovakia. Regarding to sector, in sample are all kind of startups – software and hardware oriented. Survey is based on formalized questionnaire, which includes closed as well as open questions. Every startup included in research sample was visited personally by one of research team member. Questionnaire was used as guideline for open conversation between researcher and startup team member (mostly founders). Thanks to this, we were able to manage data collecting as open conversation which led to more honest and accurate answers. Open questions are great way to get better understanding of closed one and results from statistics. Article reflects results from 1st phase of research.

In this article are presented only results about business model and it's block in connection to Development of business idea and Cycle of financing. Development of business idea is ranked on scale from 1to 5,in which 1 – idea/concept/research, 2 – development of product, 3 – prototype/ testing, 4 – firs revenues, 5 – repeating revenues. Cycle of financing is valuation of development based on cycle of financing. Scale in this is: 1 – pre-seed capital (in investors case it is angel investor, in this case exist idea, which need to be developed), 2- seed capital (finances needed for start, work on product, prototyping, customer research), 3 – series A/B, capital needed for initial start and business developing (startups already have some customers, is generating some revenues), 4 – business developing capital (mezzanine capital), 5 – IPO. Business model blocks are examined in percentage share of individual items and also on scale of their development. Scale is general: 1 – none, 2 – first idea, 3 – concept, 4 – realization,5 – complete or nearly complete functionality.

2. Results

As first we present basic personal characteristics about Slovak startups. In the Table 1 are summarized information about founders and basic startups characteristic.

Table 1Basic information about Slovak startups

Mean	Stdev	Modus	Median
2,32	0,93	2	2
3,87	0,57	4	4
2,49	0,99	2	2
5,63	3,33	4	5
1,84	1,82	1	1,5
	2,32 3,87 2,49 5,63	2,32 0,93 3,87 0,57 2,49 0,99 5,63 3,33	2,32 0,93 2 3,87 0,57 4 2,49 0,99 2 5,63 3,33 4

^{*}scale: 1 - 18-25.2 - 26-30.3 - 31-35.4 - 36-40.5 - over 41

The age of leading person or founder of startups is between 26 to 30 years (mean is 2,32, so it is closer to level 2 on our scale). Leading person achieved, in general, higher education (mean is 3,87 which is closer to 4.th level on our scale and Modus, Median is also 4). The

^{**}scale: 1 – elementary, 2 – secondary education, 3 – upper secondary, 4 – higher education-master's degree 5 – Phd./3.rd degree higher education

^{***}scale: 1 - none, 2 - to 5 years, 3 - to 10 years, 4 - to 15 years, 5 - 15 and more years Source: own processing by the Author

practice or experiences before founding this particular startup founders have something between scale 2 and 3, but closer to 2. It means around 5 years of practice length. Average Slovak startup team has 5 to 6 members. And startups exist almost 2 years.

 Table 2

 Basic information about startup's development

	Mean	Stdev	Modus	Median
Originality of business idea*	3,76	1,26	5	4
Development of business idea **	3,66	1,09	4	4
Cycle of financing ***	2,36	0,80	2	2

^{*}scale: 1 – local, 2 – national, 3 – middle European, 4 – European, 5 – worldwide

In the Table 2 are listed basic characteristics about business idea and level of development of startups. Originality of business idea is almost at 4th level on scale. Mean is 3,76 and Modus is 5, Median 4, so we can easily say that originality is European. Development of business idea is 3,66, which is in the middle between level 3 and 4 on our scale. But Modus and Median are both at 4. Under this we can say that business idea is developed in 4th level – first revenues.

Mean in case Cycle of financing is 2,36, Modus and Median are 2. Based on this we can claim that Cycle of financing is in general in seed phase. Development of business idea is overtaking Cycle of financing more than one phase (precisely 1,30).

2.1 Development of business model's blocks

At the Table 3 bellow we can see development of individual blocks from business model Canvas.

Table 3Development of business model and its blocks in Slovak startups

	Mean	Stdev	Modus	Median
Value Proposition	4,15	0,97	5,00	4,50
Customer Segments	3,90	0,73	4,00	4,00
Channels	3,62	1,29	5,00	4,00
Customer Relationship	3,84	1,12	4,00	4,00
Key Resources	3,91	1,07	4,00	4,00
Key Activities	3,80	1,01	4,00	4,00
Key Partners	3,50	1,34	5,00	4,00
Revenue Streams	3,11	1,04	3,80	3,20
Cost Structure	3,95	1,16	5,00	4,00
Business Model	3,75	0,82	4,38	3,95

Source: own processing by the Author

^{**}scale: 1 – idea/concept/research, 2 – development of product, 3 – prototype/ testing, 4 – firs revenues, 5 – repeating revenues

^{***}scale: 1 - pre-seed capital, 2 - seed capital, 3 - series A/B, capital needed for initial start and business developing, 4 - business developing capital (mezzanine capital), 5 - IPO Source: own processing by the Author

The most developed, in general, is Value Proposition. On the other side, the least developed is block Revenue Stream. This is clear discrepancy, startups cannot make revenues from their value. In many cases startups do not have model to monetize value from product/service. That means, that customer see value from product/service, but payment methods are not suitable for him. Second explanation can be, that value is only seeming, customers do not share founder's/s' opinion on value. Or startup is delivering value to wrong customers. We can see that business model itself in developed in 3,75 and Value Proposition 4,15 stage. Value Proposition itself is developed at higher level that complex business model. Valuation of business model lies on Value Proposition, for the most part.

Table 4Number of startups in development phases of business model blocks

	=1	>=1 and <=2	>2 and <=3	>3 and <=4	>4 and <=5	Total
Value	0,00	8,00	7,00	14,00	47,00	76,00
Proposition					•	
%	0,00	10,53	9,21	18,42	61,84	100,00
Customer Segments	0,00	2,00	10,00	35,00	29,00	76,00
%	0,00	2,63	13,16	46,05	38,16	100,00
Channels	4,00	16,00	10,00	21,00	25,00	76,00
%	5,26	21,05	13,16	27,63	32,89	100,00
Customer Relationship	3,00	9,00	9,00	31,00	24,00	76,00
%	3,95	11,84	11,84	40,79	31,58	100,00
Key Resources	1,00	10,00	11,00	27,00	27,00	76,00
%	1,32	13,16	14,47	35,53	35,53	100,00
Key Activities	0,00	10,00	17,00	27,00	22,00	76,00
%	0,00	13,16	22,37	35,53	28,95	100,00
Key Partners	7,00	13,00	15,00	17,00	24,00	76,00
%	9,21	17,11	19,74	22,37	31,58	100,00
Revenue Streams	0,00	16,00	20,00	27,00	13,00	76,00
%	0,00	21,05	26,32	35,53	17,11	100,00
Cost Structure	1,00	12,00	11,00	18,00	34,00	76,00
%	1,32	15,79	14,47	23,68	44,74	100,00
Business Model	0,00	2,00	14,00	27,00	33,00	76,00
%	0,00	2,63	18,42	35,53	43,42	100,00

Source: own processing by the Author

In the Table 4 is presented frequency of startups and their business model block through their phases. The substantial part of development of blocks lies in 3rd and 4th phases.

Table 5Average development of business model blocks in phases of Development of business idea

	Developmen					
Blocks of Business model	1	2	3	4	5	Mean
Number of startups in phase	3	8	20	26	19	-
Value Proposition	3,00	3,00	3,78	4,60	4,61	4,15
Customer Segments	3,56	2,96	3,55	4,33	4,14	3,90
Channels	3,00	2,13	3,15	4,08	4,21	3,62
Customer Relationship	1,67	2,75	3,40	4,35	4,42	3,84
Key Resources	3,00	2,75	3,45	4,38	4,37	3,91
Key Activities	3,00	2,63	3,40	4,15	4,37	3,80
Key Partners	3,33	2,50	3,40	3,73	3,74	3,50
Revenue Streams	2,20	1,85	2,31	3,51	4,06	3,11
Cost Structure	2,67	2,63	3,45	4,58	4,37	3,95
Business Model	2,82	2,58	3,32	4,19	4,25	3,75

Source: own processing by the Author

Table 6Average development of business model blocks in phases of Cycle of financing

	(Cycle of financing - phases							
Blocks of Business model	1	2	3	4	5	Mean			
Number of startups in phase	9	36	27	3	1	-			
Value Proposition	3,67	3,93	4,48	5,00	5,00	4,15			
Customer Segments	3,67	3,76	4,10	4,33	4,67	3,90			
Channels	3,56	3,14	4,07	5,00	5,00	3,62			
Customer Relationship	3,00	3,72	4,19	4,33	5,00	3,84			
Key Resources	3,56	3,72	4,19	4,33	5,00	3,91			
Key Activities	3,33	3,58	4,15	4,33	5,00	3,80			
Key Partners	3,22	3,36	3,74	4,33	2,00	3,50			
Revenue Streams	2,38	2,68	3,69	4,47	5,00	3,11			
Cost Structure	2,56	3,72	4,63	4,33	5,00	3,95			
Business Model	3,21	3,51	4,14	4,50	4,63	3,75			

Source: own processing by the Author

In the Table 5 and the Table 6 is presented reallocation of average development of individual blocks in separate phases of Development of business idea and Cycle of financing. These tables present transformation of business model and its block. In tables are average development of every block in individual phase of Business idea and Cycle of financing. We can see how blocks and model itself is changing in every phase of startup's development. Blocks and business idea are not equally developed. Development in business idea is bigger from phase 1 to 5. In case of business model it starts at almost 3rd stage and ends a little above 4th. Similar situation is in Cycle of financing. Development of blocks smoothly rises along with development of idea and financing. In the Table 5 important part of sample lies in phase 3, 4, 5. In Table 6 it is in phase 2, 3. Again, we can see shift down in case of startup's development based on Business idea and Cycle of financing.

3. Discussion and conclusion

Startups are young, based on the age of founders and leaders. Founders are educated and have some experiences from previous projects or work places. Startup teams are not big, approximately 6 members. Founders look for freedom, self-realization. They believe in their ideas, but this unconditional belief can bring some difficulties in later phases.

Level of originality is not as high as is expected from startups. Startup idea should be international if not global. Startups have difficulties with identifying their competition. Often, they do not consider indirect competition as risk. First step in founding of startup should be research of competition.

Based on open questions, we can easily explain some of the main reasons for founding startup in Slovakia. Most of the founders were talking about idea. They say existence of some problem, they saw, was very strong impulse to start startup around it. In some cases founders had or experiences problem on them. Others saw this problem around them, in environment where they lived. Some of founders saw opportunity in innovation or improvement of existing product/service. Experiences, creativity or just light bulb idea brought them to improvement of existing solution. Some of the founder simply brought solution from abroad, customized it for Slovak conditions and implemented to the market. Some of the respondents use their college research (mostly PhD. Studies) and implement it to the market.

In many cases, blind trust of founders in their idea, product/service is reason why they overvaluation phase of development. Valuation of Business idea development from founders, subjective valuation, is overtaking valuation from investors, which we consider as objective. Median from investors is higher more than 2 points. We assume that founder overestimate their activities. More realistic view is given from investors. Investors are not personally included, they are not emotionally involved in project. They can better see the real potential and risks.

Startups know their customer quite well, they are somewhere between middle European and European market. Based on startup definitions, they are supposed to have global customers. However, for Slovak startups it is quite hard to achieve global market. Comparatively lower level of development block Partners shows that startups do not prefer having partners. This can be one problem in effort to gain global customers. Founders try to do every needed activity by intern team. They try to enter foreign markets without any partners, what means extension of time period, in which new competitors can rise.

Distribution channel represent way to achieve customers and their development is lower than Segment of customers. This is discrepancy, because these two blocks are connected to each other. We know that startups are not using partners in this area, as well. And it causes difficulties, stretching time period and reduced development.

In general, we can claim, that development of individual business model blocks is not at same level. The highest development shows Value Proposition. But, startups cannot deliver this value to customers. Development of Revenue Streams is the worst from all blocks. Startups should, from very beginning, consider ways of revenues. Their focus should be equally located to value as well as revenue streams. In general, we can claim, that development of business model and block grows with development of business idea and cycle of financing.

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Transfer Pricing as a Consequence of Globalisation Processes

Tatiana Hajniková

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: tatiana.hajnik@live.de

Abstract

Globalisation of the world economy has been a part of globalisation processes since early 1990s. It has been expressed in the increased dependence of markets, production and consumption of national economies. One of the negative aspects produced by globalisation is corruption. Corruption causes low economic growth, high inflation rate, currency depreciation, great income inequality accompanied by poverty, and a low level of tax revenue. International tax planning is mainly connected with global companies. In the current globalised world, there are only a few companies operating in a sole country or region. The issue of international taxation is also related to transfer pricing, methods of transfer price formation along with the most recent demands on transfer pricing documentation in the form of master files, local files and the concept of country-by-country reporting.

Keywords: globalisation, global corporations, transfer pricing

JEL classification codes: M41, H21

1. Effect of globalisation processes on national economies and corruption as a consequence of the processes

Accelerating globalisation in the early 1970s was supported by changes in international and national regulations concerning the exchange of goods and services as well as by changes of financial flow regulations in particular. In this period, globalisation was most importantly affected by the deregulation of trade with goods and money after the Bretton Wood system collapse, deregulations of national markets in the course of transformation from social state to liberal-oriented politics favouring free market, and creating conditions to attract international corporation investments.

Thanks to globalisation, the issue of international business comes to the forefront. In their study, the authors Pelegrimová and Lačný (2013) state that globalisation has had a significantly growing tendency for the last twenty years together with high integration of national economies and markets. Free movement of capital and labour force, relocation of production from areas with high costs to those with low costs, gradual elimination of trade barriers, and technological and telecommunicational development has had substantial influence on the growth of international corporations. The participation of countries in the process of economic globalisation enables them to increase their productivity and expand to foreign markets.

Pelegrimová and Lačný (2013) further emphasise the fact that the mutual interconnection of economies all over the world causes sensitive responses of national economies to any fluctuation or change in another economy. The responsiveness is conditioned by the intensity of the interconnection; however, even the low intensity of interconnection can indirectly affect other economies through the intensity of interconnections of all other economies.

Šikula (1999) comprehends globalisation processes with criticism and underlines the negative aspects of the phenomena. The current shape of globalisation deforms economy and even human relations. The middle class fades out although it has always been the pillar and healthy core of society. Polarisation between the richest and the poorest has been becoming stronger and stronger; globalisation suppresses internal regulatory mechanisms while financial economy reaches far behind reality and enables life in debt. Corruption and the so-called grey economy are taboo issues, although these resources often reach the value of GDP. According to the OECD calculations, 10 % of the grey economy resources would facilitate introduction of health and pension reforms and improve the situation in education, science and research. Corruption is literally the economic cancer existing everywhere in various proportions. For example, in the Scandinavian states, it reaches 1-2 % while in Slovakia, it is estimated to have reached 30 %.

Empirical evaluation of corruption levels in order to reliably compare the data is almost impossible.

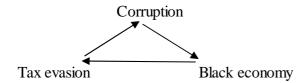
According to the CPI (Corruption Perceptions Index) by Transparency International, Slovakia gained 54th position in 2016, preserving the score of 51 points out of 100 from the previous year. At the same time, the position worsened by 4 points in comparison to 2015 (and the number of assessed countries was increased from 168 to 176). It is the seventh worst position out of the EU countries, and only the following countries have reached worse score than Slovakia: Croatia, Hungary, Romania, Italy, Greece and Bulgaria.

Transparency International states that any significant shift of Slovakia in the corruption rating is mostly conditioned by the executive power, not legislation.

In an interview in the publication *Parlamentné listy*, Staněk (2015) said that corruption in the Slovak Republic leads to the destruction of society.

The relation between corruption and tax evasions was implied by Burák (2013). As depicted in Figure 1, higher corruption rates lead to a stronger position of black economy, and thus to a greater level of tax evasion. In relation to the tax policy, this is considered a grave risk and a problem.

Figure 1
Relation between corruption, tax evasion and black economy



Source: BURÁK, E. (2013). Daňová politika a daňová ilúzia. [Online]. Available at the URL: http://www.danovecentrum.sk/clanok-z-titulky/danova-politika-a-danova-iluzia_.htm. [Accessed 20.6.2013].

1.1 International corporations as symbols of globalisation in economy. Tax optimisation of international corporations

International corporations have become the main agents of globalisation, using the advantage of placing their offices throughout the world. Their main goal is to maximise profits and accumulate capital.

National tax policy and autonomous right to guarantee and reach adequate tax revenues is an inseparable characteristic of each state; in this respect, globalisation also influences the income taxation regimes of international corporations in individual states.

International taxation planning is a tool aimed to achieve tax optimisation. It represents a strategy with the starting point in systematic analysis and subsequent utilisation of possible instruments in order to cut tax obligations of international corporations related to worldwide income, currently or in the future. In this regard, the corporations strive to allocate and smartly place their resources into enterprises taxed in various taxation regimes, where it is possible to utilise reduced rates and other benefits offered by tax legislations of the states in question. These are the localities with tax benefits, also called tax havens.

In any case, minimum or no taxation is a great advantage of tax havens from the viewpoint of investors. Other advantages include the protection of banking secrecy, stability of the legal system, ensuring anonymity and property protection as well as minimum bureacracy. Thus, tax havens with their minimum taxation obligations serve to establish the so-called offshore enterprises or offshore enterprise located in a tax haven, i.e. locality with tax benefits. Partial exclusion of an enterprise from taxation in such a country or even total exemption is an added value. However, it is necessary to also identify onshore enterprises or onshore jurisdiction when discussing tax havens. The typical features of such enterprise types are described in Table 1.

Table 1 Features of Offshore a Onshore enterprises

Feature	Offshore business	Onshore business
Establishment and trade of the business	- established based on local legislation, however, not undertaking (cannot undertake) business activities at the territory of a given state	- established based on local legislation, authorised to trade with any subjects from various states
Income taxation	- income from business activities not subject to taxation in a given state	- obliged to pay income taxes in the place of residence
Accounting and tax legislation	- usually does not have to submit accounting or file tax returns	- must keep accounting, file tax returns and is subject to audit
Tax burden	- practically 0%	- lower tax burden
Other features	-high level of anonymity of owners and management (business registers in offshore regime is not public)	-better image of subjects

Source: own processing by the Author

2. Economic nature of transfer pricing and importance of transfer pricing documentation and country-by-country reporting in the light of new changes

In practice, taxable entities strive to generate profits (tax base) where it is most convenient for them from the viewpoint of tax effectiveness. Tax effectiveness can be achieved e.g. by *profit transfers* between dependent persons in the framework of a given country legislation, or profit transfers between dependent persons across borders into states with more favourable tax legislation.

Profit transfers are usually conducted through systematic pricing of goods, services and other transactions, e.g. interest; that is where the work title – transfer pricing – comes from. From the international point of view, a product is priced only at the level of costs (with no profit) and profit is created when selling the product in a state with more convenient taxation rules. Individual states try to allocate profit (tax base) within their competence and thus reach tax profits entering their budgets; this is also the case of the Slovak Republic. It is an objective economic interest of states; if they did not use the righteous tax principle, profits would float with no taxation.

Transfer pricing is based on the arm's length principle, with the main idea to compare the terms set in business relations between dependent persons and the terms the independent persons would set under comparable conditions.

The arm's length principle is also defined in Article 9 of the OECD Model Tax Convention on Income and on Capital stipulating that if a state is affected due to non-market prices and trading conditions, the difference can be subject to taxation.

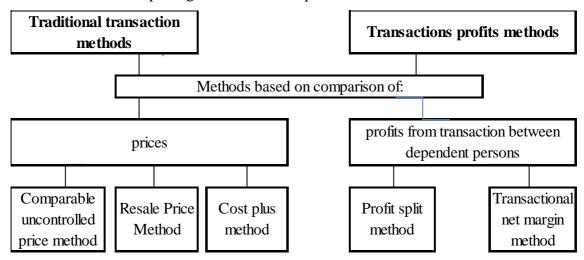
The arm's length principle is also included in agreements on avoidance of double taxation. At the EU level, there is the Code of conduct on transfer pricing documentation for associated enterprises (2006/C 176/01), adopted by the Council of the EU and representatives of the EU member states; essentially, the code refers to the OECD methodology on transfer pricing.

Under commercial market terms, independent persons naturally defend their interests; the seller is interested in maximising the price (revenues) and the buyer is interested in minimising the price (costs). In case of dependent persons, this natural market regulator does not function, as sellers and buyers act in accordance and pursue the same economic interests. Therefore, the accounting and tax practice individually verify business relations of dependent person, as dependent persons tend to unify their proceedings towards the fiscal interests of state and other persons.

The correct transfer pricing depends on the choice of the most suitable method of transfer pricing and suitability of using more than one transfer pricing method based on a specific case.

In practice, it mainly depends on the arm's length principle application, which is generally established on the comparison of conditions in controlled transactions with conditions in uncontrolled transactions. To make such a comparison possible, the economic indicators in question must be sufficiently comparable. The comparability analysis and type of transactions are essential for the selection of the best transfer pricing method and transfer price regarding taxation. The methods used in transfer pricing are described in Figure 2:

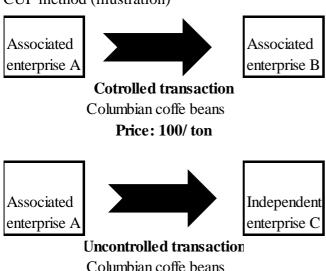
Figure 2
Methods used in transfer pricing in the Slovak Republic



Source: Own processing by the Author

Based on the example of uncontrolled market price method (CUP method), we explain its practical functioning. The specific model of the uncontrolled market price method is outlined in Figure 3 – CUP method:

Figure 3
CUP method (illustration)



Price: 120/ton

Source: OECD. (2010). Transfer Pricing Methods.

Notes: First, it needs to be determined wheter the uncontrolled transaction (sale by A to C) is comparable to the controlled transaction (sale by A to B). This will be done through a comparability analysis (review of the five comparability factors). If many be that the difference in the price of the two transactions reflects a difference in relation to one comparability factor (for instance, an additional function performed or risk borne by A in its transaction with C, compared to its transaction with B). In such a case, the effects of such difference should, to the extent possible, be eliminated through a comparability adjustment. If the two transactions are comparable, the price difference may indicate that the controlled transaction is not arm's legth and the tax administration auditing enterprise A may consider a transfer pricing adjustment 20.

In the comparison, the following activities carried out by comparable persons, e.g. production, assembly services, research and development, purchase and sale, scope of

business risks, properties of sold goods or services, terms and conditions, economic environment and business strategies, are taken into account in particular.

Conditions are comparable if there is no significant difference between them or if the impact of the difference can be eliminated. A taxpayer is obligated to keep documentation on the used method.

On 23 May 2016, the OECD Council approved the amendments to the Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations ("Transfer Pricing Guidelines"), as set out in the 2015 BEPS Report on Actions 8-10 "Aligning Transfer Pricing Outcomes with Value Creation" and the 2015 BEPS Report on Action 13 "Transfer Pricing Documentation and Country-by-Country Reporting"

These facts are also emphasised by Harumová (2016) in the monograph *Finančný* manažment nadnárdoných korporácií (Financial management of international corporations).

The revised Chapter V of the OECD's Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations contains new standards for transfer pricing documentation. The guidelines recommend that individual jurisdictions adopt a three-tiered approach to transfer pricing documentation:

- A master file with global information about a multinational corporation group, including specific information on intangibles and financial activities, that is to be made available to all relevant country tax administrations;
- A local file with detailed information on all relevant material intercompany transactions of the particular group entity in each country; and
- A country-by-country (CbC) report of income, earnings, taxes paid, and certain measures of economic activity.

Furthermore, the Deloitte report (2015) *Transfer Pricing Dokumentation and Country-by-Country* states that the new guidance will change the documentation process fundamentally and significantly increase multinational enterprises (MNEs') transfer pricing compliance burden, because it requires most MNEs to gather and provide to the tax authorities substantially more information on their global operations than they have previously provided.

The master file should provide an overview of an MNE's global operations, its overall transfer pricing policies for the creation and ownership of intangibles and its financial activities, and its global allocation of income and economic activity to place the MNE's transfer pricing practices in their global economic, legal, financial, and tax context. In preparing the master file, MNEs should use sound judgment to determine the appropriate level of detail, taking into consideration that the guidelines indicate it is not necessary for the master file to include exhaustive details. Nonetheless, there is some concern that an individual tax authority's view of prudent business judgment could be affected by the information on local transactions.

MNEs could present the information for the group as a whole, or by line of business, as long as centralized group functions and transactions between business lines are properly described. In addition, if the master file is prepared by line of business, all product groups will have to be submitted to all tax authorities, even if the local entity is part of only one line of business.

The guidance requires that the local file contain much of the same information that was traditionally found in transfer pricing documentation related to the local entity, including its controlled transactions and financial data. Although the local file will be centered on a

traditional functional and economic analysis, the guidelines are more prescriptive than the documentation rules in many countries, and require additional details not required or contained in many documentation reports. While the master file provides a high-level overview, the local file should provide more detailed information relating to specific material intercompany transactions.

A key concern for MNEs may be the lack of guidance in terms of post-transaction adjustments that are required to prepare a compliant local file. Most countries allow only upward adjustments. This means that if an entity needs to make an upward adjustment to be in compliance, but is prohibited from making a downward adjustment in the counterparty's country, it would be subject to double taxation. This suggests a need for close monitoring of transfer prices to reduce the potential for post-transaction adjustments.

As set forth in the guidelines, the final piece of the three-tiered documentation package—the CbC report—should contain aggregate information (without any intercompany adjustments or eliminations) for all entities and for each tax jurisdiction.

The CbC report should provide information on each group member (company, corporation, trust, or partnership) by tax jurisdiction, along with an indication of the jurisdiction of organization or incorporation, and relevant business activity codes for each entity, including dormant entities.

Adoption of the CbC report as part of the OECD's transfer pricing guidelines was one of the key goals of the BEPS project, because it may provide most local tax authorities, for the first time, an organized picture of where a company earns income and pays taxes. The report may highlight gaps and inconsistencies in a company's transfer pricing policies or its implementation of those polices. In addition, the report may highlight potential inconsistencies in the place where revenue is recognized and the place where "value" is created. MNEs should be ready to provide counterarguments, especially in situations where seemingly similar functions and risks have resulted in different profits for their affiliates in different countries. Such analysis should focus on the location of the decision-makers and the location of unique, high-value assets, including technical and marketing intangibles. MNEs should consider addressing any potential gaps or inconsistencies before they file their first CbC report.

The new documentation guidance may accelerate the trend toward centralized management and documentation of an MNE's transfer pricing policies and the monitoring of transfer price implementation, as MNEs may strive for more consistency in light of the new transparency of their financial results. This increase in global transparency is likely to mean that deviations from transfer pricing policy or the implementation of that policy will become more apparent to tax authorities around the world. For these reasons, MNEs that currently do not establish and monitor transfer pricing policies on a global basis may find a need to do so in the near future. For some MNEs, the new guidance could require an increase in authority and resources to establish and implement transfer pricing policies, and new systems and procedures to regularly and proactively monitor transfer pricing results on a global basis.

3. Conclusions and policy implications

Globalisation is an irreversible process. It cannot be revised. Nevertheless, it can be changed and maintained. Globalisation is a phenomenon of the modern world, often linked to the boom of multinational corporations with immense economic power. Thanks to the power, multinational corporations possess the might and possibilities to avoid taxation, though their profits are huge.

Avoiding tax obligations and harmful tax competition are global problems. The measures aimed at tackling these problems must exceed the EU boundaries. In the situation when the member states strive to introduce new global tax transparency principles and fair tax competition, it is important that the international partners of the EU do not stand aside. The developing countries should also participate in the international network of proper tax obligations administration in order to benefit from the worldwide fight against avoiding tax obligations.

Annually, billions of EUR are lost due to avoiding tax obligations – the money would and could be spent on public services, such as schools, health care facilities or employment and growth support.

The Council of the EU adopted a set of measures – The Action Plan aims to reform the corporate tax framework in the EU in order to tackle tax abuse, ensure sustainable revenues and support a better business environment in the Single Market.

Its task is to strengthen the cooperation with international partners in order to fight tax avoidance, improve the EU measures on the support of worldwide fair taxation based on international norms, and to articulate the common approach to the external threats of tax avoidance. This will ensure fair and equal conditions for all enterprises and states.

It is necessary that individuals, states and enterprises strengthen their confidence in the whole tax system and believe that it would become more fair and effective. People must believe that tax rules are the same for everyone – both individuals and enterprises. Enterprises must pay fair taxes in the location of their activities. Europe can become the global leader of the fight against tax avoidance. It requires coordination of activities at the European level, so as not to repeat the situation where 28 member states apply 28 different approaches.

The world has changed under the influence of globalisation. It is important that the consequences of the swift and massive changes do not throw the world off balance and the ways of real correction are found soon.

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Navigation in the Arctic

Dorota Harakal'ová

University of Economics in Bratislava Faculty of International Relations Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: dorota.harakalova@gmail.com

Abstract

Global environmental changes (besides shrinking of the ice cover) offer new opportunities for economic exploitation of the Arctic. In addition to the mineral exploitation, maritime transport has the greatest potential. In the Arctic, there are two major sea routes – the Northeast Passage and the Northwest Passage. Two Arctic coastal states have the greatest impact there: Canada and Russia. Opening of new sea routes in the Arctic brings significant savings in transport costs and time. The disadvantage is the complicated prediction of the ice cover and subsequent navigation.

Keywords: Arctic, navigation, Northwest Passage, Northeast Passage

JEL classification codes: K33, R41

1. Introduction

Maritime transport is an important economic factor in the Arctic (see the Figure 1). Opening the sea routes due to the loss of ice cover would significantly shorten the routes and speed up supply of goods. Savings in operating costs and carbon emissions reduction would be significant. The new route would also mean greater independence transcontinental transport in major canals and straits (the Suez Canal, the Panama Canal, and the Strait of Malacca). However, it is necessary to note that the current stage of opening the Northern sea routes does not mean that they could compete significantly with these important canals or straits.

The danger of piracy, which is a problem, for example in the Malacca Strait, located between Indonesia and Sumatra, is not a problem in the Arctic areas. But this positive factor is in negative sense balanced by political and bureaucratic obstruction, harsh climate, and security risks of the navigation. The main factor affecting navigation is still only the presence of ice.

The Arctic sea transport is also affected by polar day (respectively polar night) that on the Polar Circle lasts 24 hours and towards the Pole is its duration extended up to six months. This means that most of the Arctic and the sea routes located here are during 6 months of winter shrouded in gloom. Vessels in addition to low temperature must also reckon with this factor. Also the Arctic communities and animal populations are affected by these seasonal changes.

2. Northwest Passage

Canadian Arctic Archipelago comprise approximately 2.1 million square kilometres and consist of approximately 36,000 islands which make them one of the most complex areas on the Earth's surface (Antartctic Facts, 2017). Canada defines baselines by methods of determining the basis of direct lines, and thus included the Arctic islands in its internal waters

(effective from 1 January 1986) (AMSA - Arctic Marine Shipping Assessment, 2009). Internal waters are considered coastal state's territory where the jurisdiction of the state is applied. However, other countries do not accept the claims of Canada, as this would give the exclusive right to control over these waters and they proclaim the waterways of the Arctic Archipelago an international strait (e.g. the USA, the EU). (Struck, 2006)

Otherwise navigation through these straits would need the consent of Canada and the right of innocent passage would not apply.



Figure 1
Northwest Passage and Northeast Passage (Northern Sea Route)

Source: AMSA - Arctic Marine Shipping Assessment. (2009). AMSA Executive Summary with Recommendations. [online]. Available at the URL: http://www.pame.is/images/03_Projects/AMSA/AMSA_2009_report/AMSA_2009_Report_2nd_print.pdf>. [accessed 01.02.2017].

The USA declare Northwest Passage for the straits on the basis of Article 37 of the UNCLOS. Canada based declaring the straits for their internal waters on Article 7 (1). The question is whether the baselines are determined in accordance with the international law, because at the time of determination Canada had not ratified the Convention on the Law of the Sea (1982) yet. The International Court of Justice in the case of the Anglo-Norwegian Fisheries Case literally "invented" conditions for the application of straight baselines, as at that time they had not been included in any international legal norm. Canada was therefore entitled to adopt them in accordance with the assumptions set by the ICJ (Proelss – Müller, 2008).

Northwest Passage

Strait governed by the international legal regime must meet two conditions - the geographical aspect and use for international navigation. Geographically the waters of the Arctic Archipelago meet the characteristic of straits, but their use is questionable for international maritime shipping. UNCLOS itself does not determine the scope of an international navigation requiring the declaration of shipping routes for international straits. Views of the coastal States on use of the straits for international navigation in the Arctic vary (AMSA - Arctic Marine Shipping Assessment, 2009).

The Northwest Passage consists of seven possible routes, but only some of them are deep enough for navigation. First supertanker successfully navigated through it in 1969 with the help of icebreakers and the route was not very economical (Urban, 2014). Opening Northwest Passage for maritime transport would have global economic importance not only for transportation but also for the use of natural resources and for trade relations between the countries. The Northwest Passage would shorten the journey from London to Tokyo 12 870 km compared to 23,600 km long journey around Africa, which was used in the years 1967 to 1975, when the Suez Canal was impassable (Northwesst Passage, Trade route, North America, 2017).

The Arctic Archipelago is a natural extension of the continent and shares with it a common continental shelf. There are not any international sea routes. Canada considers the waters between the islands as Canadian territorial waters (this claim was accepted also by the USA). According to Head (1963), prospective claims to the right of innocent passage through the archipelago were somehow speculative (Head, 1963). Width of the straits between islands is somewhere greater than the limit set for the territorial waters, but the risks associated with shipping and remoteness of the region for many years did not aggravate the interest of the state to obtain any economic impact in the area.

At present, however, in connection with environmental changes in and opening new sea routes attractiveness of these straits is rising. With the waning of the ice sheet crossing these routes become not only technically but also commercially viable. The diversity of the Arctic Archipelago, challenging conditions and the unpredictability of glaciation are facts which make the Northwest Passage navigable much less compared to the Northeast route.

However, by research made by York University in 2015, ice in the Northwest Passage remains in spite of climate change too rough and not suitable to be the Northwest Passage become a regular Arctic sea route. According to Haas (2015), who was head of the research team, it is difficult to predict the impact of environmental change on glaciation of the Northwest Passage. Further melting of the Arctic could cause the Arctic Ocean emitting more multi-annual ice that arrive in the Northwest Passage, which will make route less navigable than at present (ScienceDaily, 2015).

3. Northeast Passage

Significant part of Northeast Passage lies along the coast of Russia. After 70 years, it was seasonally used between the ports of Murmansk and Dudinka and its navigability still highly dependents on climatic factors (Ištok, 2012). The Russian part lies in the exclusive economic zone of the Russian Federation, called the Northern sea route (translit. Северный морской путь), does not include the Barents Sea, but, as a majority of the Northeast route lies there, the name is sometimes used for the whole route. It is subject to the legislation of the Russian Federation. The Northern sea route is defined in the Russian legislation as a set of Arctic sea routes between Kara Gates Strait on the west and the Bering Strait (AMSA - Arctic Marine Shipping Assessment, 2009). Northern sea route, which was during the Soviet era exclusively used for domestic purposes, is now open to international navigation.

The entire route lining the coast is characterized by its relatively shallow depth from the Norwegian-Russian border to the Bering Strait, making it a shallow more or less for all maritime operations (average depth of the Chukchi and East Siberian Sea is 58 meters, respectively 88 meters) (AMSA - Arctic Marine Shipping Assessment, 2009).

Since the trail is bordered by the Russian coast and still occasionally freezes, transport services depend on the Russian nuclear icebreakers. Commercial vessels must be adapted to navigation in freezing waters and rescue operations in difficult climate in addition to the lack of ports - the coast is largely uninhabited and there are only a few ports. Since the route is bordered by the Russian coast and still occasionally freezes, transport services depend on the Russian nuclear icebreakers. Commercial vessels must be adapted to navigation in freezing waters and rescue operations depend on difficult climate in addition to the lack of ports - the coast is largely uninhabited and there are only a few ports. The Russian Federation currently invests in modernization of ports and army bases.

In 1991, Russia opened the Northern sea route for non-Russian ships. MV Nordic Barents was the first such vessel, which has undergone Northeast Passage. It was carrying iron ore from Kirkenes (Norway) to Lianyungang (China). The journey took 21 days, which is 16 days less than the journey lasted through the Suez Canal. Cost savings reached 300,000 dollars for a one-way route (Bergo, 2014). The route between Rotterdam and Yokohama lasts 13 days, sailing from Rotterdam to Vancouver through the Arctic is shorter by 2,242 miles compared the route through the Panama Canal. In 2011, 34 ships passed Northeast Passage, in 2012 there were at least 46 (Benčat, 2012), and in 2013 it was already 71 (Bergo, 2014).

The Northeast route has greater potential compared to the Northwest Passage. The Northeast Passage and the Arctic generally, is of immense importance for Russia, therefore, it intends to invest in the construction of ports, icebreakers recovery, improving rescue services and satellite coverage. In 2013, The Northern Sea Route Administration (NSRA) was created, whose purpose is to develop infrastructure and facilitate the process for issuing licenses for navigation. The NSRA was established by the Government of the Russian Federation no. 358-P (from 15 March 2013), Federal Law No. 81 (from April 30, 1999) Section 3 par. 5.1 of Merchant Shipping Code of the Russian Federation to organize cruises in the Northern Sea Route.

The advantage of the Northwest Passage is to shorten cruises and reduce transport costs thus reduction of transport costs and speed up by about 30-40% (Heikkilä – Laukkanen, 2013) and no threat of piracy.

It is possible to believe that the more the Arctic will be ice-free, the more its strategic value will grow (Chrášťanský – Jenne, 2010). The current dynamics in the region makes reflection on the rise of geopolitical importance of the region. Condition of the ice is still not possible to predict and even though the loss of the Arctic ice cover could extend the shipping season, it does not automatically simplify conditions for shipping.

In the very distant future it is possible to theorize about a passage through the North Pole (Transpolar route) which would not lead at all along the coast of the Arctic States. When and whether such a route will be possible, it depends on the nature and the acceleration of climate change and technical and technological progress of maritime transport.

Possibilities of navigation in the Arctic also attract interest of non-Arctic states. In April 2016, China issued Guidances on Arctic Navigation in the Northwest Route offering detailed route guidance from the northern coast of North America to the northern Pacific as a means of promoting the potential of the route (GREEN4SEA, 2016). Importance of the Northern Sea Route for global maritime transportation is unquestionable.

4. Conclusion

The Arctic is currently geopolitically attractive region. Global climate changes are more evident in the Arctic, also due to higher temperatures and the fact that it is a part of the frozen Arctic Ocean without continental base where ice reaches a thickness of only a few meters compared to an average thickness of the Antarctic ice 1.8 kilometres (Antarctic Facts, 2017). With ice melting and technological advances, it is now possible to use mineral raw materials from areas where it has not been possible before. Sea routes in the Arctic, which greatly reduce transport costs and time, remain open for a longer period, which increases their use. Maritime routes are linked to other inter-state disputes. Canada considers the Northwest Passage in the Arctic Archipelago in the North of Canada its territorial waters and, therefore, exercises its sovereignty. The USA disagree with this declaration and declare the maritime route an international strait.

The North Sea route, which forms the majority of Northeast Passage, refers to the Russian legislation. Article 234 of the UNCLOS Convention contains provisions under which States may adopt detailed national rules governing the conditions of voyage in areas covered by ice in order to prevent pollution and to control it. Russia and Canada have adopted such laws.

Russia with its icebreakers fleet from the era of the USSR and others in the construction is the most important recipient of the Arctic maritime transport. It also receives substantial funds from the fees applied on the Northern Sea Route. China is also building its icebreakers and plans to engage in transcontinental transport in the Arctic. However, the USA has a limited number of icebergs and since construction takes many years and is costly, it will not be enough to compete with these two countries. Although the area of the seasonally frozen area is getting smaller, the use of icebergs continues. The Northern Sea Route, which lies along the coast of Russian Federation, is relatively shallow, so large boats are likely to navigate further form the coast and it must be accompanied by icebreaker. Maritime routes are accessible in the summer months and even then the range of glaciation cannot be accurately predicted.

In connection with opening the sea routes, notably Northern Sea Route, it is necessary to point out that it is questionable to what distance from the coast, the new routes are getting through. Although statistics indicate the amount of the loss of ice cover in the Arctic, but do not specify the exact coordinates, making it difficult to determine the route and is located in the territorial waters or exclusive economic zone of the Russian Federation or in the high seas. In the case where the sea route is located in the territorial waters of the coastal State (in this case Russia), the State applies in this zone full sovereignty, where a right of innocent passage of foreign vessels is limited. For navigation in the exclusive economic zone, vessels of foreign States do not need the consent of the coastal State, in this zone coastal States enjoys only sovereign rights relating to the water column and the seabed and its subsoil.

Even in the case that the route would be situated in the coastal waters of a State, it does not rule out the possibility of foreign vessels sailing there, in the case they submit to the laws of the State and its established rules. Fees for sailing these routes, accompanying icebreakers, navigation on these routes, and similar services provided by the coastal State may make a significant contribution to its budget.

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Foresight Exercise and Analysis as a Basis for Valuation of a Company

Anna Harumová

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: anna.harumova@euba.sk

Ján Londák

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: londak.jan@gmail.com

Abstract

In modern economies, knowledge becomes a strategic resource. Knowledge and access to information are necessary prerequisites for building a competitive advantage of business entities and, in a broader context, for stimulating economic growth. The basic economic information characterising individual assets as well as complex business entities is their value. Knowledge of the enterprise's value is required to make rational decisions in terms of evaluating its efficiency and investment attractiveness as well as assessing its development prospects; the role of strategic analysis in the process of enterprise valuation has a great significance in terms of determination of total profit potential. Profit potential consists of internal and external potential. External potential is expressed by opportunities and risks arising from the business environment, which the enterprise has to face. Internal potential of the enterprise is the ability to take advantage of opportunities and to resist risks arising from the external environment. The characteristic features of internal potential of the enterprise are its strengths and weaknesses. Similarly, the analysis of competitors of valued enterprise provides a new point of view to the examination of internal potential.

Keywords: value, enterprise valuation, forecasting, analysis, value generators

JEL classification codes: C12, C33, C42

1. Introduction

The enterprise can be seen as a conglomeration of physical, financial and intellectual resources engaged in conducting business activities. Due to its complexity, the estimation of its value is a difficult process. This applies both to the identification of factors that create business value and the manner in which they are reflected in the process of valuation. The extensive methodology of business entity valuation encompasses asset-based valuation methods, focusing on the assets of the entity undergoing valuation, income-based methods, determining value from the perspective of future incomes projected for the enterprise, comparative methods based on the comparative analysis of the enterprise undergoing valuation and similar entities with known market values. The strategic analysis is according to Kourdi (2011) the basis of successful existence of the enterprise in the market environment

and it is also the basis for delimitation of its profit potential. It takes into consideration internal and external factors, which has some effects on the enterprise and it is possible to use obtained information by planning of the future development of the enterprise or its future cash flow. Good strategy of the enterprise is based on established specific features of the division and the comparison with competitors; it also seeks for strengths of the enterprise, which are further developed, as well as it efforts for minimization of weaknesses. The key factors influencing the enterprise development can be also the timely elimination of threats and taking benefits of opportunities, which the enterprise has to face.

2. Basis of corporate strategy at the Valuation

The enterprise strategy are plans, choices and decisions used in order to direct the company to increased profitability and success." (Grant, 2007) The term strategic analysis itself consists of words "strategy" and "analysis". "The strategy is the method (way), by which the organization executes its visions and missions. It is based on needs of main interested parties and supported by relevant policies, objectives, intentions and processes. (Grasseova – Dubec – Řehák, 2011). According to Grant, the strategy is not the detailed plan or the list of instructions, but the set of knowledge, which directs decisions of an individual or an organization. The necessity for the strategy implementation into the business sphere grew after the World War II., when relatively peaceful market environment transformed into the rapidly unstable and competitive environment.

The ability to predict changes on the market became a great advantage in creation of new opportunities and in avoiding of possible threats. As authors who for the first time implemented the strategy into the business sphere in 1947 can be considered Von Neumann and Morgenstern and their game theory. The term analysis is defined by Sedláčková and Buchta (Sedláčková – Buchta, 2006) as "allocation of a certain complex onto particular parts or components." The authoress also adds that: "the aim of the strategic analysis is to identify, analyse and evaluate all relevant factors, about which it is possible to assume that will have some influence of the final choice of objectives and the enterprise strategy." The realization of strategic changes is however the question of individual decision of managers. For this reason, arising outcomes of the strategic analysis are into the certain extent relatively subjective and depend on the ability of the manager to correctly interpret obtained information and connect them into the context. The strategic analysis on one hand puts into the context and mutually confronts external environment of the enterprise, but on the other hand also sources and abilities of the enterprise.

PEST analysis – by the PEST method, we analyse factors of external environment, which could mean future opportunities or threats, while the external environment is composed of factors: political, economic, social and technological.

For the division analysis is often used the Porter's model of five forces. This model is named after the Harvard University professor, Michael Porter, who provided the practical analytical framework for determination of competitive strategy, including the structural analysis of the environment. He says that the division profitability is not only the function of how the product looks like or whether there is put in it high or low level of technology. The profitability is the function of the division structure (Košťan – Špuleř, 2002). Porter set up five motion forces, which has effect practically in each division. Common effects of these forces determine the potential of the final profit within the division. Thus, the enterprise has to strive to achieve correct identification of these five forces, as well as to obtain the competitive advantage in most of given factors. Those forces influencing the competitiveness were called as negotiation factors of purchasers, threat of substitutive products or services, negotiation

influence of contractors, threat of new-entering companies and competition between already existing companies.

The main idea of the internal analysis is to carry out the objective evaluation of the current position of the company. It is the effort to identify strengths and weaknesses of the concrete company. It is clear that the internal analysis includes valuation of those indicators, which are within the analysed company and which create the basis, on which the analysis will be carried out (Mallya, 2007). Its internal environment, in contrast to the external, the enterprise can actively influence. In order to be possible to identify strengths and weaknesses of the enterprise, it is necessary to analyse its internal factors. By searching for strengths and weaknesses of the enterprise, we focus on marketing and distribution factors, production factors and production management, factors of enterprise and work sources and financial and budget factors.

3. Revenue methods of the enterprise valuation

Revenue methods of the enterprise valuation are based on the estimation of future enterprise incomes (discount future cash flow). The basic concept of revenue methods lies in the precondition that if the investor will invest into the enterprise, in the future, he will gain increased benefit or profit, in comparison to safe investment (alternative capital cost). The concept of discounted cash flow is the key for valuation of any property. The basis consists of future benefits, which are possible to be measured by various methods, and which are transferred into the current value. The enterprise valuation, when future revenues are unsure, represents significant problem and requires application of the whole line of analytical tools and methods.

Methods of discounted cash flow (DCF) are currently most used by estimation of the enterprise value. The reason for this is that the great significance is put to performance of enterprises by the process of valuation. Also, very important fact is that these methods greatly reflect needs of investors. Thus, DFC methods create nowadays the bearing theoretical and practical concept of the enterprise valuation. The basic formula for the calculation of the enterprise value is following:

Enterprise value
$$V_{(0)} = \sum_{t=1}^{t=N} \frac{E(CF)}{(1+r)^t}$$
, (1)

where E(CF) are future free cash flow,

r – capitalization rate reflecting the risk level of future cash flow,

N – assumed lifetime of assets.

Among most frequently used revenue methods for determination of the enterprise value belong methods of discounted cash flow, by which is important the estimation of future free cash flow for shareholders and creditors, as well as great influence on the final value has also the estimation of capitalization rate and the growth rate (permanently sustainable growth rate of drainable resources). In the practice are used models of discount FCFF (free cash flow for shareholders and creditors) and FCFE (free cash flow for shareholders). Besides models based on the economically added value has started to be used also real options for enterprise valuation. By all of these revenue models has great influence on the final value of the enterprise certain determinants used by determination of the enterprise value. In accordance with legislative provisions, from revenue methods is used, so called, Entrepreneurship method. By the Entrepreneurship method, the expert's organization determines the general

value of the enterprise or of its part by capitalization of drainable resources for the valuated period of entrepreneurship (Harumová – Janisová, 2014).

4. Revenue forecast of valuated enterprise

The analysis of competitors of valuated enterprise provides a new point of view to the analysis of internal potential. According to Mařík (2011), by strategic analysis, it is possible to proceed in three steps:

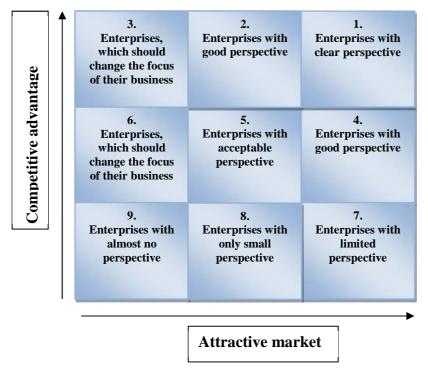
- 1. Delimitation, analysis and forecast of relevant market
- 2. Analysis of competitors and of internal potential
- 3. Forecast of revenues of valuated enterprise.

By delimitation of relevant market, the evaluator executes on the market deep, qualitative evaluation — market attractiveness analysis. The objective of such analysis is to seek for opportunities and risks of the given market, which will be later projected in the forecast of the development of market share of valuated enterprise. The suitable tool for qualitative valuation of the market is, for example, above mentioned Porter's model of five competition forces. Market attractiveness analysis serves as the basis for determination of risk surcharge for the discount rate. The market attractiveness is influenced by several factors, as for example, market growth, market size, direct competition intensity, average profitability, access barriers, market sensitivity on conjuncture, and others.

The result of analysis of competitors and the internal potential is the estimation of development of valuated enterprise market share. For this is necessary to determine most significant competitors, determine and analyze recent development of market share of the enterprise in the relationship to the development of market shares of competitors. The objective of the analysis of internal potential is to evaluate the ability of the enterprise to utilize opportunities, which provides the market and the ability to fight against competitors within the division and to face threats, which appear on the market. The basis of the analysis should be identification of factors, which influence market shares. Useful is to divide selected factors into two groups. Direct factors are perceived by the customer and they can be identified with features of marketing mix, as for example range of products, their quality, price level, advertisement, distribution and others. Indirect factors include management quality, executive personnel, innovations, long-term property and investments.

Revenues forecast of the enterprise is based on data obtained from the analysis and market forecast and also from the analysis of internal potential and competitive strength. The growth rate of revenues of the enterprise is the product of market growth rate and enterprise market share growth rate. Results of foregoing analyses should be the grounding point for valuation of perspective of the enterprise and the estimation of forecast of its revenues. For valuation of enterprise perspective it is possible to work with the matrix indicated by the Figure 1.

Figure 1 Market perspective evaluation matrix



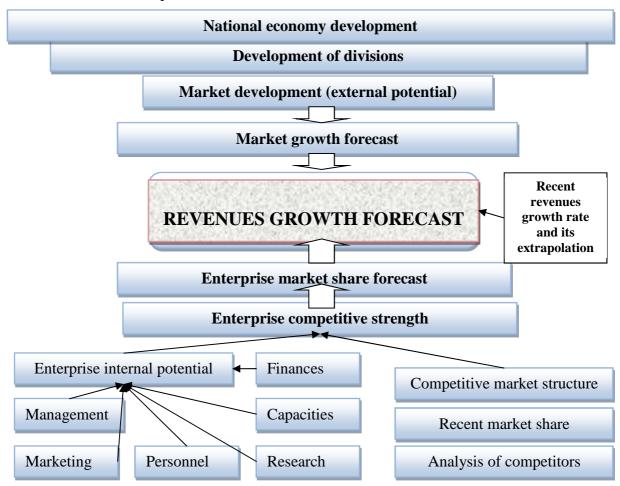
Source: Mařík, M. (2011). Metody oceňování podniku: proces ocenění – základní metody a postupy. 3. uprav. a rozšíř. vyd. Praha: Ekopress. pp. 93. ISBN 978-80-86929-67-5.

Market analysis or the situation analysis is often underestimated. Large companies, supranational corporations, know that market analysis and trends analysis is the basis of marketing and also business strategy. Business strategy without the market analysis many times leads to incorrectly determined objectives.

Market analysis provides us basic information about the market size or maximal turnover, which can be reached within this market. Mainly by starting entrepreneurs or by entering of new product into the market it is necessary to know the potential, which it can reach. Without information about the market size, it many times happens that companies overestimate their planned revenues and suddenly end up in red numbers. And without the market analysis it is very hard to create any marketing strategy.

Absence of information about the market many times leads to incorrectly selected communication means and message, which the company wants to tell to its customers. To found the communication strategy solely on intuition leads very often to thrown money out of pocket for advertisements. From the point of view of business, it is rather the size of the market and trends, whether this category still develops or grows, or stagnates. From the marketing point of view, it is analysis of customers' behaviour. Acquired forecast is necessary to compare with the recent growth rate of revenues of the enterprise, or it is possible to carry out the extrapolation of enterprise revenues timeline. If the resulting forecasted rate is different from the recent revenues development, this gap must be justified. Otherwise, it is necessary to correct the enterprise revenues forecast. The entire process of revenues forecast is best described on the graphical displaying of the process on the Figure 2.

Figure 2
Revenues forecast extrapolation



Source: Mařík, M. (2011). Metody oceňování podniku: proces ocenění - základní metody a postupy. 3. uprav. a rozšíř. vyd. Praha: Ekopress, 2011. pp. 94. ISBN 978-80-86929-67-5.

5. Analysis and forecast of value drivers

The term of value drivers represents the set of basic enterprise indicators, which commonly influence the value of the enterprise. Value drivers' analysis provides the detailed view on factors of enterprise value creation for the past. Its result is the estimation of effects of these factors into the future. Value drivers' forecast creates the basic construction pillar of financial plan. It is revenues and their growth, profit-margin of operation profit, investments into the work capital, and investments into the long-term property, which is operationally necessary, discount rate, funding method and enterprise existence period.

Revenues and their growth — to revenues significantly pays attention the strategic analysis, of which content is also forecast of this item. For this reason, it is possible to assume results of the forecast as the future estimation of this value driver. The forecast can be further modified with regards on capacity options of the enterprise.

Forecast of the profit-margin from above is based on analysis of past development of profit-margin, calculated from the operational result of management prior to depreciations and taxes. Profit-margin should be analysed in relationship to the competitive position of the enterprise. The profit-margin forecast will be determined as the estimation into the future on the basis of results from the strategic analysis with regards on its previous development.

Subsequently will be calculated the corrected operational result of management as the product of estimated profit-margin and forecasted revenues.

Forecast of the profit-margin from below is based on exact calculation of profit-margin on the basis of estimation of particular cost items – material consumption, personal costs and less significant operational cost items. The result of management will be found out by difference between revenues and costs, and subsequently will be counted up the profit-margin. Results of both procedures can be different, and for this reason it is necessary to correct such predictions, until they will be identical. The aim of this effort is to obtain such profit-margin forecast, which will be based and justified by the position of the enterprise and also by the real forecast of operational costs.

Investments into the work capital – short-term financial property, which is operationally necessary, is the part of work capital, and it is forecasted as the share on short-term liabilities (the degree of operationally necessary liquidity). From forecasted items of reserves, claims, financial property and liabilities will be found out the value of operational work capital and coefficient of revenues growth difficulty on the work capital.

Investments into the operationally necessary long-term property – the analysis and planning of investment activities are the most difficult from all value drivers. The reason is not fluent development of investments, which does not enable to use extrapolation. As the suitable procedure is considered monitoring of difficulty of revenues growth difficulty on changes of long-term property. The coefficient should be calculated for the longest possible period and beneficial is also its comparison with competitive companies or enterprises within the division. The product of coefficient and the gain in revenues for the whole monitored period represents net investments into the long-term property.

Preliminary evaluation by means of value drivers – after the analysis and value drivers' forecast it is possible to proceed to the estimation of the enterprise value based on cash flow. Free cash flow for particular years is calculated as the difference between corrected operational profit after taxation and gain of work capital and long-term property.

6. Conclusion

The valuation of the enterprise by revenue methods should be preceded by elaboration of strategic and financial analysis for the purpose of delimitation of external and internal revenue potential of the enterprise. In regards to strategic analysis, there is delimited and analysed the development of relevant market, on which acts the given enterprise. With regards to the recent development of national economy, and with the help of forecasts of macroeconomic factors is determined the forecast of relevant market in monetary expression. Internal potential analysis includes the detailed analysis of strength of competitors, delimitation of closest competitors and comparison of valuated enterprise with competitors on the basis of quantitative data (financial indicators) and qualitative characteristic features (produced product, advertisement, and image).

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Amount of Royalty Rate as Key Parameter of Valuation of Intellectual Property

Ján Havier, Monika Jančovičová, Adam Bartoš

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: jan.havier@euba.sk (Ján Havier), janhavier9@gmail.com (Ján Havier), jancovicova.monikaa@gmail.com (Monika Jančovičová), adam.bartos@euba.sk (Adam Bartoš)

Abstract

Intellectual property is the central resource for creating wealth in almost all industries. The foundation of commercial power has shifted from capital resources to intellectual property. Intellectual property has attained an extremely important status within the fabric of our society and livelihood. Enterprises, and even whole industries, are built on an intellectual property foundation. We depend on intellectual property in our businesses and careers. Intellectual property creates a crucial part of value of many companies and it is also very important for their economic and financial prosperity. The aim of the article is to clarify the issue of appropriate royalties to the valuation of intellectual property. One of the key parameters of valuation by relief of the royalty method is the amount of royalties. The main goal of the article is to research such appropriate amount by using national and international sources and to define the process of valuation of the chosen part of intellectual property.

Keywords: intellectual property, valuation, royalties

JEL classification codes: D46, O34

1. Introduction

Industry, the economy and society as a whole are undergoing fundamental changes brought about by the introduction of information technologies and artificial-intelligence systems into production or services. The impact of these changes is really radical that they are being spoken of as the fourth industrial revolution. Within the field of expertise, a big emphasis is put on a company valuation, however it must be said that the area of the intellectual property is poorly elaborated. This is due to the fact that many companies did not appreciate the importance of the intellectual property and this trend comes up to the present. Together with this, the need for more complex elaboration of this subject and elaboration of necessary researches in the field of the intellectual property valuation is rising.

Parr said, that intellectual property dominates corporate value. Commercialization of intellectual property involves annual revenues of at least 5 trillion dollars. Licensing intellectual property is a core strategy for many companies and universities. All industries make use of intellectual property (Parr – Smith, 2015).

If we take into account the current situation on the world market, the dominating companies are those which dispose of the intellectual property with a huge value. Whether it is technology companies like Apple, Google or Microsoft which have become the leaders on the world markets and offer a great value added. They built up their positions especially because of know – how, patents, software or trademarks and also because of other different

forms of intellectual property. These things are the core activities which guarantee these companies success on the market and they are formed by the intellectual property. It means that to build a globally successful company these days, it is just not sufficient to dispose of a capital or tangible assets – something more is needed. So, the intellectual property have become the most powerful competition advantage for the most powerful companies throughout the world.

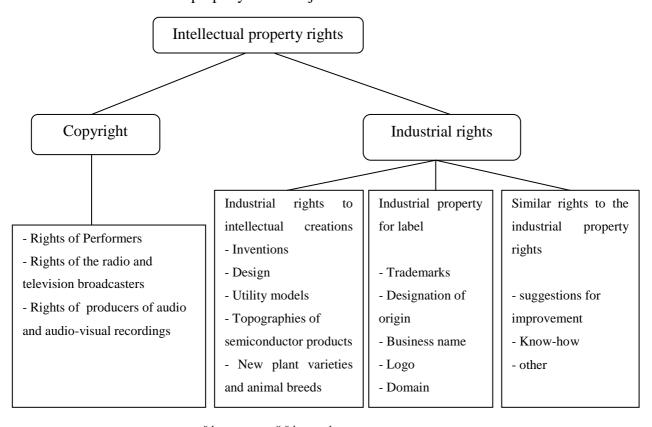
The aim of the article is to clarify the issue of valuation of intellectual property. The idea of this article is to give an overview of the field of the appropriate royalties, because royalties are the most important parameter to the valuation of the intellectual property. One of the key parameter of the valuation by the relief of royalty method is the amount of the royalties. The main goal of the article is to research this appropriate amount by using national and international sources and to define the process of valuation of the chosen part of intellectual property.

2. Definition of Intellectual Property

In this chapter is needed the definition of intellectual property. Exist so many definitions, we can state that a problem of the intellectual property is quite a controversial topic and authors have partially different opinions on it.

Vojčík offers the following division of intellectual property, which primarily follows the legal nature of the individual components of intellectual property.

Figure 1Distribution of intellectual property under Vojčík



Source: own processing and VOJČÍK, P. – MIŠČÍKOVÁ, R. (2004). Základy práva duševného vlastníctva. 1. pub. Košice: TYPOPRESS. 342 p. ISBN 80-89089-22-4.

The definition quite accurately divides the intellectual property according to the nature of its creation. Intellectual property is therefore divided into copyright and industrial property rights. However, the internal organization of copyright and industrial rights is not uniform and the authors include various items of intellectual property in the individual items.

3. Valuation of intellectual property

In this chapter we try to describe methods of valuation intellectual property rights. In the last years, the practice of valuation of intellectual property has grown dramatically. Four different methodologies have typically been favoured (Anson – Suchy – Ahya, 2005):

- Market-based approach
- Income approach
- Cost or replacement value approach
- Relief from royalty approach

Income-based methods according to publications of the European Union report on intellectual property are divided into the following (European Commission, 2014):

- The royalty relief methods,
- the premium profits methods,
- the excess earnings methods,
- the residual value methods.

Svačina (2010) indicates the following income-based methods:

- The methods of profit sharing,
- the bonuses methods.
- the net present value methods,
- the methods income increase,
- the real options methods,
- the methods based on technological factors
- The method of brand value added, namely Brand Value Added method.

This selection of methods is not definitive, there is a large number of income-based methods for the valuation of intellectual property.

The most used method is method of relief from royalty method, which we explain in next chapter.

3.1 Relief from Royalty Method

Relief from Royalty Method is very often used in practice. It is based on an assumption that the value of a particular element of the intellectual property is equal to the price which would be paid on the market as an approval for its use if another company would not own it. It means that the owner of the intellectual property subject would not be its owner and would have to buy this right for using it. These rights are offered in a form of licence or licence contract. For the right to use them, one has to pay an appropriate financial fee, usually in a form of royalties depending on the real amount of sales in a form of revenues and in combination with fixed royalties (Havier, 2015b).

Valuation using "relief from royalty" is a common methodology based on the concept that if a company owns intellectual property it does not have to "rent" the asset and therefore is "relieved" from paying a royalty. The amount of that phantom payment is used as a

surrogate for income attributable to the intellectual property, and a calculation of the after-tax present value can proceed (Parr – Smith, 2005).

We can calculate the annual value of the intellectual property subject by the Relief from Royalty Method with a help of the following equation:

$$HV = \frac{RV * LP * KZ * PM}{KD}$$

Characteristics of the individual variables:

- HV Value of the chosen intellectual property element for the particular year.
- RV Annual production range, usually future revenues forecast in a financial plan.
- LP Royalties or Licence fee. Acquirer of the licence has to pay royalties to the licence provider in various amounts depending on an agreement, usually in a range of 25 50 % from a profit. Licence fee is usually in a range of 0.5 10 % from sales, but can be also higher.
- KZ Coefficient of obsolescence or valuation. It is important to recognize and define which element of the intellectual property we evaluate. Patent loses its value over time, thus the coefficient of obsolescence is used. On the contrary, trademark valorises over time, thus the coefficient of valuation is used.
- PM Share of the intangible property. The sales used in calculation must refer to the sales attributable to the chosen element of the intellectual property which we evaluate.
- KD Coefficient of discount rate (capitalization rate) it takes a time value of money into account and serves for discounting of future profits resulting from the ownership of the chosen element of the intellectual property.

Relief from royalty methods are the most relevant and widely used methods for valuing IP. As we could see, the key parameter of the relief from royalty methods is the amount of royalties.

4. Appropriate amount of royalties

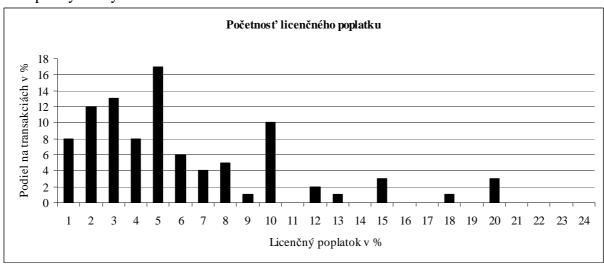
The appropriate amount of royalties is the key parameter, which can strongly influence the valuation intellectual property. In general, royalties aren't defined as an absolute number, but represented as % from sales, EBIT, EBITDA, operating profit or net profit. It can be determined by a combination of a fixed annual amount and a percentage of sales. Only in very exceptional cases – for example single license, license between related subjects is determined as an absolute value. Most often, as indicated by the foreign literature is defined as % of earned revenues (Kardoš – Havier, 2015).

The basis for determining the appropriate amount of royalties for trademark is relevant research of royalties in our territory. Just research of royalties is also extremely important in the context of the transfer of intellectual property, as well as is relevant for valuation of intellectual property by the relief from royalty method (Havier, 2015a).

Czech authors like Čada (2007), Jurečka (2006) or Malý (2002) indicate, that the royalties range from 0.5 % - 10 % of the selling price. Problem is the fact, that license agreement is a trade secret and third persons can't inspect them and find out the amount of royalties. In our territory, databases about made licensing transactions or prices for them don't exist.

Svačina (2010) provides an overview of database www.royaltystat.com, which is aimed to compare the amount of royalties and its share of the transactions.

Graph 1Multiplicity of royalties



Source: SVAČINA, P. (2010). Oceňování nehmotných aktiv. Praha: EKOPRESS. 216 p. ISBN 978-80-86929-62-0.

The most frequented amount of royalties is on the level of 5 %, next is 3% and 2%. This is the modus of royalties on the level of 5 %.

The questionnaire survey, which is focused on the amount of royalty rates, was worked by authors Kardoš and Jakubec at the University of Economics in Bratislava, Slovak Republic.

Table 1Provided and receipt amount of royalties as % of sales

				Provided		Receipt	
Interval	Quantity	%	Production	licence	Average	licence	Average
0 - 1 mil. Eur	45	40,18	7	1,00-10,00	5,00	1,00-10,00	3,50
1 - 10 mil. Eur	38	33,93	14	0,75-20,00	5,23	0,5-20,00	4,27
10 - 30 mil. Eur	19	16,96	9	0,00-5,00	2,31	0,00-5,00	2,01
viac ako 30 mil.	10	8,93	5	1,50-5,00	2,80	1,25-3,00	2,15
Sum	112	100,00					

				Provided		Receipt	
Interval	Quantity	%	Services	licence	Average	licence	Average
0 - 1 mil. Eur	45	40,18	37	0,00-50,00	10,00	0,00-20,00	7,76
1 - 10 mil. Eur	38	33,93	23	0,75-20,00	3,77	0,75-15,00	2,82
10 - 30 mil. Eur	19	16,96	9	0,5-40,00	11,06	0,5-29,00	8,10
viac ako 30 mil.	10	8,93	4	2,00-40,00	13,50	1,00-25,00	8,25
Sum	112	100,00					

Source: KARDOŠ, P. – JAKUBEC, M. (2012). Ekonomické znalectvo – vybrané problémy. Bratislava: IURA EDITION. 248 p. ISBN: 978-80-8078-450-8.

Table 2 Provided and receipt amount of royalties as % of sales

Royalties as % of sales	Provided	Receipt	Average
Services	v %	v %	v %
Average	8,25	6,13	7,19
Median	5,00	3,00	4,00
Production	in %	in %	in %
Average	4,06	3,23	3,65
Median	3,00	2,00	2,50

Source: KARDOŠ, P. – JAKUBEC, M. (2012). Ekonomické znalectvo – vybrané problémy. Bratislava: IURA EDITION. 248 p. ISBN 978-80-8078-450-8.

This survey was focused on royalties, and the result of the survey is in harmony with data from Svačina (2010).

Weiler targets his research to analyse the range of royalties regarding sectors of industry. Statistics are divided into minimal and maximal range of the amount of royalty rates, average and median of royalty rates. We want to evaluate the intellectual property from the sector of Healthcare and so we focus on royalty rates in the sector of Healthcare products.

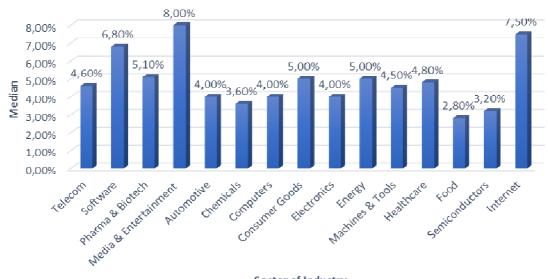
Table 3Royalties regarding sector of industry

Sector	Minimum	Average	Median	Maximum					
Sector		in %							
Chemicals	0,1	4,7	4,3	25,0					
Internet including software	0,3	11,8	8,8	50,0					
Telecom	0,4	4,9	4,5	15,5					
Consumer goods, retail, free time	0,1	5,5	5,0	28,0					
Media and entertainment	2,0	9,1	5,0	50,0					
Production of food	0,3	3,2	2,8	10,0					
Healthcare products	0,1	6,1	5,0	77,0					

Source: WEILER, D. (2004). Valuing Your Intellectual Property for Strategic Alliances and Financing. [Online]. Available at the URL: www.njsbdc.com/scitech/scitech120804-weiler.ppt>. [Accessed 07.10.2015].

If we want to find out the appropriate amount of royalties in the sector of Healthcare, we will see the big range of the amount of royalty rates. We can see, that average royalty rates are on the level 6,1 %, median is on the level 5,0 % and the range of royalty rates is from 0.1 % (minimum) to 77,0 % (maximum) of sales.

Graph 2
The amount of royalty rates by sector of industry

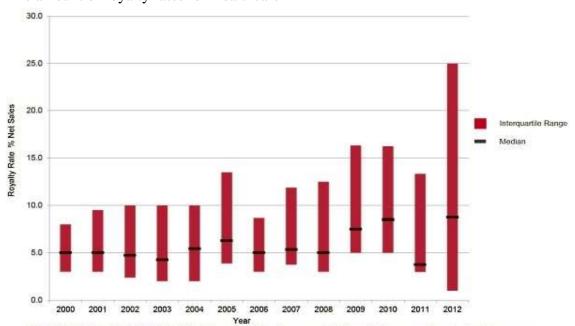


Sector of Industry

Source: RoyaltyStat. (2010). [Online]. Available at the URL: http://www.royaltystat.com. [Accessed 10.01.2015].

As we can see from the graph, royalty rate in sector of Healthcare is on the level 4.8%. Also, we introduce foreign database Ktmine in years 2000 - 2012, where is the amount of royalty rates reported for sector Healthcare. In the graph, there is indicated the range – minimum and maximum and median.

Graph 3The amount of royalty rates for Healthcare



HEALTHCARE: PHARMACEUTICAL covers the license of intangible property related to:

- Prescription drugs, including brand name and generic products
- Non-prescription drugs, such as over-the-counter products
- Nutritional supplements
- Products, equipment and software used by this industry's establishments
- Other related products

Source: Ktmine. (2013). [Online]. Available at the URL: http://www.ktmine.com/free-resources/royalty-rate-resource-guide/. [Accessed 17.01. 2017].

Median is volatile in past years, the minimum was reached in 2011, it was approximately 3 % and the maximum was reached in 2012, it was approximately 8 %. As we can see, it was the strong annual increase. Paar (2007) indicates followed amount of royalty rates (Table 4):

Table 4The amount of royalty rates by sector of industry

	Median Royalty Rate	Average Operating Profit	Royalty as % of Profit Rate		
Automotive	5.0%	11.3%*	44.1%		
Chemicals	3.0%	12.0%	25.0%		
Computers	2.8%	8.3%	33.3%		
Consumer Goods	5.0%	18.4%	27.1%		
Electronics	4.5%	13.1%	34.3%		
Energy & Entertainment	3.5%	9.2%	38.1%		
Food	2.3%	14.2%	15.8%		
Healthcare Products	4.0%	18.5%	21.6%		
Internet	5.0%	10.4%	48.0%		
Machines/Tools	3.4%	9.6%	35.0%		
Media & Entertainment	9.0%	-13.5%*	-66.7%		
Pharma & Biotech	4.5%	25.8%	17.4%		
Semiconductors	2.5%	31.9%	7.8%		
Software	7.5%	25.1%	21.4%		
Telecom	5.0%	14.5%	34.5%		
Total	4.3%	18.8%	22.6%		

Source: PAAR, R. (2007). Royalty Rates for Licensing Intellectual Property. New York: John Wiley & Sons, Inc. 240 p. ISBN: 978-0-470-06928-8.

Median in Healthcare sector is on the level of 4 %. In the table, royalties are reported as % of profit rate and average operating profit.

When we look at figure 2, we can see the importance of the appropriate amount of royalty rate. There we can see a regular income method where we see a whole host of assumptions that are made. We have projected revenues, we have the income tax, the present value factor, weighted average cost of capital—all those inputs that we put into a standard valuation model.

Figure 2
Relief from royalty example

USD (millions)				F1 111	- 4	-				
		Fiscal Year Ending December 31,								
2020000120000000	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Projected Revenue	\$75.0	\$82.5	\$95.0	\$100.0	\$105.0	\$109.2	\$113.6	\$117.0	\$120.5	\$123.5
Growth Rate		10.0%	15.2%	5.3%	5.0%	4.0%	4.0%	3.0%	3.0%	2.5%
Percent Attributable to the Intangible Asset	100.0%	95.0%	90.0%	80.0%	65.0%	50.0%	35.0%	10.0%	5.0%	0.0%
Projected Attributable Revenue	75.0	78.4	85.5	80.0	68.3	54.6	39.7	11.7	6.0	0.0
Royalty 5.0%	3.8	3.9	4.3	4.0	3.4	2.7	2.0	0.6	0.3	0.0
Income Tax @ 40%	1.5	1.6	1.7	1.6	1.4	1.1	0.8	0.2	0.1	0.0
After-Tax Royalty	2.3	2.4	2.6	2.4	2.0	1.6	1.2	0.4	0.2	0.0
Partial Year Adjustment	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Present Value Period	0.50	1.50	2.50	3.50	4.50	5.50	6.50	7.50	8.50	9.50
PV Factor @ 15.09	0.93	0.81	0.71	0.61	0.53	0.46	0.40	0.35	0.30	0.27
Present Value of After - Tax Royalty	\$2.1	\$1.9	\$1.8	\$1.5	\$1.1	\$0.8	\$0.5	\$0.1	\$0.1	\$0.0
Total Present Value	\$9.8									

Source: Business Valuation Resources. (2016). Valuing Intangibles: From Search to Valuation. [Online]. Available at the URL: https://www.bvresources.com/>. [Accessed 07.1.2017].

This is an example for one company that actually has one patent that may be of value. There is an example for a one-patent firm, if we choose a 4% royalty rate, the value of the patent becomes \$7.8 million. If we choose 5%, it is \$9.8 million, and 6% is \$11.8 million. This is very strong impact to result in difference of one percentage point of royalty rate. It can mean millions of dollars for a small entrepreneur. When it becomes a bigger enterprise with many patents, the consequences are fatal. This example shows, how is the appropriate amount of royalty rate very important parameter for the resulting value of intellectual property.

Conclusions

The valuation of the intellectual property is very difficult process, it can demand a lot of experiences in the area of the intellectual property rights. The most important parameter to the valuation of intellectual property by relief from royalty method is the royalty rate. The difference of one percentage point in assumption for the royalty rate can influence millions of dollars change in the resulting value of intellectual property. A valuator must be very experienced, when he want to determine the appropriate amount of royalty rate.

It is obvious, that medians in the healthcare industry are indicated so wide and they are extremely different from foreign databases. We consider the most relevant database - Ktmine, which includes a lot of information about royalties, but in the figure, enormous turnovers, as well as the range of royalty rates, are characteristic. In our territory, the amount of royalty rates used to be approximately 1 %, which indicated Čada (2007). However, Kardoš (2012) demonstrated, that the amount of royalty rates is higher than 1 %, depending on sector of industry. This survey was realized on 120 companies, and didn't work with representative sample. It's suitable to extend this survey and to determine relevant, appropriate and justifiable amount of royalty rates, because it is the key parameter to the valuation of intellectual property.

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Characteristics of Selected Online Marketing Metrics

Vladimír Hojdik

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic Email: vladimir.hojdik@euba.sk

Róbert Šlosár

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

Email: robert.slosar@euba.sk

Abstract

This paper focuses on the definition of basic online metrics. It explains the concept of online marketing metrics and describes some of the fundamental marketing metrics, which help to quantify the effectiveness of a company's web advertising and online marketing communication. The aim of this paper is to focus on the issue of online metrics, to suggest methods that can help marketeers to evaluate the performance of marketing activities and also to describe basic online metrics. Such approach should also support the need for quantification of online marketing effectiveness in the company.

Keywords: online metrics, web metrics, marketing metrics

JEL classification codes: M31, M37

1. Introduction

Recent innovations in the business environment are forcing marketing experts to quantify the marketing opportunities and competitive threats. The need for evaluation of plans and results, interpretation of different variables assessing the effectiveness of marketing activities, identification of crucial data for improvement is still growing – and all that is based on calculations. It is therefore important for firms to develop and implement systems for the acquisition and subsequent evaluation of the crucial data for the marketing department – in other words, marketing metrics. The aim of this work is to explain the issue of online marketing and web metrics, and also highlight the importance of marketing metrics as a necessary aspect of the online marketing effectiveness evaluation in the enterprise.

2. Characteristics of selected web metrics

Marketing as a complex can massively influence financial results of a company. Nowadays, an extremely important part of marketing strategy is also the corporate website design and quality, especially for companies those businesses are closely related with their websites (for example e-commerce companies). For marketeers, it is necessary to know, how efficiently its website operates and what the customer perception of this website is. That is the reason why company should focus on using metrics, measuring so-called web traffic of company and analysing all available data.

The Internet currently provides very good availability of data about advertising and campaigns. Based on that, metrics measuring the efficiency of online advertising are likely to use data that are obtained easier than data from conventional channels.

All in all, assessing the effectiveness of some marketing activities may prove difficult, since it is often complicated to capture the impact of marketing decisions and advertising campaigns on business revenue. But the fact is, that if metrics interpretation is correct, it may lead company to increased efficiency of allocated financial resources. The Internet gives opportunities to collect lots of information about customers – what are their actions on the website and how they behave in different stages of purchase process.

2.1 Impressions, Pageviews, Hits

Number of impressions is the number of opportunities to see an advertisement. This metric is also called advertising impressions or opportunities to see (OTS) as well. It is the number of times the ad was viewed by potential customers. The impression is created every time an ad has been seen – total number of impressions is expressed by multiplying total reach (total people in audience, or population who saw an advert and frequency (how many times one person saw an advertisement). This metric is used both in online and offline marketing campaigns.

Impressions = Total Reach * Total Frequency

Next relevant metric is pageviews. The number of pageviews is monitored by marketing analysts with objective to quantify the user traffic on the website. Pageviews is the number of times the page was viewed (Lim, 2016).

The number of files loaded on the website when requested by visitors. Because of wide variety and high number of files on the webpage, total hits depend on number of page visits and files on each page as well. Hits are rarely used to judge a web traffic, because it is generally very high number and not quite accurate (Lim, 2016). The expression of hits is then:

Hits = Number of Pageviews * Files on the Page.

Accordingly, pageviews can be easily calculated by dividing total hits by the numbers of files on the web page:

Number of Pageviews = Hits / Files on the Page.

Above mentioned metrics are all aimed at quantification of advertisement impressions (opportunities to see), but they do not consider the number of ads actually seen neither the quality of these impressions. Impressions, pageviews and also hits do not respond for following questions:

- Ddid the advertisement message reach relevant and defined audience?
- Did people who were reached actually see the shown advertisement?
- Did audience that was reached by the campaign remember the advertising message at the end of the campaign?

Impressions, or opportunities of see do not inform about the quality of advertisement and its impact on potential customers. Managers are never sure how impressions or pageviews influence the users. Pageviews results are very often based on data that include duplicate showings to the same user. Based on this, opportunities to see may be delivered to the same viewer more than once, what can distort interpretation of the result (Farris et al., 2010)

2.2 Gross rating points of campaign

Gross rating points (GRP) of advertisement is a metric which construction is based on reach that is expressed as a percentage number. Rating points are then expressed as number of individuals reached by campaign divided by total number of people in defined audience

(Patel, 2016). Result of this calculation represents rating points of ads. Rating points of all advertisements may be summed, thus yielding the total reach of the campaign known as gross rating points, as shown in following example.

Example: A company decided to create and place six advertising insertions (Insertions 1 – 6). Estimated audience has 5 people (A - E). Table below determines GRP of marketing campaign. In this table, "1" represents an impression (opportunity to see), "0" means that impression was not delivered to the individual.

Table 1Gross Rating Points of marketing campaign

	I	ndividu	als in A	Audien	ce	Total Impressions	CDD (0/)		
Insertion	A	В	C	D	E	Total Impressions	GRP (%)		
1	0	1	0	0	1	2	40		
2	0	1	1	1	1	4	80		
3	0	0	0	0	1	1	20		
4	1	1	1	1	1	5	100		
5	0	0	0	1	1	2	40		
6	1	0	1	1	0	3	60		
Total	2	3	3	4	5	17	340		

Source: FARRIS, P. – BENDLE, N. – PFEIFER, P. 2010. *Marketing Metrics. The Definitive Guide to Measuring Marketing Performance*: Pearson Education Inc., 2010. ISBN-10: 0-13-705829-2.

Insertion No. 1 generated impressions among two people from total five people in population. Rating of this insertion is then 2/5 * 100% = 40%. Based on that, rating points of insertion No. 6 is 3/5 * 100% = 60%. In the end, ratings of each insertion may be summed up to determine GRP for the campaign. Possible definition of GRP of the campaign is a by using following construction:

GRP = Total number of impressions / Defined Audience * 100% (Waiz, 2013)

Using the numbers from previous example, total number of impressions of this campaign equals 17 and population has 5 members. In this case, calculation of GRP of marketing campaign is 17/5 * 100% = 340.

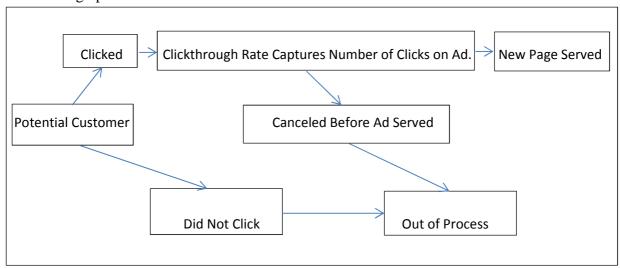
2.3 Clickthrough rates (CTR)

Vast majority of online companies adapted to using metrics based on clickthroughs. Clickthrough rate measures the ratio of clicks to impressions of an online or email campaign. Generally, higher the CTR is, more successful the campaign was. Although this metric provides useful information, it does not inform marketeers if a user completed a product purchase (Lin, 2016)

Clickthrough rate (%) = Total Clickthroughs / Impressions

Clickthroughs help marketeers to capture how users react to websites. Clickthrough rate is a result of how many users initiated action related to an advertisement that redirected them to another page where they could find additional information about products or services, or also complete the purchase of an item.

Figure 1 Clickthrough process.



Source: FARRIS, P. – BENDLE, N. – PFEIFER, P. 2010. *Marketing Metrics. The Definitive Guide to Measuring Marketing Performance*: Pearson Education Inc., 2010. ISBN-10: 0-13-705829-2.

Example: A website provides completely 300 000 impressions. There were totally 3 000 clicks on this website. Calculation of clickthrough rate will be as follows: $3\ 000/300\ 000 = 1\%$. Clickthrough rate from this example equals 1%.

Clicks express the number of times user interacted with an advertisement. It does not represent the number of customers who clicked on this advertisement. An individual visitor of website may click on an advertisement more than once. But not all websites are able to control the number of times an advertisement was shown to the same customer. This means that most websites can count only the number of times the advertisement was clicked, not the number of individual visitors who clicked on the ad (Farris et al., 2010).

2.4 Cost per Impression, Cost per Click, Cost per Order

Cost per impression, cost per click and cost per order all measure the level of online campaigns efficiency. Each of these metrics provide useful information, but their using is dependent on objective with which they are used. Construction of cost per impression is expressed below:

Cost per impression = Advertising Costs / Impressions

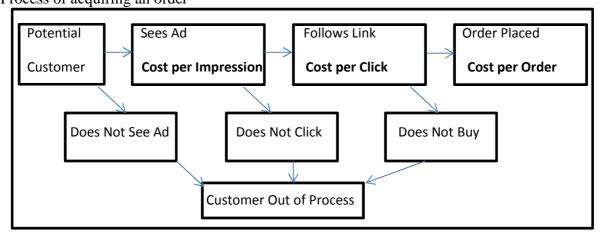
Cost per impression informs how expensive for company it is to offer potential customers one impression, or opportunity to see an advertisement. Cost per click means how much funds company spent for one click on the advertisement. That is the reason why cost per click is more important and also more accurate indicator of online campaigns effectiveness, because clicks allow measuring attention and engagement of individuals. If maximizing of clicks is the priority of campaign, then cost per click will be preferred metric. Cost per click can be determined with the use of following relation:

Cost per Click = Advertising Costs / Total Clicks

Cost per order express how much it was for company to acquire an order. If the priority of advertisement is to increase sales as much as possible, then cost per order will be the metric preferred by company. Cost per order is defined as follows:

Cost per Order = Advertising Costs / Total Orders (Farris et al., 2010).

Figure 2
Process of acquiring an order



Source: FARRIS, P. – BENDLE, N. – PFEIFER, P. 2010. *Marketing Metrics. The Definitive Guide to Measuring Marketing Performance*: Pearson Education Inc., 2010. ISBN-10: 0-13-705829-2.

Example: An online company sells its products via their Internet website. This company spent totally 92 000 € on online advertising. This online campaign generated 4,6 million impressions. It also generated 46 000 clickthroughs. From total number of clickthroughs, 10% resulted in a purchase of product.

Cost per impression = 92 000 € / 4 600 000 = 0,02 €

Company had to spend 2 cents to generate one impression (opportunity to see).

Cost per click =
$$92\ 000 \in /46\ 000 = 2,00 \in$$

For generating one click on advertisement, company spent 2,00 €.

Cost per order =
$$92\ 000 \in /(46\ 000*10\%) = 20,00 \in$$

Firstly, total number of orders needs to be determined. As 10% of clickthroughs resulted in purchase, it means the number of orders (or purchases) is $46\ 000*10\% = 4\ 600$. Thus, cost per order (or cost per purchase) for company equals $20\$ €.

2.5 Bounce Rate

Bounce rate is a tool that enables measuring the efficiency and atractiveness of website. This metric informs if visitors are encouraged by the website and how long their visit lasted. Crucial aspect of this metric is the amount of visits which ended on the first page of website. Bounce rate is thus expressed as a percentage as single page visits. It is a number of visits in which a user leaves the website from the landing page without browsing any further (Sharma, 2012).

Bounce rate (%) = Visits That Ended on First Page of Website / Total Visits of Website

According to this formula, high percentage of bounce rate indicates, that website is not very attractive to users, and because of their lack of interest they end visits on the website too soon – on the first page. Importance of this metric lays in its usefulness for owners of the website – these owners usually want to maximize the number of visits and want the users to click not only on the landing page (Hines, 2011).

For example e-companies are targeting to sell products and that is why they will want to bring as many visitors as possible on their website and make them to complete a purchase. Generating high web traffic on the website will subsequently decrease the bounce rate and that means the content of the website is relevant, informative and also attractive for users and potential customers. Bounce rate is a reliable indicator of quality of website content.

For construction of this metric company will be focused in acquiring all data needed. To get the data, marketeers will have to research information on their website. This metric can be also defined for individual pages, not for the website as a whole. Analysis of individual pages bounce rate will need more precise attitude and interpretation. Purpose of the website existence may be different in firms, and thus the interpretation of bounce rate must take into consideration even this fact.

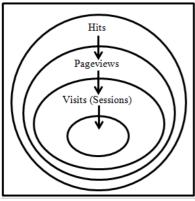
2.6 Visits, Visitors, Abandonment Rate

Visits measures the number of times the website was visited, without regard to repeat visitors. Visits are also known as sessions. This metric helps to understand how a website user behaves. Only first request counts as a visit. Following requests coming from the same individual cannot be counted as visits unless they happen after a specified time period, which is most often set at 30 minutes (Lancaster, 2016). As company wants to understand their website traffic better, it focuses on tracking the number of visits. A visit consists of single pageview, or may also consists of multiple pageviews. One individual may also execute multitude of visits to a website. The specification of one visit depends on exact timeout period. Timeout period is a time period user did not use the website, it is a interval of individual's inactivity, and thus it should be defined in company to reliably assess the number of visits.

In addition to visits, important metric for company is visitors – it represents the number of people who actually visited the website. Visitor can visit a website multiple times and that is why the number of visits is higher than the number of visitors. Firms usually refer about visitors as unique visitors or also unique users in order to be sure that each visitor is counted only once (Lancaster, 2016).

According to above mentioned suggestions, the metric called visitors represent the number of unique individuals or users, who visited company's website during specifically defined time period. Measuring the amount of users is thus executed in standard time period, but companies must consider possible distortions in this metric, which is usually caused by automated systems, known as "bots". Nowadays, companies are able to eliminate this problem to get very exact estimations of visitors, visits but also pageviews. Mentioning pageviews, this metric is closely related to visits. By definition, one visit equals total number of pageviews grouped together in one session. Based on that, the number of pageviews will exceed the number of visits (sessions). Relations between metrics called visitor, visits, pageviews and also hits are explained below, in the Figure 3.

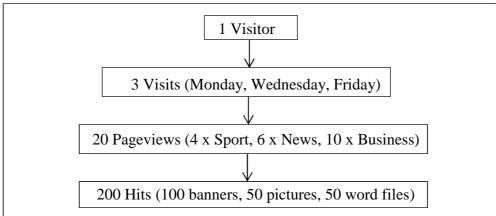
Figure 3
Relations between Hits, Pagevievs, Visits and Visitors



Source: FARRIS, P. – BENDLE, N. – PFEIFER, P. 2010. *Marketing Metrics. The Definitive Guide to Measuring Marketing Performance*: Pearson Education Inc., 2010. ISBN-10: 0-13-705829-2.

Example: The user visited a news website on Monday, Wednesday and Friday. During the visits, user clicked 4 times on "Sport" page, 6 times on "News" page and 10 times on "Business" page, what means that totally 20 pageviews were generated. On the webpages there are placed 100 banner advertisements, 50 pictures and 50 word files (totally 200 hits). This situation can be explained graphically, as shown in following Figure 4.

Figure 4 Explanation of user's behaviour on news website



Source: FARRIS, P. – BENDLE, N. – PFEIFER, P. 2010. *Marketing Metrics. The Definitive Guide to Measuring Marketing Performance*: Pearson Education Inc., 2010. ISBN-10: 0-13-705829-2.

Another metric in this category is abandonment rate. This metric measures how many purchases on the website were not completed, even if the customer initiated a buying process. Abandonement rate is a ratio of online shopping carts (online purchases) to number of initiated transactions (AMA, 2017). Online shopping car is a website tool that allows customers to select products for eventual purchase. Calculation of abandonement rate is as follows:

Abandonement rate (%) = Purchases not completed / Purchases initiated

This metric is used almost entirely only the online companies. In classic shops, once the purchase process is initated, customers usually complete this action and do not abandon their shopping carts. Abandonement of purchases in online companies is, however, a common issue. Marketeers need to find, how many of these purchases are not successfully completed. Important information for them is also find out reasons why customers refused to buy a product and take a relevant measures to improve this result (e.g. optimizing website design, improving functions of shopping cart, simplify purchase process etc).

Example: An online books retailer found in its data, that from 500 customers who added products into their carts, only 400 completed the purchase. From this data we can get a result of abandoned purchases, which is 500 - 400 = 100. According to above defined formula, abandonement rate is: 100 / 500 = 20 %. Companies should thus research the causes of unsuccessful purchases, and focus on better results in the future (Farris et al., 2009)

2.7 Downloads

Tracking the number of downloads is the possibility to measure how the audience engage with the organization. Main purpose of reflecting on downloads is to determine how efficiently company delivers applications (or other different files) to users, ao potential customers. Expression of metric called downloads is simple:

Downloads = Number of times application (file) is downloaded

Downloads represent a common way for marketeers to gain a presence with consumers. This metric definitely prevails especially in technological and internet-based companies because it includes downloads of smartphone applications, music files and other files for mobile devices, tablets as well as computers. This metric, however, is not crucial one, as many developers and analyst say – downloads are only guide to potential success of company. (Dredge, 2011).

Downloads is a simple count of the number of times an application or another file is downloaded, regardless of who requested that action. Crucial aspect of downloads is that it does not distinguish 5 identical downloads of single individual from 5 separate downloads to 5 separate users. Marketeers should be critical about this metric as these two above mentioned possible scenarios may have very different consequences for the company.

Another complication in the counting of downloads is how to consider downloads that were started by user, but not completed. One way of handling this problem is to count both numbers – downloads started and also downloads completed. As always, most important is interpretation for marketeers, who must know how to explain downloads calculations (Farris et al., 2010).

2.8 Friends (Followers, Subscribers, Supporters), Cost per Friend

Friends/Followers/Subscribers or also Supporters is a very simple metric that measures the number of individuals who follow or join company's page, in this case, on social network website. Construction may be simple, but significance of this metric is increasing, because the number of people interacting on social network has grown rapidly in recent time. A high number of friends indicates an active interest in the owner of the page. The higher this number is, the stronger customer database the company has. This metric is also very often ranked among most important social media metrics (Shively, 2012).

Friends = Number of people registered as friends of the company on a social network website. The number of friends depends on many factors. Two companies and their brands may have very different levels of social network presence. The product they offer is also important and will probably influence the possibility of registering as a friend at the social network webpage. According to this, it is very hard to objectively judge the efficiency of social network marketing. Having more followers may be a positive signal of customer engagement, and thus companies try to maximize this number. More followers means more potential customers who have positive relationship with a brand. Moreover, customers, who publicly support the company will incline to strong brand awareness and loyalty (Farris, 2009).

Nevertheless, a metric called friends is by no means the most important aim of the company. Despite its positives and information it provides, companies does not exist with the goal to generate friends on social networks – the real challeng is to convert friends into customers (DiPietro, 2010). Also, number of friends may report the success of online marketing strategy, but companies need to do a deeper research because this metric is not sufficient without any additional information.

With using of the metric friends, companies often calculate another metric called cost per friend. Cost per friend offer a marketeers information about effectiveness of social network campaigns and answers the question, if the social network presence has benefits for the company. Construction of cost per friend is following:

Cost per Friend = Total Cost of Social Network Activities/Number of Friends

Direct costs of having a social network webpage are often very low. But it is important to consider following: page designing activities, updating the webpage by marketing staff, creating of marketing strategy – all those activities are costs that company must be careful of.

3. Summary

The issue of online marketing metrics still represents largely unexplored area. This paper informs the reader about options how to measure efficiency of online marketing campaigns. A detailed analysis of all known online marketing metrics is beyond the scope of this work, but this brief introduction to this topic should encourage marketeers to increase their interest in exploring the effectiveness of online marketing activities. Proper evaluation of calculations related to efficiency of online campaigns can save a lot of company's funds, and may also help to allocate corporate finances even better.

Acknowledgement

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Monetary Impact of Accelerated Economic Convergence

Martin Hudec

University of Economics in Bratislava Faculty of Commerce Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: mhudec18@gmail.com

Abstract

Accession of countries into unions of political and economic nature such as the European Union also means a commitment to adopt a common currency. A monetary union is based on the assumption of a fixed exchange rate between its members, or a single currency within the union. An important role, therefore, plays the exchange rate, which is used as a stabiliser in response to asymmetric shocks in countries before joining the monetary union. Naturally, after the entry the opportunity to use this tool fades away, meaning that countries need to know under what conditions it is beneficial for them to join a monetary union and to give up their autonomous monetary policies. The aim of this research paper applying methods of analysis and comparison is to closely present the issue of monetary integration, focusing on the impact of monetary integration on countries' economy.

Keywords: economic convergence, economic shocks, monetary union

JEL classification codes: A13, O4, O10

1. Introduction

Optimum currency area represents an optimal geographic zone of a single currency or previously existing several currencies (now standardized), whose exchange rates are fully pegged. The single currency with stable exchange rate can fluctuate only against currencies used outside this territory, while optimality is determined contingently depending on several properties, also known as the theory (theories) of optimum currency area. The theory of optimum currency area was first presented by Professor Robert A. Mundell in 1961, addressing the advantages of sharing a common currency in a monetary union, however theoretical analysis regarding the concept of a monetary union was presented in 1944 by the economist Abba Lerner in his research called The Economics of Control: Principles of Welfare Economics, addressing the issue of a potential conflict between different levels of interest rate and income, which are necessary to maintain fixed exchange rates and the need to achieve the objective of full employment and a corresponding economic growth. Lerner attaches to these objectives more weight than to maintaining fixed exchange rates and suggests that exchange rates should be subordinated to the goal of full employment by creating a monetary autonomy as he calls regime of freely floating exchange rates. This apparently raised the question of which factors could determine the optimal currency area and what factors determine it.

According to Mundell, there are benefits for regions using the common currency, since monetary union facilitates especially international trade as a single medium of exchange and reduces transaction costs. On the other hand, the use of single currency may be problematic during asymmetric shocks and rigidity of nominal prices and wages, during a shift in demand from country A to country B, which forms formed inflationary pressures in country B, while

the country A manifests recession caused by the outflow of demand. Mundell argues that providing unrestricted movement of labour problems would be solved by moving both markets available labour market and market B. Assuming the absence of labour mobility, asymmetric shocks would offset by the appreciation of currency with increased demand, which, however, may occur only in case that both countries A and B use different currencies (Mundell, 1961). Optimum currency area is therefore an area with free movement of labour. Imperative contributions regarding optimum currency area were also published by Professor Ronald McKinnon in 1963, defining a positive relationship of optimality of a currency area with openness to trade its members. His findings show that smaller countries tend to be more open economies with lower nominal rigidities and therefore are more suitable candidates to join the monetary union. Furthermore, Professor Peter Kenen extended the optimal currency area in 1969 with the idea that monetary union should be entered by countries with a similar and diversified industries, in order for them to adopt the common currency in a beneficial way. At the time of its inception, this theory has been widespread and often discussed since Kenen concluded that countries with a higher degree of diversification suffer fewer asymmetric shocks and thus should enter the monetary union.

1.1 An Optimum Currency Area Odyssey

Moreover, when it comes to the development of the optimum currency area theories, the fundamental characteristics can be seen in price and wage stability; integration of labour and financial market; integration of production factors; economic openness; similarity of inflation rates; fiscal and political integration. Most of the optimum currency area research explores the interrelationships of potential members of the monetary union in four areas, namely trade volume, similarity of shocks and cycles, the degree of labour mobility and a system of fiscal transfers. Among the main benefits of membership in the monetary union we can include higher usefulness of resources; transparency of prices; growth of competition; the removal of uncertainty by preventing the mobility of the national currency exchange rate, which should lead to the strengthening of the internal market and trade promotion. Due to more transparent and more interconnected financial markets and reduced transaction costs additional benefits from a single currency should be achieved. Conversely, the main disadvantage of monetary union membership are restrictions on the possibility of using instruments that are available to individual national governments and the loss of control over the execution of national monetary policies, meaning that countries which do not have synchronized economic cycles, are giving up the necessary tool of stabilization, when entering the monetary union.

Likewise, the advantages of monetary union are also dependent on the type and similarity of economic shocks which member countries are facing, because the basic presumption is that if the occurrence of shocks and the speed with which economies respond to them are similar among the members of the monetary union, then the need for an autonomous policy is reduced and net gains of the single currency should be higher. In other words, the fix exchange rate between two or more countries can be beneficial if their economic cycles are strongly correlated. The degree of correlation of cycles is never absolute, but the mobility of production factors between countries or regions can mitigate the impact of asymmetric shocks. Only those countries whose economic cycles are not highly correlated, may benefit from the possibility of stabilization with national monetary policies. The degree of correlation of economic shocks may be negatively affected only by specific supply shocks, since there is an assumption that aggregate demand shocks and supply shocks should act uniformly among the monetary union countries (Mongelli, 2008).

2. Fixed vs. Flexible Exchange Rate

Adopting a single currency means a loss of autonomous monetary policy in favour of a common monetary policy, leading to the abandonment of a flexible exchange rate. These factors (autonomous monetary policy and flexible exchange rate) are considered in economic theory as instruments to stabilize an economy after suffering external shocks or as tool to ensure competitiveness. In other words, various optimum currency area properties (also called prerequisites, properties, characteristics or criteria) have naturally emerged from the debate on the benefits of fixed vs. flexible exchange rate regimes, depending on the characteristics of the economy, while their fulfilment means significantly smoothing the loss of autonomous monetary policy and a floating exchange rate by ensuring internal and external stability, reducing impact of shocks and facilitating subsequent adjustment of the economy. Mobility of factors of production was the first criterion defined within the optimum currency area theory. Its author is the founder of the theory, Professor Robert Mundell, while it was first published in 1961 in a research article called A Theory of Optimum Currency Areas, revised in 1997 Currency Areas, Common Currencies, and EMU; Optimum Currency Areas and in 2000 Currency Areas, Exchange Rate Systems and International Monetary Reform. The mobility of labour and other production factors increases efficiency and wealth. In the short term, the possibility of factors of production movement is lower than the long term. This movement is limited by the speed at which investments can be generated in one country and how fast they can be accepted by other countries. Labour mobility is lower in the short term due to the high cost of relocation or retraining. In the long run, however, the mobility of factors of production may allow levelling of economic shocks. Mundell's assumptions were based on the Phillips curve, i.e. the existence of a trade-off between unemployment and inflation, as well as his findings that prices and wages are inflexible downward in the short term; for the government, there is interchangeability between unemployment and inflation; the task of economic policy is stabilizing function and supporting aggregate demand if lagging.

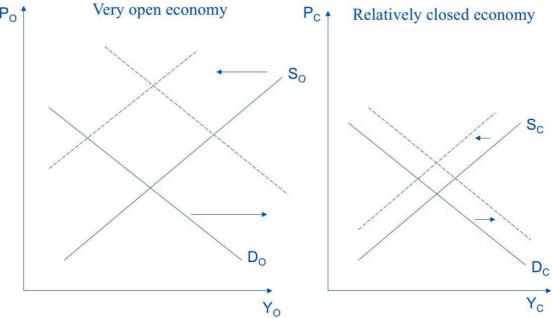
Following the Mundell's research, Professor Ronald McKinnon defined additional criteria in his research articles called *Optimum Currency Areas* in 1963 and *Optimum Currency Areas* and Key Currencies: Mundell I versus Mundell II in 2004, regarding the issue of optimality and considering the impact of the openness of the economy to achieve internal and external balance. Optimum currency area is therefore an area where the monetary, fiscal policy and a flexible exchange rate are effectively applied in the context of three potentially conflicting, goals - full employment, the balance of payments, stable domestic price level. The openness of the economy is defined as the ratio of tradable to non-tradable goods (McKinnon, 2004). Using the example of a small open economy, there is appropriateness of using a fixed exchange rate, while by the term small and open economy we understand a country where exportable and importable goods make up a high percentage of domestically consumed goods. In the event that country has a floating exchange rate, used for ensuring the balance of payments, exchange rate fluctuations are also equally reflected on the prices of tradable goods, while prices of non-tradable goods remain constant. However, since the tradable goods represent a large part of domestic consumption, these fluctuations will be considerably reflected on the price level of the domestic economy. In the case of depreciation of the domestic currency, the domestic price level will have to increase and the decline in real wages will occur, meaning that with the decline in real wages and a fall in the purchasing power of the population will increase pressure on nominal wages, which could mean decline of supply. That would eliminate a positive impact on the export and domestic production.

A comparison of the impact of depreciation on very open economy and relatively closed economy can be seen on the Scheme 1, while large depreciation of currency affect strongly

the price level of the open economy than the price level of closed economy. Systematic use of monetary policy will be costlier in very open economy, since it has higher price variability.

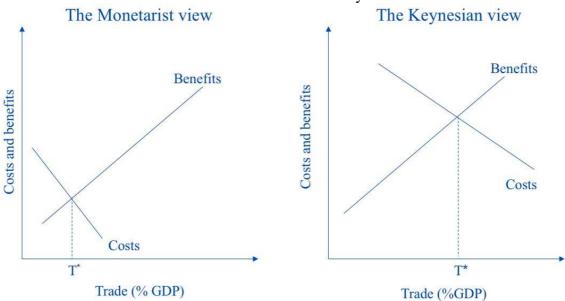
When countries join a monetary union, they naturally loose an instrument of policy which would allow them more effectively to absorb transitory asymmetric shocks. On the other hand, this loss does not always have to be seen as a very costly solution, since countries not in the monetary union that actively use such stabilization policies also have to accept the unpleasant results in terms of higher long-term rate of inflation.

Scheme 1Effectiveness of Currency Depreciation in Relationship to Economy Openness



Source: Author's based on DE GRAUWE, P. (2014). *Economics of Monetary Union*. Oxford: Oxford University Press, 280 pp.

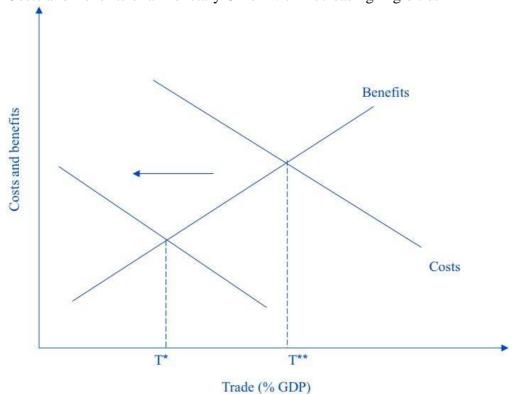
Scheme 2
Different Views about Costs and Benefits of a Monetary Union



Source: Author's based on DE GRAUWE, P. (2014). *Economics of Monetary Union*. Oxford: Oxford University Press, 280 pp.

For a small open economy, it is therefore more favourable to join the monetary union and fix its course even in situations of low labour mobility. Flexible exchange rate in a very open economy is not much effective as an instrument of ensuring external balance, while it is harmful for maintaining domestic price stability. Loss of the exchange rate and autonomous monetary policy will not be for such economy significant. On the contrary, if an economy is hit by transitory asymmetric shocks, it may be easily absorbed thanks to other monetary union members, since the shocks will spread rather quickly to other trade partners and a common monetary policy will be beneficial for all members of the monetary union. If we look at costs and benefits of the monetary union, according to the monetarist view, monetary policies are inefficient as tools to correct different development tendencies between member states. We can see on the Scheme 2 that the cost curve is close to its origin, meaning that many economies would gain benefits form relinquishing their existing national currencies by joining a monetary union. On the contrary, the Keynesian view takes into an account the fact that the world is full of rigidities, meaning that monetary and exchange rate policy are a powerful tool in eliminating disequilibria states of development. Furthermore, the cost curve is located far away from its origin. In other words, only a relatively few economies should be interested to join a monetary union. However, the reality shows that since the 1980s, the monetarist view has gained more adherents compared to the Keynesian view, creating desirability of joining a monetary union (i.e. EMU since the 1990s). Moreover, with decreasing rigidities (i.e. price and wage) and increase in labour mobility, we can see that the cost curve shifts downwards on the Scheme 3, meaning that monetary union becomes more attractive for both existing members and new applicants.

Scheme 3Costs and Benefits of a Monetary Union with Decreasing Rigidities



Source: Author's based on DE GRAUWE, P. (2014). *Economics of Monetary Union*. Oxford: Oxford University Press, 280 pp.

Likewise, the degree of openness of the economy has an impact on reducing the risk of asymmetric shocks. The higher the degree of openness equals to lower transaction costs of

converting currencies used in international trade. Also, the devaluation will be faster incorporated into the prices of tradable goods and the cost of living. Economic openness must be assessed on several levels, which overlap but are not identical. They include the overall trade openness of the country with countries outside the monetary union; the degree of openness to other countries of the monetary union; the proportion of tradable and non-tradable goods and services in production and consumption; the marginal propensity to import, while the degree of openness of the economy determines the optimum currency area endogeneity. Professor Peter Kenen in 1969 in his research article *The Theory of Optimum Currency Areas:* An Eclectic View as well as in 2001 Currency Areas, Policy Domains, and the Institutionalization of Fixed Exchange Rates and 2003 What we can Learn from the Theory of Optimum Currency Areas also identified diversification of production as the third criterion of the economic zone with there a little likelihood of contact with asymmetric shocks. The high degree of diversification reduces the negative effects and the probability of asymmetric shocks to the economy or one of its sector. Region is seen here as a homogenous group of producers who use the same technology, face the same demand curve and due to external circumstances, they suffer or prosper together. However, if the area is defined by activities and not geographically and politically, perfect labour mobility between regions will also require a perfect labour mobility concerning the professions (job opportunities), while it occurs only if the production factor labour is homogeneous (Meade, 2007).

Nonetheless, perfect labour mobility occurs rarely, meaning that more relevant characteristic should be the diversity in the national production mix. In other words, countries should produce a larger number of products, since a highly diversified economy will not have to undergo changes of the exchange ratios, by modifying the nominal exchange rate, as often as the economy producing only one product (production and subsequent export diversification reduces the need for frequent changes). Secondly, if a sharp decline in demand hits the main export sectors, unemployment will not increase so sharply and also linkages between foreign and domestic demand, especially among export and investment will be weaker in less diversified economy. Imported fluctuations in employment will not be aggravated by related fluctuations in capital formation. Economy with a diverse production structure will be able to export a greater variety of products. Due to fluctuations in foreign demand, it is possible to consider export flow as a potential source of volatility. These variations, however, are not harmful because they only apply to a relatively independent market segment, while in another segment demand will be able to grow. Total exports will be therefore more stable than in an economy with a low degree of diversification. High diversification of production and consumption and the corresponding diversification of import and export, along with many job opportunities (diversified economy has more branches in which the workforce is distributed hand in hand with a higher amount of production activities increasing the number and variety of job opportunities) reduces the potential negative impact of economic shocks specific to certain sectors. Diversification also reduces the need for influencing the nominal exchange rate and provides protection against the adverse consequences of economic shocks, since highly diversified partner – trading economies are more likely to achieve cost reductions due to the abandonment of the bilateral nominal exchange rate thanks to the single currency (Spanjers, 2009).

Among other dominant optimum currency area aspects, we can include wage and price flexibility; integration of financial markets; a similar inflation rate; fiscal and political integration; the similarity of economic shocks and synchronization of economic cycles. Wage and price flexibility allows to suppress inflation and unemployment due to asymmetric shocks without affecting the nominal exchange rates (in a country affected by the recession, wages will fall and vice versa) It is particularly important in the short term, while in the long term

the mobility of factors of production, including labour play vital role. Integration of financial markets may reduce the need for intervention to the exchange rate. Disruption of the balance can be alleviated through capital inflows (such as borrowing from surplus areas). With a high degree of integration even small changes in interest rates may cause balancing movements of capital within the member states, which will lead to reducing the gap in long-term interest rates. A similar inflation rate may lead to the establishment of external balance, since if inflation rates in member states are low and similar in time, trade conditions remain relatively stable, leading toward balancing of country's current account, which will reduce the need to influence the nominal exchange rate. Various inflation rates may be due to differences in structural development, labour markets, economic policies and social preferences (i.e. inflation aversion).

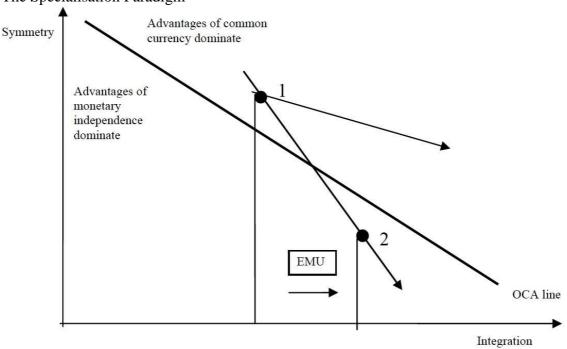
The aspect of fiscal and political integration is seen as sharing a supranational system of fiscal transfers to redistribute funds to member countries affected by adverse asymmetric shock that would facilitate dealing with such a shock and would not require major interventions in the nominal exchange rate. Such a system requires an advanced degree of political integration and the willingness to risk sharing. The political will for integration is seen as the most important condition for sharing a single currency and supports compliance with common obligations, maintaining cooperation within various economic policies and calls for closer institutional connectivity. Similarity in political attitudes between member countries is substantial for the unification of countries in the monetary union. The similarity of economic shocks and synchronization of economic cycles, as well as the reactions of economic policies to these shocks, includes almost all of the above criteria and is called meta criterion, capturing the interactions between multiple currency factors. If the incidence of supply and demand shocks and the speed with which economies adjust to them are similar in the countries of the monetary union, the need for an autonomous economic policy is limited and the net benefits from the adoption of the single currency are increasing (Lacina, 2007).

3. Specialization vs. Endogeneity

Fiscal and monetary policy should go hand in hand, since over-reliance on one of the policies could have a critical impact on selected sectors of the economy. Area of operation of fiscal policy should cover several regions producing one product and should match monetary area, in view of a key feature of fiscal policy to compensate regional differences, maintaining internal balance. When defining the essential characteristics for the determination of net profits, respectively benefits from the monetary integration, openness of economies and the degree of correlation of incomes play an important role as a tool of measurement. As we have upper analysed, openness is one of the optimum currency area criteria, because the growth in trade leads to decreased transaction costs and risks associated with floating exchange rates. High marginal propensity to import reduces the variability of output and thus the need for domestic monetary policy and the openness of the economies serves as a stabilizer. In countries with a single currency, there is an increase in bilateral trade and openness, due to the decreased transaction costs and removed variability between national exchange rates. Entry into the monetary union can significantly positively affect trade relations between member states and this may lead to a major change in the development of economic cycles of members. These changes may be caused partly by reconciling the necessary monetary policy, but also due to narrower business ties between members of the monetary union, however increase in trade between members can result in both higher and also lower degree of correlation of business cycles. Removal of trade barriers can lead to specialization of countries and thus decrease the degree of correlation of business cycles as a result of the action of specific supply shocks. On the other hand, the higher trade integration can lead to an increase in the degree of correlation, due to the effect of demand shocks or dominance of intra trade (Baldwin, 2012).

The first school of thought is based on Krugman's Specialization Hypothesis released in 1993 in Lessons of Massachusetts for EMU research article. This hypothesis is based on the theory of trade. Once country joins the monetary union, the single currency will remove trade obstacles, while increasing integration of countries will lead to their specialization on those goods where they can gain their comparative advantage. Specialization will occur due to the fact that most trade is cross-sectoral in nature. Due to this development, members of the monetary union may become more vulnerable to supply economic shocks and for this reason correlation of their income will decrease in these countries (Krugman, 1993). As shown in the Scheme 4, the increase of monetary integration may cause country's shift away from the OCA line, a decrease in the correlation of income and increase of openness (a shift from point 1 to point 2). In point 2 dominate the advantages of monetary independence, unlike in the starting point 1 (in which predominated the benefits of a single currency). This means that in point 2 outweighs the advantages of a single currency over the cost of the loss of monetary independence. On the contrary, in point 1 it is better for the participating countries to maintain a floating exchange rate, because the advantages of independence outweigh the monetary savings from decreased transaction costs when adopting the common currency. In the case of Krugman's Specialization Hypothesis, economic cycles become less matched due to the higher susceptibility of member countries to industry-specific shocks.

Scheme 4The Specialisation Paradigm

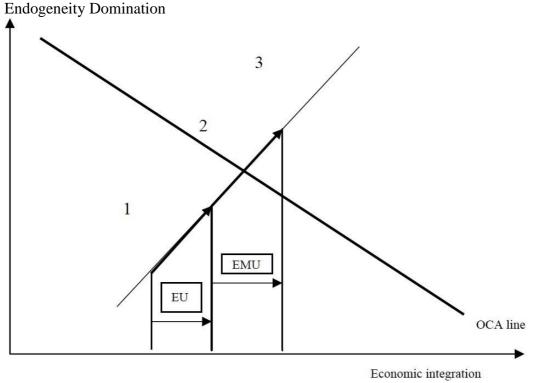


Source: DE GRAUWE, P. (2014). Economics of Monetary Union. Oxford: Oxford University Press, 280 pp.

On the other hand, contradictory to the Specialization Hypothesis is the optimum currency area Endogeneity Hypothesis by Jeffrey Frankel and Andrew Rose released in 1998 in research article *The Endogeneity of the Optimum Currency Area Criteria*, which finds a positive link between the degree of correlation of income and trade integration. Default argument of this hypothesis is that monetary integration reduces transaction costs by more than just the costs associated with the volatility of exchange rates. Through increasing mutual

trade, member states may generate economies of scale, since in this case most commerce or trade operations take place on the intra-industry basis, which causes an increase in the degree of correlation of business cycles. Intra-industry trade is widely regarded as the international trade growth catalyst (Frankel – Rose, 1998). Monetary integration is seen as a long-term commitment, which facilitates the flow of foreign direct investment, thereby enabling them to build long-term relationship between the partner countries. It can also be a tool of political integration of these countries. Because of this development, which takes place between countries with the single currency, mutual trade as well as the economic and financial integration also increase the alignment of economic cycles, meaning that those countries may be more dependent on mutual trade and shocks are likely because of close trade ties transferred from one country to another.

Scheme 5



Source: DE GRAUWE, P. (2014). Economics of Monetary Union. Oxford: Oxford University Press, 280 pp.

An example of endogeneity can be seen on the Scheme 5. Point 1 is perceived as the default position, which is a group of countries. It is apparent that these countries are located on left from the OCA line, which means that advantages of monetary independence dominate. If these countries would join a union, in the case of our scheme the European Union, there would occur a shift to point 2. With this shift, the correlation of income increases, as well as the degree of openness of member states. If those same countries created a monetary union, in this case the European Monetary Union (EMU), there would occur a shift to point 3. Along with the further increase in the correlation of income and level of openness there is a shift to the right side of the OCA line, indicating that members are getting dominant advantages of monetary union, while benefits depend on how those countries are similar. If these countries are highly diversified, subject to similar shocks, quite open, prefer low inflation, characterized by high labour mobility and high price and wage flexibility, fiscally integrated, then after monetary unification they will be located on the right side of the OCA line and benefits of higher correlation of income and greater openness will be significant for them. Conversely, a group of countries that does not meet these OCA criteria, are would be located on Scheme 5

above point 3 of OCA line and they should wait longer for the entry into the monetary union (De Grauwe, 2014). Likewise, between countries in the monetary group prevail common demand shocks and therefore the economic cycles of member countries are highly correlated.

4. Conclusion

The notion of an optimum currency area represents a territory for which it is advantageous to use a common, only one currency, respectively set of currencies rigidly held with a fixed exchange rate, maintaining flexible nominal exchange rate with other currencies, allowing its turnover. This fact naturally means that the optimum currency area theories are useful not only for examining the appropriateness of introducing a common currency, but also as a view regarding fixing an exchange rate in general. Theories based on the assumption that the adoption of a common currency or fix of the exchange rate brings a number of benefits in addition to various disadvantages, seek to identify various situations where the benefits outweigh the costs of permanent monetary action. While the benefits are usually microeconomic nature, disadvantages on the other hand, are rather macroeconomic in nature. Among the main benefits of adopting a common currency, we can include in particular the removal of administrative and transaction costs, reducing exchange rate risk and hence creating a stable environment for international business, as well as reduction in speculative capital flows. The disadvantage of this step, in relation to monetary policy can be seen in the issue of dealing with asymmetric shocks – economic amplitudes, which do not hit the whole currency area evenly (as opposed to symmetric shocks), but only individual parts, limiting the possibilities of monetary policy to adequately respond to these shocks.

In such a case, then there must be a mechanism to substitute previously existing monetary and exchange rate policies within a currency area to avoid or to be able to effectively face asymmetric shocks, negative events that affect demand respectively offer only in some parts of the currency area. The probability of asymmetric shocks occurring then indicates whether monetary union is an optimum currency area. Optimum in the sense that a likelihood of asymmetric shocks is very low, since there is an economic mechanism that is capable of eliminating, or at least reducing their impacts, while optimality is determined by the nature of the currency area, in particular the mobility of labour and other production factors, flexibility of wages and prices, economic openness, diversification of production and consumption, similar rate of inflation, fiscal and political integration. These features reduce the need to use the nominal exchange rate to restore internal and external balance, reducing the likelihood and impact of asymmetric shocks. Moreover, most influential monetary theories build on the assumption that own currency with a flexible exchange rate could, under ceteris paribus, function as a successful tool to control these asymmetric shocks, as in the case of positive shocks leading to appreciation of currency and depreciation in the case of negative shocks. Therefore, countries deciding to join a common monetary union should know if the benefits of such action outweigh the future costs.

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Economic Value Added as a Modern Method of Measuring Business Performance

Monika Jančovičová

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: jancovicova.monikaa@gmail.com

Kristína Kováčiková

University of Economics in Bratislava
Faculty of Business Management
Dolnozemská cesta 1
Bratislava, 852 35
Slovak Republic
E-mail: kristinakovacikova.kk@gmail.com

Abstract

The traditional way of tracking performance of companies is based on the assessment of their ability to achieve desired financial indicators — profit, turnover or market share. The company is rated as the most powerful when it reaches the planned financial results. A major weakness of the traditional approach to monitoring company performance is the fact that financial indicators provide an accurate feedback on what was or was not effective. Thus, they evaluate the realised performance. Nowadays, new approaches to monitoring company performance are based on the traditional system, but they are complemented by other aspects. A modern method of performance evaluation rests on the assumption that a company is efficient if it is able to achieve predefined strategic objectives.

Keywords: economic value added, profit, performance

JEL classification codes: M21, L25, D22

Introduction

In the most general sense, the notion of performance is used for the definition of the very essence of existence of the company in the market environment, its success and future survivability (Fabiánova, 2002). In the literature and economic practice the notion of performance is widely used and there are many definitions of its meaning. These definitions are most often related to output – the result of work.

1. Business Performance

Veber provides a clearer and wider definition of the performance stemming from the technocratic idea. The performance is a general measure of the efforts of individuals or groups (Veber, 2011). In simple terms, the performance is seen as an evaluation of the input scarce resources in the final output. The concept of performance can be imagined as the amount of work done per unit of time or the amount of output produced in a given time period.

Wagner sees the performance as a characteristic that describes the way the studied entity carries out an activity, based on the similarity with the reference method of implementing this activity. Performance encompasses two dimensions – efficiency and effectiveness (Wagner, 2009). Care is taken not to equate these two concepts. Effectiveness is doing the right things, while efficiency means using the correct way for the activity. Performance analysis usually takes the form of financial analysis, credibility model of individual structural units. Hardly any performance analysis respects a dynamic and comprehensive modern management view of the performance.

Approaches to measuring business performance have undergone a significant development from traditional performance indicators to the preferred market value of the company. Even informational efficiency of capital markets has evolved, which is increased by the efficient allocation of capital. The new concept of financial management is based on value management for owner called Shareholder Value, which is based on the modified financial indicators that allow to successfully and better identifying processes and activities that enhance shareholder and company value in the long term (Dluhošová, 2006).

1.1. Modern approaches to the evaluation of business performance

Modern approaches to the assessment of business performance result from criticism of the traditional approach and their conceptual barrier occurs between the market valuation of the company and the performance measured by the accounting methods and procedures. According to Rajnoha a modern indicator should meet the following requirements (Rajnoha et al., 2013):

- a) allow the use of the largest possible amount of information provided by accounting system,
 - b) calculate the risk and take into account the range of committed capital,
- c) provide clear and transparent identification of links with all levels of management of the company,
 - d) allow performance evaluation and also the valuation of the company.

2. Performance Evaluation Using the Indicator Economic Value Added (EVA)

In 1991, the New York consulting firm Stern Stewart & Co developed a fully integrated framework for financial management and incentive pay. The heart of this framework is economic value added "EVA®". It is a registered trademark of Stern Stewart company, but in our thesis EVA® is displayed without the ® symbol, but it continues to be seen as a registered trademark of Stern Stewart & Co (Maříková – Mařík, 2005).

EVA is a measure of value creation for shareholders. Performance of value for shareholders of a company is a decisive factor in determining whether an enterprise can succeed or not. It is also an excellent metric for tracking profitability and using of the company's capital. As a result, the indicator EVA was soon accepted as one of the most useful analytical tools for assessing company's financial performance. EVA has been widely adopted by the management to decide on increasing the productivity, where to invest new capital and which non-performing assets to liquidate (Stewart, 2013).

According to the Eva indicator the main objective of the company is to maximize economic profit, not the accounting one. The principle of the economic value added is based on economic profit, which is the difference between revenues and costs, and the costs are considered ordinary expenses and cost of capital. The cost of capital includes not only the cost of debt but also the cost of equity.

Economic value added means the value added by economic activities of enterprises above the cost of capital, which is bound in their assets. Economists and the EVA method therefore recognize the achievement of real profit to the level when it reaches the minimum required rate of return for all investors, therefore, creditors and equity holders.

EVA talks about how much the company has produced above the minimum requirements of the owners. Therefore, it helps to determine whether the enterprise earns income only for the survival or even increases its value.

The concept of economic value added is then used because of the value generated beyond these demands; a company can invest in its further development and thus in increasing its value (Zikmund, M. 2011).

In general, if:

EVA>0 \rightarrow company creates value for shareholders,

EVA=0 \rightarrow value of invested capital is returned without evaluation,

EVA<0 \rightarrow there is a decline in the value of the company.

2.1. Sources of information

Economic value added is one of the methods of financial analysis based on the economic assessment in accordance with accounting or more precisely, according to financial statements of a company.

Success rate of reaching real results mainly depends on quality of information sources.

In the analysis of financial statements we draw attention to balance sheet and profit and loss statement, which are necessary for obtaining the information needed for the calculation of the EVA indicator. From this information we will get a realistic picture of the company's property and financial situation.

Balance sheet

The balance sheet is an organized overview of what the company owns and owes at some point in time. This categorizes all resources of the company such as assets, liabilities and equity.

Profit and loss statement

Profit and loss statement measures the financial performance of the company. It is a report that informs about income, expenses and final gains or losses of a company over a certain period of time. It is used to detect and report in detail the result of economic activities and it provides a detailed overview of the running operations that affect the result of economic activities. It is important to realize that sometimes the costs and revenues are time-unrelated to expenses and income, which means that the economic result does not match the payment (Růčková, 2008)

On January 1st, 2015, the amendment to the measure on accounting procedures was adopted, in which the most significant change is the abolition of the existence of extraordinary activities. Consequently, the economic result for the accounting period will be divided to the profit and loss from economic activities and profit and loss from financial activities. Extraordinary activities will be presented as part of the economic activity of the enterprise.

2.2. Calculation of the EVA indicator

EVA measures the economic profit, which is formed by the difference between the return on capital and economic costs, which include not only the accounting costs but also the opportunity costs. This difference and thus economic profit can be expressed as follows:

$$EVA = NOPAT - WACC \times C$$

where

 $NOPAT = Net \ operating \ profit \ after \ tax$ $WACC = Weighted \ average \ cost \ of \ capital \ (cost \ of \ equity \ and \ cost \ of \ debt),$ $C = invested \ capital$

In general, we can distinguish three possible ways of calculating the indicator EVA (Maříková – Mařík, 2005):

a) **EVA entity** (the capital charge method) at which it is necessary not only to quantify the amount of the average cost of capital, but also the amount of net operating profit and net operating assets. This method is considered to be the most accurate for determining the value of the indicator and it is the most frequently used method in practice. The calculation is as follows:

$EVA = NOPAT - WACC \times NOA$

where

 $NOA = net \ operating \ assets - capital \ that \ is \ tied \ up \ in \ assets \ required \ for \ main \ business \ activities.$

The given formula is very similar to the one mentioned above. The only difference is in the entry C - invested capital, which we can identify with NOA, provided that it is a capital that covers only operating assets.

If the EVA indicator is positive, it means that the company can cover the cost of capital (equity and debt) through the net operating profit, while a part of the profit remains for owners. If the Eva indicator is negative, the company is unable to cover the cost of capital generated from the operating profit. Value of the enterprise begins to decrease and the enterprise might be at risk of disappearing.

b) **EVA equity** (the Value Spread Method) – when using this method, it is not necessary to determine the amount of operating assets, but the same problem occurs even in the case of EVA entity when determining the amount of the cost of equity. The method is based on the accounting information, which often produces distorted conclusions. Value of the EVA indicator is determined as follows:

$$EVA = (ROE - r_c) \cdot E$$

where

 $ROE = return \ on \ equity$ $r_c = cost \ of \ equity$ E = equity

c) **EVA APV** – this is the least used method, it considers a zero debt company (and thus financing only with own resources).

Quantification of the NOPAT

Net operating profit (NOPAT) is an operating profit after tax, which company generates from main business activities. In determining the NOPAT, this should be considered:

- what profit will be considered as the initial one, while the most appropriate one in our circumstances is considered the economic profit or loss and the ordinary profit or loss. In order to use the economic profit or loss and the ordinary profit or loss in quantifying the value of EVA, it is necessary to take into account only the items that have operating characteristics, which often depends on the subjective opinion of the analyst (expert),
- what tax rate to use it is recommended to use the effective tax rate, which represents the share of income tax on gross profit.

Quantification of the average cost of capital

Determining the amount of the average cost of capital is quite difficult. This is mainly because the average cost of capital includes not only the cost of debt, but also the cost of equity. In Slovakia, the calculation of the average cost of capital (WACC) is used in the following structure (Vyhláška č. 492/2004):

WACC=(1-DS).
$$N_{PK}$$
. $\frac{PK}{CK} + N_{VK}$. $\frac{VK}{CK}$

$$CK = PK + VK$$

where

DS = income tax rate, which is established under the law on income tax for valuation of companies. The income tax rate is appointed in decimal form in the calculation,

Npk = costs associated with the use of debt capital as a percentage, that is, interest and other expenses paid by the lender. The costs are appointed in decimal form in the calculation,

PK = the amount of debt capital in euros. It consists of the components of foreign liabilities, which are for the purpose of calculating the interest rate, long-term bank loans, conventional bank loans, borrowings, issued bonds, notes, leases, rents payable and other liabilities.

 $Nvk = cost\ of\ equity\ as\ a\ percentage,\ that\ is\ expected\ and\ acquired\ profit\ share\ by\ owner$ for capital contribution to enterprise. The cost of equity is appointed in decimal form in the calculation.

VK = equity volume in euros.

CK= total capital (the sum total of equity and debt capital).

When quantifying the cost of debt capital, the procedure is simple, as it is based on loan agreements and it is a weighted arithmetic mean of the interest expense calculated from all loans provided to company.

In calculating the EVA indicator, the problematic variable is the cost of equity capital. This is defined in decree as expected and acquired profit share by owner. In practice, it is not easy to determine the cost of equity capital. Literature provides us with several guides, how to quantify the cost of equity capital, but to choose the right one depends on the particular enterprise, environment in which it is situated and general situation. The most used methods include modular models, the capital asset pricing model (CAPM), dividend discount model and the like (Jakubec et al., 2011).

Quantification of net operating assets

Net operating assets are the assets which companies need for their main economic activities. The starting point for the calculation of net operating assets is the balance sheet, of which:

- a) must be excluding non-operating assets,
- b) must be activating the items not reported in the balance sheet, at market prices,
- c) must be reducing the assets by non-interest bearing debt capital.

2.3 Advantages and disadvantages of the EVA indicator

ADVANTAGES:

- It helps companies in tracking problem areas and takes corrective measures to solve the problems.
- It can improve company administration and management because the higher the EVA indicator is, the higher are the bonuses for managers who work hard and faithfully which bodes well for company.
- Unlike accounting profit, such as EBIT, net income and EPS, the EVA indicator is economic and based on the idea that a company must include both the operating costs and the cost of capital, and therefore it represents a true and fair view of company for owners, creditors, employees, shareholders and other stakeholders. It acknowledges the fact that business units have different risk profiles and therefore should be charged to different costs of capital.
- Using the EVA indicator, a company can independently evaluate projects and therefore decide whether to run the project or not.
- It shifts the focus from achieving the growth to achieving the profitable growth, enabling the company to better assess where to bind its capital.

DISADVANTAGES:

- It takes into account revenues and costs obtained in a given period, it does not include expected benefits in future periods, neither directly in the form of estimates of future flow variables or through the valuation of assets and liabilities at the present value of future returns.
- It is based on the accounting information and the quantification of the input data on profit and capital invested requires many adjustments to accounting variables.
- If the growth of the EVA indicator is accompanied by an increase in the cost of capital, the enterprise value may go down even as EVA increases.
- It does not recognize the potential future value of the investment costs, such as research and development, investment in human resources.
 - There is lack of financial knowledge in many companies.
 - There are many assumptions for the calculation of the WACC.
 - When calculating EVA, it does not take into account the inflation.
 - It is based on historical data, even if shareholders are interested in future performance.

3. Conclusion

Performance and competitiveness are nowadays the most important words among companies. They are indispensable for the survival of the company, if the company is not competitive in the market, it will not generate sufficient performance to satisfy its shareholders. The companies measured their performance using traditional performance

measures for years. In 1982, a new concept of economic value added was introduced, which offered a new way to create value for shareholders. It gives shareholders a better way to measure the real economic performance of the company and to bring a closer alignment of management and shareholder objectives. It is mainly used as an alternative way in comparison with the traditional methods of financial analysis. Its quality implies the possibility to remove deficiencies in methods, which have been used so far for these purposes.

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Industry and Industrial Policy – the Phoenix of Economies

Richard Kališ

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: richard.kalis@euba.sk

Abstract

Discussion about the falling importance of industrial policy and industry as a dominant sector of economies is related mainly to the process of deindustrialisation. In our empirical part, we examined the change of production structure and production generated by final demand in four Central European countries in a dataset from 2000 to 2014. Our results suggest that there is no evidence of decreasing importance of industry and relevant policy. Moreover, because of its extensive benefits, e.g. R&D, high productivity and linked services, the studied sector should be even after the drop in the years of crisis considered as the key sector for development.

Keywords: industry, input-output, indirect effects

JEL classification codes: R15, L60, D24

1. Introduction and research question

The process of deindustrialization mainly caused by several key factors e.g. globalization, outsourcing, new technologies connected with automatization of typical human's occupations presenting questions about the importance of industrial policy. The decreasing employment in industry as a percentage of the employment in whole economy, as well as decreasing share of industry's value added, connected with the shift of many tasks and jobs from industry to services or other sectors are main indicators suggesting, that the typical driver of economic growth – industry is losing its importance and our attention should be given to services as a key sector for future development (Lábaj – Stracová, 2016).

Before any early judgement we should consider few facts, playing for industry policy and industry as a dominant sector for the most developed economies. The outsourcing as a determinant of growing importance of services at the expense of industry is mainly generated by industry.

Second important factor – industrial policy as a determinant of future development of the sector is considered as a policy with wider range of influence not only for selected area but for whole economy, mainly in sector of agriculture and several services (Lin – Monga 2013). Industrial policy is nowadays way beyond original aim of protection national independence and technological autonomy of domestic industrial production. In Warwick's paper *Beyond Industrial Policy* (2013) are presented new trends and definitions of industrial policy.

Finally, the driver of the growth in developed - economies research and development is mainly covered by industry's sectors. The research in knowledge-based economies is a fundamental factor to create technological progress and therefore increase productivity connected with reduced costs per unit (Mucha-Leszko, 2016). In Slovak Republic is the

industry a dominant sector in expenditures on research and development, where more than 60% of all expenditures is financed by industry's sectors.

All these factors, connected with the concerns about deindustrialization and so called reindustrialization (as an answer of European industrial policy) putting forward few questions. In our paper, we are examining the long-term development of industrial production compared to services and other sector generated by final demand in four Central European countries so called Visegrad group. The main research question is, if there is a significant change of production in industry's sectors generated by the final demand followed-up by the concrete shift to other sectors of economy.

1.1 Data and methodology

As a dataset, we used the world input-output database (WIOD) covering 43 countries of the period from 2000 to 2014. The tables are adhered to the 2008 of the SNA and structured as symmetric commodities times commodities sheets.

To examined direct as well as indirect effects generated by final demand using the simple input-output model. We assuming that the total production is the sum of the intermediate consumption and final consumption – final demand (the sum of domestic demand and export).

$$x = Zi + y$$

where

x is the vector of total production of commodities

Z is the matrix of intermediate consumption of commodities in a process of producing other commodities

y is the vector of total final demand (without distinguish between domestic demand and export)

than for Leontief matrix L is

$$L = (I - A)^{-1}; A = Z * \hat{x}^{-1}$$

where any element of matrix L

$$l_{i,j,t}^r$$

is interpreted as the production of commodity j generated by consumption of one unit of commodity i in the year t of country r.

If we want to examine effects of final consumption for industry, services and other sectors separately, we need to aggregate the original vector *y*.

Than for generated production of industry, services and other sectors we get:

$$\begin{aligned} x_{industry} &= L * \ y_{industry} \\ x_{services} &= L * \ y_{services} \\ x_{others} &= L * \ y_{others} \end{aligned}$$

Where for example for any

 $x_{industry,t}^{r}$

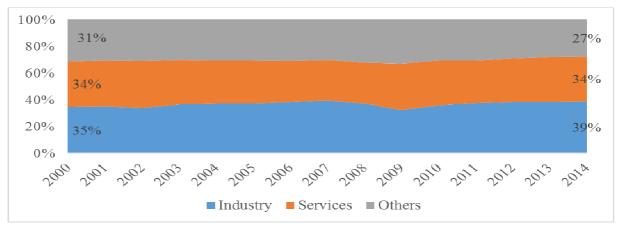
is the total production in economy of country r generated by final consumption of industry's commodities in a year t.

2. Empirical results

In further part - the empirical results, we are showing on eight figures that there is no significant decrease of industry's production as a share on total production, moreover, if we consider also the indirect effect of production generated by final demand for industrial commodities there is even positive change in mentioned indicator.

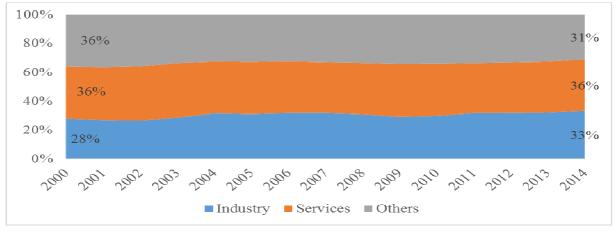
Firstly, we show the direct share of production separated to aggregated sectors – industry, services and others on total production. On the figures 1-4 are shown the countries of V4 where can be seen almost no change of structure of total production, except the years of global crisis 2008 - 2009. For better view, we show values only for the first (2000) and the last year (2014) of time series.

Figure 1The production of aggregated sectors as a share of total production for the Czech Republic



Source: wiod database 2016, author's calculations

Figure 2The production of aggregated sectors as a share of total production for Hungary Source: WIOD database 2016, author's calculations



Source: WIOD database 2016, author's calculations

Figure 3The production of aggregated sectors as a share of total production for Poland

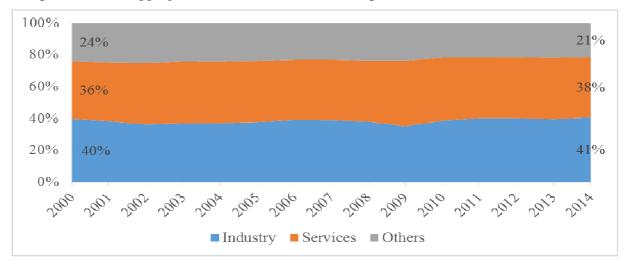
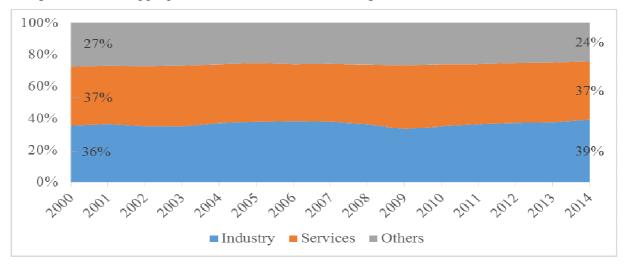


Figure 4The production of aggregated sectors as a share of total production for Slovakia



Source: WIOD database 2016, author's calculations

For next four figures we used the model interpreted in section 2 – data and methodology, to get also the indirect effects of final demand on production. We can see that there is no decrease in share of production generated by final demand of industrial commodities moreover the share is increasing (again without the years 2008 – 2009, where the global financial crisis decreased the demand for commodities produced in industrial sectors).

While we only examining the gross production, and abstracting of any further socioeconomic indicators like employment or more frequently added-value, that are from macroeconomic view more interesting and important, we can conclude, that there is no structure change in gross production presenting the decreasing in importance of industry and especially the industrial policy as a horizontal and wide subject of interest of any studied country.

Figure 5The share of production generated by final demand for commodities of aggregated sectors. The case of the Czech Republic

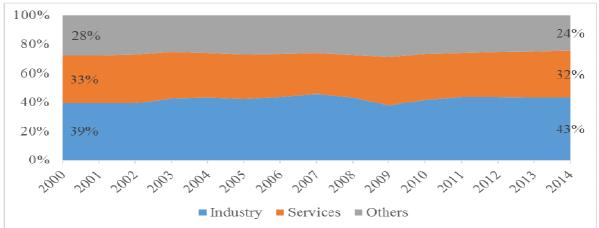
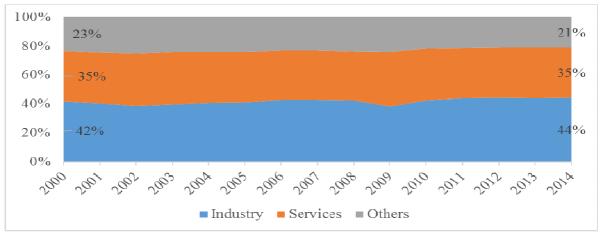
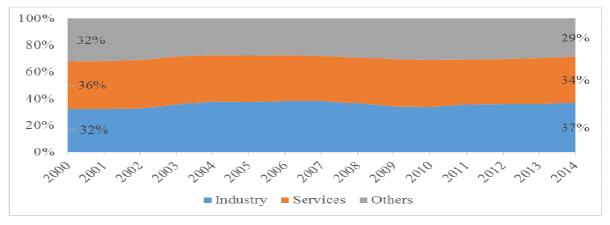


Figure 6The share of production generated by final demand for commodities of aggregated sectors. The case of Hungary



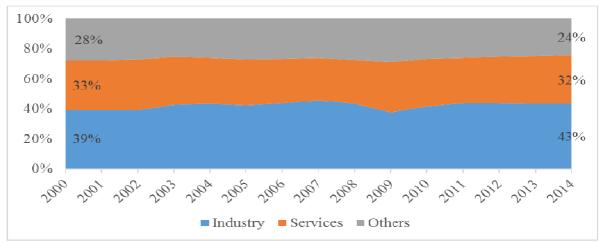
Source: WIOD database 2016, author's calculations

Figure 7The share of production generated by final demand for commodities of aggregated sectors. The case of Poland.



Source: WIOD database 2016, author's calculations

Figure 8The share of production generated by final demand for commodities of aggregated sectors. The case of the Czech Republic.



For better view in Table 1 is shown also the absolute difference in percentage points as a difference between the year 2000 and 2014.

Table 1 Absolute difference of share in year 2000 and 2014

	1	Direct share		Share generated by final demand					
	Industry	Services	Others	Industry	Services	Others			
Czech									
Republic	4,2%	-0,4%	-3,8%	9,0%	-4,2%	-4,8%			
Hungary	5,0%	-0,4%	-4,6%	2,5%	0,1%	-2,6%			
Poland	0,8%	1,8%	-2,6%	4,4%	-1,1%	-3,3%			
Slovakia	3,8%	-0,5%	-3,2%	4,0%	-0,6%	-3,4%			

Source: WIOD database 2016, author's calculations

3. Conclusions and policy implications

Presented figures and table gave evidence, that the share of industry's production and production generated by final demand for industry's commodities is not decreasing in years 2000 - 2014. Moreover, the absolute difference between the years is positive only for the sector of industry in direct production, with except of Poland, however in deeper look at indirectly generated production by final demand, there is clear evidence that, even the increased share of Poland's services was generated by increased final demand for industrial commodities.

The second important evidence is the global financial crisis in 2009, where from all eight figures is the most vulnerable industry. However even the change in the size like this was not big enough to change the structure of gross production and the industry got to the pre-crisis share very soon after (for better view see the appendix 1 and appendix 2 with tables of shares for every year from time series).

Lastly, the pitfalls of any support for other sectors, especially services. The services have less need for new technologies, and so research and development. Furthermore the

productivity, as key factor for international competitiveness in services is in long term lower than in industry.

From all mentioned, as well as from our empirical analysis of production in four Central European countries is clear, that there is no space to avoid the sector of industry as a key part any economy.

The further research should be aimed more on socio-economic indicators of deindustrialization and changes in structure of sectors than on production. While there is clear evidence, that in gross production the change is not presented, the questions of added value, employment and structure of employment (e.g. divided into difference skill groups of employees) in such aggregated sectors can be questionable.

Acknowledgement

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Appendix 1Total production divided into three aggregated sectors

Year	Czech Republic			Hungary			Poland			Slovakia		
Tear	Industry	Services	Others	Industry	Services	Others	Industry	Services	Others	Industry	Services	Others
2000	35%	34%	31%	28%	36%	36%	40%	36%	24%	36%	37%	27%
2001	35%	34%	31%	27%	37%	36%	38%	37%	25%	36%	37%	27%
2002	34%	35%	31%	27%	37%	36%	36%	39%	25%	35%	38%	27%
2003	37%	33%	30%	29%	38%	34%	37%	39%	24%	35%	38%	27%
2004	37%	32%	31%	32%	36%	33%	37%	39%	24%	37%	37%	26%
2005	37%	32%	31%	31%	36%	33%	38%	39%	24%	38%	37%	25%
2006	39%	31%	31%	32%	36%	33%	39%	38%	23%	38%	36%	26%
2007	40%	30%	30%	32%	35%	33%	39%	38%	23%	38%	36%	26%
2008	38%	31%	32%	31%	36%	33%	38%	38%	24%	36%	37%	26%
2009	33%	35%	33%	29%	36%	34%	35%	41%	24%	33%	40%	27%
2010	36%	34%	30%	30%	36%	34%	39%	40%	22%	35%	39%	26%
2011	38%	32%	30%	32%	35%	34%	40%	38%	22%	37%	38%	26%
2012	39%	32%	29%	32%	35%	33%	40%	38%	22%	37%	37%	25%
2013	39%	33%	28%	32%	35%	33%	40%	39%	22%	37%	38%	25%
2014	39%	34%	27%	33%	36%	31%	41%	38%	21%	39%	37%	24%

Appendix 2 Production generated by final demand for commodities divided to three sectors

Year	Czech Republic			Hungary			Poland			Slovakia		
1 cai	Industry	Services	Others	Industry	Services	Others	Industry	Services	Others	Industry	Services	Others
2000	37%	38%	25%	42%	35%	23%	32%	36%	32%	39%	33%	28%
2001	39%	37%	24%	40%	35%	25%	32%	36%	32%	39%	33%	28%
2002	38%	37%	24%	39%	36%	25%	33%	36%	31%	39%	34%	27%
2003	38%	38%	24%	40%	36%	24%	35%	36%	28%	43%	32%	25%
2004	42%	35%	23%	41%	35%	24%	38%	34%	28%	43%	31%	26%
2005	43%	35%	22%	41%	35%	24%	37%	35%	28%	43%	30%	27%
2006	44%	34%	22%	43%	34%	23%	38%	34%	27%	44%	30%	27%
2007	44%	34%	23%	43%	34%	23%	38%	34%	28%	46%	28%	26%
2008	42%	35%	23%	42%	34%	24%	37%	34%	29%	43%	29%	27%
2009	39%	38%	23%	38%	38%	24%	34%	36%	30%	38%	33%	29%
2010	41%	37%	22%	42%	36%	22%	34%	35%	31%	42%	32%	27%
2011	43%	35%	22%	44%	35%	21%	35%	34%	31%	44%	30%	26%
2012	44%	35%	21%	44%	35%	21%	36%	34%	30%	44%	31%	25%
2013	44%	35%	21%	44%	35%	21%	36%	34%	30%	43%	32%	25%
2014	46%	34%	20%	44%	35%	21%	37%	34%	29%	43%	32%	24%

Source: WIOD database 2016, author's calculations

The Process of Valuing Technical Reserves and its Disclosure in the Financial Statements according to IFRS and Solvency II

Daniela Katríková

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: d.katrikova@gmail.com

Zuzana Gajdošová

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: z.m.t.gajdosova@gmail.com

Abstract

Insurance companies represent a special kind of financial entities. Their daily risk challenges, which go along with the insurance business, result in their different approach to risk that another business entities might have. Thanks to risk insurance companies gain maximisation of market value. Insurance companies as public interest entities are obliged to present their financial statements according to the IFRS. A new Solvency II regulation is considered as an important step in the history of the European insurance market. It brings about changes in the view on the valuing process of assets and liabilities. This change, naturally, has to be transposed into the disclosure process and visualise in the financial statements. Technical reserves are kind of safety guarantee of fulfilment, which with regard to company liabilities are associated with signed contracts. A signed insurance contract represents a long-term commitment of an insurance company where its fulfilment value and timing are not certain not only for the company, but also from the policyholder's point of view. The European Insurance and Occupational Pensions Authority (EIOPA) and the International Accounting Standards Board seek to harmonise the requirements of the valuing process of an insurance company's assets and liabilities. The goal of this harmonisation is to ensure the consistency of mandatory data presentation in financial statements prepared on the basis of the IFRS. The aim of the paper is to highlight and analyse technical reserves' relevance and the impact of different reserves' valuation on the Slovakian insurance entities in the coming future.

Keywords: insurance, valuation of assets and liabilities, technical reserves, Solvency II, IFRS

JEL classification codes: M41, G22

1. Introduction

Insurance companies are institutions whose main purpose is to provide insurance to business entities and to general public. They promise to insure against the possible negative future events which might cause material and financial losses to policyholders. Another aspect of insurance is that it should secure and stabilize economic and living standards of insured entities (Vávrová, 2011). The problem of insurance companies they face nowadays is to truly secure the guaranty they promised by signing insurance contracts where the exact volume and

time of its fulfilment was not certain in the time of a contract conclusion. This problem might not be seen as too serious but the fact that insurance is perceived as a long term commitment where its fulfilment could appear in the close time or later from the signing contract date should be taken into consideration. Whereupon this fact the insurance companies are constantly obliged to record awaited future development, to identify and also to eliminate risks which might disrupt their ability to fulfil their future liabilities. Insurance undertakings shall have in place an effective risk-management system comprising strategies, processes and reporting procedures necessary to identify, measure, monitor, manage and report, on a continuous basis the risks at an individual and at an aggregated level, which they are or could be exposed to, and their interdependencies (Directive 2009/138/EC, 2009). Risk management system shall be effective and well integrated into the organisational structure as well as in decision-making processes of an insurance company. It shall cover the risks to be included in to the calculation of the Solvency Capital Requirement together with risks which are not or not fully include in this calculation. The risk-management system shall cover at least the following areas:

- a) underwriting and reserving;
- b) asset-liability management;
- c) investment, in particular derivatives and similar commitments;
- d) liquidity and concentration risk management;
- e) operational risk management;
- f) reinsurance and other risk-mitigation techniques (Directive 2009/138/EC, article 44, 1.-2.).

Risk-management system of an insurance company includes risk and solvency assessment. This includes all solvency requirement, authorized risk range limits and business strategy. It shall also comply with the capital and technical reserves requirements.

In order to secure a sustainable business and also to resist all possible future threats insurance companies create so called technical reserves whose creation process must be based on respective legislation. IAS 37 Provisions, Contingent Liabilities and Contingent Assets outline an accounting for reserves (resp. provisions) as contingent liabilities and assets of uncertain timing or amount which could be reported in the accounting only when certain conditions are fulfilled:

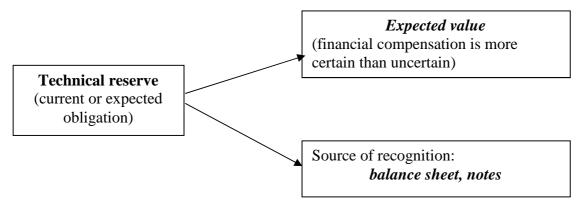
- a present obligation (legal or constructive) has arisen as a result of a past event (the obligating event),
- payment is probable ('more likely than not')
- the amount can be estimated reliably (Directive 2009/138/EC, art. 44,1.).

Technical reserve is in the insurance business understood as a reserve, resp. provision which is created in order to cover future liabilities of an insurance company. This term is used in Act No 39/2015 Coll. On insurance (further as "Coll. On insurance") and also in other Slovak legislation given by National Bank of Slovakia. But the term 'technical reserves' is not so important from the IFRS perspective².

¹ IAS 37 Provisions, Contingent Liabilities and Contingent Assets.

² In some of financial statements of insurance companies based on IFRS this term is not used at all.

Figure 1
Technical reserve identification as a commitment of an insurance company



Source: prepared on the basis MELUCHOVÁ, J. (2009). *Účtovníctvo a vykazovanie poisťovní podľa IFRS*. Bratislava: Iura Edition, 2009. 279 p. ISBN 978-80-8078-278-8.

Technical reserves are the basic of the economic prosperity of an each insurance company. They are created in the form of founds with the aim to secure company's solvency, so to fulfil its liabilities which comes for signed contracts in a certain time and volume. Technical reserves give insurance company kind of security that is needed to fulfil its promised commitments in case of an unexpected or extraordinary turbulence on the insurance market. That means that an insurance company shall be thanks to technical reserves always able to cover its future liabilities, even in the unknown future economic conditions (Meluchová, 2009).

According to Coll. On insurance shall be technical reserves created on the following purposes:

- technical reserve for unearned premium,
- technical reserve for claims payment,
- technical reserve insurance for bonuses and discounts,
- technical reserve for life insurance,
- technical reserve for the risk cover derived from financial investments made on behalf of insured,
- other technical reserve.³

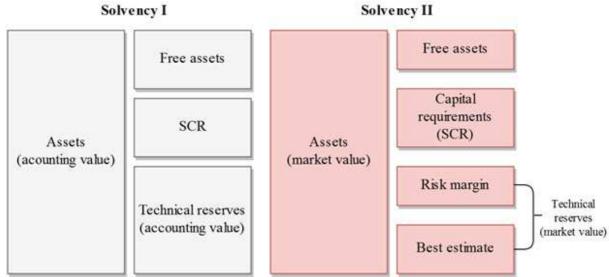
2. Valuation of technical reserves according to Solvency II

New regulation Solvency II brought new fundamental changes to the process of assets and liabilities valuation. The regulation is based on market value principle. This means that the valuation must be done according to the actual market value. The Solvency I, the predecessor of the Solvency II, required accounting value of assets and liabilities. This approach was focused on the best estimate and should have included reasonable margin for the negative deviation assumption of a valuation itself.

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³ Coll. On insurance, § 171, 1.

Figure 2
Valuation of assets and liabilities of an insurance company according to Solvency I and Solvency II



Source: MAJTÁNOVÁ, A. – VACHÁLKOVÁ, I. (2011). *Trendy v oceňovaní majetku a záväzkov poisťovní*. In Trendy v podnikaní – vědecký časopis Fakulty ekonomické ZČU v Plzni. 57 – 64 p. [online]. Available at the URL: https://otik.uk.zcu.cz/bitstream/handle/11025/16169/Majtanova.pdf?sequence=1.

In order to meet the real valuation requirements of the Solvency II insurance companies need to follow and use instructions given by IFRS. Assets shall be valued at the amount for which they could be exchanged between knowledgeable willing parties (technical reserves excluding) in an arm's length transaction and liabilities shall be valued at the amount for which they could be transferred, or settled, between knowledgeable willing parties in an arm's length transaction (Directive 2009/138/EC, article 75,1). This statement proves that IFRS is being used in interconnection with Solvency II since the mentioned definition comes from the characteristic of a real value given by IFRS.

Real valuation of liabilities, mainly technical reserves, is more difficult than any other insurance company's liabilities. The main reason is that there is not any estimate for a technical reserve's market value. The valuation process is executed according to the present value of the insurance liabilities transferred on behalf of other insurance company which the insurance company would be willing to pay for. If the future cash flows stated in the contract can be reliably replicated the cash flow of tradable financial instruments (so called "hedgeable liabilities" the value of technical provisions shall be determined by the market value. If the future cash flows cannot be replicated the technical reserves value shall be set by the best estimate and the risk margin. "The best estimate shall correspond to the probability weighted average of future cash-flows, taking account of the time value of money (expected present value of future cash-flows), using the relevant risk-free interest rate term structure" (Directive 2009/138/EC, article 77,2). Beside the best estimate, the technical reserves value consists of risk margin. The value of the risk margin is determined on the basis of costs value, the costs which are required for the eligible own sources – needed for the cover of the solvency capital requirements – SCR (SCR are hold during the insurance liabilities lifetime).

⁴ Hedgeable liabilities are for example insurance payments depending on the assets portfolio market price at the time of the payment. In this case the insured person could possibly cancel the insurance policy before its maturity date.

The fifth Quantitative Impact Study, known as QIS5⁵ was aimed to test the preparedness of insurance companies for the new regulation Solvency II. The QIS5 tested the following areas: quantitative and qualitative requirements for data, testing of the technical specifications and testing internal models. The QIS5 showed that insurance companies under the Solvency II requirements will be also confronted with changes in the valuation process of assets and liabilities. The QIS5 was accomplished by the questionnaire⁶ made by institution EIOPA. In total, 15 insurance companies operating at the Slovak market joined this QIS5 survey. The 10 of them with the universal insurance specialization and 5 of them with the life insurance specialization.⁷ The results were published by the Slovak supervisory authority and the National Bank of Slovakia – NBS. The NBS on the basis of the survey results confirmed that the Slovak insurance companies which joined the survey were already at its time – year 2010 prepared for the adoption of the new Solvency II requirements.

Table 1The amount of the participating Slovak insurance companies on the QIS5 survey

	Amount	% from the insurance companies falling under the Solvency II	% from all insurance companies
Live insurance companies	5	71	71
Non-live insurance companies	0	0	0
Universal insurance companies	10	90	90
Total amount of participants	15	75	75

Source: NBS.sk. (2011). *Piata kvantitatívna dopadová štúdia (QIS5) v poistnom sektore*. [online]. 2011. p. 5. [accessed 2016.12.27.]. Available at the URL: http://www.nbs.sk/_img/Documents/_Dohlad/ORM/ Poistovnictvo/Sprava_NBS_o_QIS5_v_poistnom_sektore.pdf>.

The outcome from the testing of the Slovak insurance company is that in the valuation process, done according to the requirements of Solvency II, tested insurance companies have not noticed any significant problems. This could be explained by the fact that insurance companies operating at the Slovak market compile its financial statements according to IFRS already from the year 2006. The QIS5 test showed that the new technical reserves value calculation gave a declined in their value by the 27,52 %. The decline was caused mainly by the realistic valuation and also because the negative reserves were not replaced by zero and also not by the changes in the discounting. This significant decline could have been also caused by non-participation of the non-life insurance companies in the QIS5.

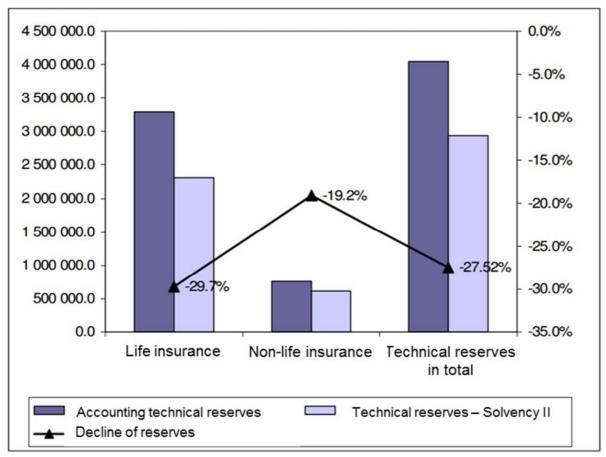
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⁵ OIS5 took a place in the year 2010.

⁶ The questionnaire consists of two parts. Quantitative and qualitative part. Quantitative part was made for the standard formula testing. Qualitative part was made for the internal model testing.

⁷ Among life insurance companies was for the QIS5 purposes also included one universal insurance company. It was thanks to the character of its liabilities which were classified as a liability of a life insurance company.

Figure 3Percentage changes in the valuation process of technical reserves to the economic value, according to requirements of Solvency II



Source: NBS.sk. (2011). *Piata kvantitatívna dopadová štúdia (QIS 5) v poistnom sektore*. [online]. 2011. p. 9. [accessed 2016.12.27.]. Available at the URL: http://www.nbs.sk/_img/Documents/_Dohlad/ORM/ Poistovnictvo/Sprava_NBS_o_QIS5_v_poistnom_sektore.pdf>.

The total technical reserves accounting value of the all participating Slovak insurance companies reported under the Solvency I was 4 775 759,60 €. Under the Solvency II this total technical reserves value decline to 3 692 901.20 €.

Table 2
Basic financial position indicators of the Slovak insurance companies with its expected value under the Solvency II

Financial indicator in thousands €	QIS5	Solvency I	Change	The ratio to the current valuation in %
Assets of insurance company	5 829 027,20	6 066 374,60	-237 347	96,10 %
Technical reserves and other liabilities	3 692 901,20	4 775 759,60	-1 082 858	77,30 %
Eligible own funds	1 998 861,20	1 047 744,90	951 116	165,30 %

Solvency capital requirement (SCR)	679 666,90	296 670,40	382 996	229,10 %
Surplus of the eligible own funds declined by SCR	1 454 491,90	977 893,40	476 599	148,70 %

Source: MELUCHOVÁ, J. (2015). *Vykazovanie poisťovní podľa nových pravidiel*. In Účtovníctvo a audítorstvo v procese svetovej harmonizácie: zborník z medzinárodnej vedeckej konferencie: VIRT vzdelávacie zariadenie Ekonomickej univerzity v Bratislava: Vydavateľstvo EKONÓM. 101 p. ISBN 978-80-225-4134-3.

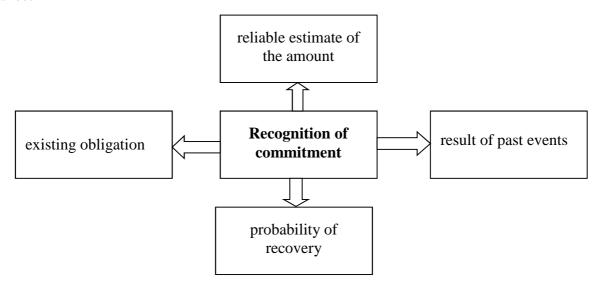
3. Technical reserve in the disclosure process according to IFRS

Insurance companies create their technical reserves in the form of funds from where they cover variations of insurance business. Simply said, technical reserves represent company's liabilities⁸ where it is more certain than uncertain that in the future the financial settlement will come in its time. Liabilities reported in a company's balance sheet that is reported according to IFRS, have to meet conditions for recognition and disclosure in the balance sheet, namely:

- liability is an existing obligation of the insurance company to provide benefits
- the transaction is a result of past events,
- financial settlement of this transaction will mean an outflow of economic benefits for the insurance company,
- the amount of the financial settlement can be measured reliably.

Figure 4

Requirements for recognition and reporting of insurance company's liability in the balance sheet



Source: MELUCHOVÁ, J. (2009). *Účtovníctvo a vykazovanie poisťovní podľa IFRS*. Bratislava: Iura Edition. 279 p. ISBN 978-80-8078-278-8.

Technical reserves represent long-term liability of the insurance company. Its final balance is disclosed in the balance sheet. Their formation shall be debited on the side of expenses and their use shall be credited on the side of revenues. This means that technical reserves considerably affect the profit or loss of the company which is disclosed in the profit and loss statement (IFRS uses term - profit and loss statements and statement of comprehensive

⁸ Technical reserve's value forms 60% to 70% of the company's total liabilities value.

income). For simplification of an accounting system, technical reserves are recognized only in the state of their changes.

Table 3 Simplified balance sheet of the insurance company

Assets Balan	nce sheet Liabilities				
Intangible assets	Equity and funds				
Land and buildings	Technical reserves				
Assets held for sale and discontinued operations	Technical reserves on behalf of the of policyholders				
Property investments	Reserves				
Investments in subsidiaries and associated companies	Deposits received from reinsurers (ceding)				
Financial assets (investments)	Liabilities from insurance and reinsurance				
Investments for the benefit of policyholders	Accruals and deferrals				
Receivables from insurance and reinsurance and other					
Other assets					
Accruals and deferrals					
Cash					
Assets	Equity and liabilities				

Source: prepared on the basis MELUCHOVÁ, J. (2009). *Účtovníctvo a vykazovanie poisťovní podľa IFRS*. Bratislava: Iura Edition, 2009. 279 p. ISBN 978-80-8078-278-8.

Table 4Technical reserves disclosed in the balance sheet of concrete insurance companies operating within the Slovak insurance market in the year 2015

Business name of the insurance company	The amount of technical reserves in the balance sheet
Allianz – Slovenská poisťovňa, a. s.	1 665 163
Generali Poisťovňa, a. s.	421 577
UNIQA, a. s.	142 562
Wűstenrot poisťovňa, a. s.	127 324
Union poisťovňa, a. s.	94 212

Source: prepared on the basis of the annual reports of listed insurance companies.

As stated before, adoption of Solvency II caused the decline in the value of technical provisions. The following table demonstrates the amount of technical reserves reported in the balance sheet of the particular insurance companies where the reporting process was based on IFRS taking the requirements of Solvency II on their valuation into account. In the valuation process calculation are taken into account the technical reserves values from the Slovak insurance companies' annual reports from the year 2015 (the annual reports from the year 2016 are not available yet).

It needs to be pointed out that Solvency II became binding on insurance companies from January 1st 2016. Therefore the amounts shown in the table are counted as an assumption which is based on scientific articles of qualified professionals who are devoted to the new regulation matters – Solvency II. Financial statements prepared from the year 2016 will demonstrate whether these assumptions gained by quantitative impact studies are appropriate or whether the calculation has significant deviations.

Table 5Accounting value of technical reserves in the balance sheet of particular insurance companies operating within the Slovak insurance market in the year 2016, taking the requirements of Solvency II into account

Business name of the insurance company	The amount of technical reserves in the balance sheet ⁹
Allianz – Slovenská poisťovňa, a. s.	1 198 917
Generali Poisťovňa, a. s.	303 535
UNIQA, a. s.	102 645
Wűstenrot poisťovňa, a. s.	91 673
Union poisťovňa, a. s.	67 833

Source: prepared on the basis of the Table 4

Applying the requirements of Solvency II, which caused a fall in the technical reserves value reported in the balance sheet, will force insurance companies to raise equity item.

3. Conclusions and policy implication

Insurance companies must be able to meet their obligations taken on by insurance contracts. This means to take obligations which are not at the time of concluding the insurance contract properly known by the insurance company as well as by the policyholder (Meluchová, 2009). For this purpose, insurers are forced to create technical reserves beside their reserves that represent liabilities of uncertain timing or amount. Technical reserves can be defined as cash, formed by part of the insurance premium - based on mathematical models. Insurance company uses them for the purposes of meeting its obligations.

A new regulation Solvency II which came to its force on 1st January 2016 brings for the insurance companies several changes. SII technical provisions will not be recognised in the financial statements prepared according to IFRS in any of insurance companies in Slovakia in the year 2016 and years after. SII technical provisions are used for compilation of SII balance sheet and evaluation of the solvency position of the insurance company. Change in methodology of IFRS technical provisions brings IFRS 17 which will become effective as of 1.1.2021. The methodology will be closer to SII approach than the current one, but will not be the same as in SII.

These changes will be reflected by their recognition in the financial statements prepared according to IFRS. Proper valuation of technical reserves is an important process, therefore much attention is payed to it by insurance companies. The consequences of inaccurate valuation could lead to a threat to all involved entities in insurance business, insurance companies, policyholders – insured, shareholders, employees and others.

The QIS5 survey showed that adoption of the Solvency II will cause a decrease of the presented, resp. reported technical reserves value. The estimate for the life insurance is 29,70

⁹ The calculation is based on the Figure 3. For the simplicity we rounded the total technical reserves value from 27,52 % to 28 %. All other calculations are mathematically rounded to the nearest euro.

%, for the non-life insurance is 19,20 % and in total 27,52 %. The reality will show if these prognoses are right or if the reality at the insurance market will bring unexpected changes which could cause certain deviations. By the next year the financial statements of insurance companies compiled for the year 2016 and following years will show the truth.

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Aviation Safety and Security after the MH17 Flight

Michal Klenka

University of Economics in Bratislava Faculty of International Relations Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: michal.klenka@euba.sk

Abstract

This article provides a brief introduction to the issue of aviation safety and security with emphasis on the change of understanding after the downing of the Malaysian Airlines flight MH17 in July 2014. It deals with definitions of aviation safety and security, and elaborates on the practice of airlines to fly over warzones.

Keywords: aviation safety, aviation security, MH17

JEL classification codes: K33, K38

1. Introduction

Aviation contributes much to our culture and our global economy. It shrinks the planet, and integrates people of vastly different backgrounds. Commercial aviation is, by far, the safest form of transportation, and likely will remain so throughout this century. In the early twentieth century, civil aviation underwent an unprecedented development. Civil aviation went from a mostly individual to a collective dimension that was reinforced by the massive diffusion of routes and carriers due to the period of deregulation and liberalisation of the sector in the USA in the 70s and in Europe between the 80s and 90s. Aviation safety is the concern of the whole world. Its importance is unanimously recognized. While air transportation is by far the safest mode of travel, as measured by the ratio between the number of accidents and that of passenger/kilometres, it is susceptible to inherent risks of flight, the use of force, and, more dangerously, terrorist acts. From time to time, when major aviation related accidents or tragic events take place, the whole world is shaken. Consequently, aviation safety has been and will be a matter of vital importance for governments, industry, the academic community and the traveling public. It is also the raison d'être of International Civil Aviation Organization (ICAO), a global, inter-governmental organization which became a specialized agency of the United Nations in 1947. A fundamental role must be played by the legislature's regulatory activity, both at national and international levels. In fact, the very first law on the matter was on flight safety was to safeguard the people and property on the ground. From the very beginning the central role of safety was immediately recognised, to be achieved by adequate and dynamic interlinked regulations which, evolving at the same rate as

¹ On 28 April 1784, a lieutenant in the Parisian police force suggested that hot air balloons, using as they did

Publishing Switzerland. p. 10.

extremely flammable gases and being practically at the mercy of winds, since they were barely steerable, could be extremely dangerous when flying over or landing in densely populated areas with wooden buildings, which were also extremely flammable. Therefore, a directive expressively prohibiting these balloons operating above such urban locations without previous authorisation from public authorities was issued. CAPLAN, H. (2009). Worldwide safety of civil aviation. Annals of Air and Space Law, Vol. 34. p. 27. In: ROSSI DAL POZZO, F. (2014). EU Legal Framework for Safeguarding Air Passenger Rights. Aviation Safety. Springer International

the development of the air transport sector, would help achieve the highest possible level of flight safety at any stage (Rossi dal Pozzo, 2014; Huang, 2009).

2. Definition of Aviation Safety and Security

In 2006 ICAO published a modern definition of safety, identifying it as 'the state in which the possibility of harm to person or of property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and safety risk management' (Conflict Zones Risk Information, 2017). The ICAO rules, Annex 17 to the Chicago Convention (the Convention) of 7 December 1944, define Security however, as 'a combination of measures and human and material resources intended to safeguard civil aviation against acts of unlawful interference'. These measures consist in activities for the safeguarding and protecting of the community from 'unlawful acts' intentionally carried out by individuals, or groups of individuals, against or by means of civil aviation. In October 2011, the Commission, presenting measures for the establishment of common rules for civil aviation 'Security', remarked on the difference between the two concepts, defining 'Safety' as relating to the prevention of accidental accidents capable of 'affect[ing] material or people' and 'Security as the prevention of unlawful acts aiming 'to affect planes or people'. At international level, concern with aviation safety is the role required of ICAO. Moreover, Article 44 of the Convention provides that '[t]he aims and the objectives of the Organisation are to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport'. The Article then mentions safety three times: in paragraph (a) 'Insure the safe and orderly growth of international civil aviation throughout the world'; in paragraph (d) 'Meet the needs of the peoples of the world for safe, regular, efficient and economical air transport' and, finally, in paragraph (h) 'Promote safety of flight in international air navigation'. In pursuing these goals, ICAO acted both on a judicial and a technical level. Indeed, the Organisation issued many documents containing rules on the disciplining of air transport and its safety (Rossi dal Pozzo, 2014).

Safety is the state of being protected from or guarded against hurt or injury. Clearly, if aviation must be free from any dangers or risks, it will not exist at all. Flight is inherently a risky venture, carried out in a hostile environment at great speed. The only way to assure riskfree flight is never to allow the airplane to leave the gate. Accordingly, some commentators tend to link the concept of safety with accident prevention. Aviation safety includes but is not limited to operational flight safety. The tragic events of 11 September 2001, which constituted not only the most serious threat but also unprecedented damage to aviation safety, have conclusively demonstrated that aviation safety goes beyond accident prevention from a technical point of view and extends to more profound political, strategic and legal dimensions. It includes preventive, remedial and punitive measures. Accordingly, safety is not limited to accident prevention, but should be considered in a broader term as risk management. The ICAO Air Navigation Commission defined 'aviation safety' as '[t]he states of freedom from unacceptable risk of injury to persons or damage to aircraft and property' (Conflict Zones Risk Information, 2017). Risks could be at a lower or higher level. Depending on the risks involved, the scope of the aforementioned management may range from routine suspension of a license of an unqualified pilot to the temporary grounding of all civil aircraft at the time of a crisis. Sometimes, a particular safety standard is very attractive from a technical point of view, but it may not be cost-effective or may even be economically prohibitive to implement. Safety also includes security. In ICAO terminology, a distinction is made between 'safety' and 'security'. The former is related to the operational safety of aircraft, including personnel licensing and airworthiness, whereas the latter means 'safeguarding civil aviation against acts of unlawful interference'. While this distinction may be convenient, it should nevertheless be pointed out that aviation security is but one important aspect of aviation safety. Safety requires, first and foremost, technical expertise. However, it is not the exclusive domain of the technical profession. It has a policy and legal dimension. As Wassenbergh observes: 'Safety in civil aviation is a technical and operational matter, to begin with. It becomes a matter of public law as soon as the public is involved and private people participate under government control' (Wassenbergh, 1998). It may be concluded while aviation safety is a multidisciplinary matter, the legislator of a sovereign State may, subject to its international obligations imposed by the Chicago Convention and other sources of international law, determine how safe is safe for aviation within its areas of competence, such as aircraft registered or operated in its territory, personnel licensed in its country and airports as well as air traffic service agencies under its jurisdiction. From this perspective, it may not be difficult to argue that aviation safety is ultimately a matter of law, namely, a matter of legislation and its implementation. At the same time, its risks are also shared globally. While every State retains its sovereignty within its territory, it is unable to regulate the safety of international civil aviation without the cooperation of other States. A State may ensure the quality of aircraft registered in its country and airports located therein, but it may not do so for aircraft registered and operating in other countries and airports located therein, which may also impact aviation in the former State. In a nutshell, the risks incurred by civil aviation are global in nature. Global risks require global management and call for international concerted action (Huang, 2009).

3. Flying over Warzones

The fastest growing risk to civil aviation in the world today doesn't come from any particular part of the world and it's not limited to any specific place or group. It is posed by terrorist organizations or quasi-military groups seeking to make a name for themselves (like the separatists in Ukraine or militants from Daesh) and which are managing to acquire evermore sophisticated weapons taken from defeated or overrun armies, as we've seen occur in countries from Mali to Iraq, Somalia to Syria. As the horror of the Malaysian Airlines flight MH17 shoot-down showed, many of the international civil aviation routes between Southeast Asia and Western Europe still extend over these territories. What airlines and aviation authorities around the world need to do now, as a matter of priority, is to take two steps: First, to avoid the risk of high-altitude, heavy missiles like the one that struck MH17, commercial airlines should stop flying over areas that serve as war zones or are controlled by terrorists and rebel groups; second, if they do fly near high-risk destinations, airlines should begin to adopt anti-missile systems that are already available to counter the far more common shoulder-borne missiles called MANPADS (man-portable air-defence systems). Another option is imposing 'no fly' zones in war-torn regions or terrorist controlled areas can be very effective in protecting high-cruising aircraft, since the anti-aircraft systems able to reach this altitude are limited to use in a controlled territory. The passengers may not know it, but most commercial airlines today are still flying over hazardous areas such as northern Iraq, large parts of Syria, southern Yemen, Somalia, northern Pakistan and parts of Afghanistan. Diverting routes around these regions may involve greater fuel costs, one reason the airlines are reluctant to do it, but greater security doesn't come cheap. Routing of flights is first of all in the hands of the airlines, but it can be regulated by governmental aviation authorities like the Federal Aviation Administration (Politico Magazine, 2014).

Air route above eastern Ukraine is a popular pathway between Europe and Asia. The route that carries a dozen planes an hour high above eastern Ukraine is so popular it has a name: airway L980. In the weeks before MH17's downing, several Ukrainian planes and helicopters had been shot down. Following this escalation of military air operations in the region the ICAO and national aviation authorities published 'notice to airman' (NOTAM: Politico

Magazine, 2014) that put the eastern edge of Ukrainian airspace off limits up to 32,000 feet. But although MH17 had reportedly flown a few hundred miles north of its planned course, in order to avoid a thunderstorm, its altitude should have marked it out as a passenger plane. No one thought that commercial jets would be in any danger over eastern Ukraine (The Economist, 2014). As we witnessed in this case, Flight MH17 was reportedly flying at 33,000 feet when it was shot out of the sky, altitude does not provide protection against the heavy large anti-aircraft missile systems that are now available to some undisciplined militant organizations (Politico Magazine, 2014).

What's still an open question is why commercial airliners are still flying near over conflict zones at all. The Dutch investigators had no easy answer as to why the airliner was flying over Ukraine, nor to what the world is going to do to keep airliners away from danger. MH17 was hardly alone on that day it was lost. 'There were 160 other commercial flights traveling over eastern Ukraine around that time', said Tjibbe Joustra, chairman of the Dutch Safety board, who sharply criticized the Ukrainian government for failing to impose restrictions on its airspace. 'Not a single state or international organization explicitly warned of any risks to civil aviation, and not a single state prohibited its airliners from using the airspace... or imposed other restrictions,' Joustra said. The world is changing, he said, and 'these conflicts are more disorderly and less predictable than traditional wars between states'. He called for the creation of a super-data base that would draw on national security intelligence to give a better picture of where weapons are being used that could threaten civilian airplanes. In the aftermath of MH17, the ICAO in 2015 created a 'conflict zone information repository' basically a database of notices issued by member states alerting airlines to ongoing hazards to flights. The list included warnings about dangerous conditions in several countries. In addition to Ukraine, the list includes Afghanistan, Egypt, Iraq, Libya, Pakistan, Saudi Arabia, Syria and Yemen (Conflict Zones Risk Information, 2017). One problem is that warnings only apply to the airlines whose country issued them, and there are often exceptions, such as in the case of an emergency or if a plane were low on fuel. So, the question is, why are some passenger jets still passing over some of these countries? For one thing, when different governments and bureaucracies get involved, it gets difficult to agree on specific restrictions. In a disputed territory like Eastern Ukraine, pilots could get confusing or contradictory directives from two different air traffic control authorities. Airlines must consider the risk versus the cost of going the long way around, too. Because diverting planes around zones can mean adding to flying time and consuming more fuel, carriers are often loath to re-reroute flights without a compelling reason to do so. It can be difficult for them to know just how compelling a risk is. In fact, while a few airlines such as British Airways had already steered clear of Ukrainian airspace before MH17, it took a tragic accident to get everyone on board (Popular Mevhanics, 2015).

Following the downing of MH17 in Ukraine, Emirates airlines have been forced to reconsider flight paths over conflict zones. The alternative routes planned by Emirates would either take aircraft across Saudi Arabia and the Red Sea over Cairo and into European airspace, in a move that would add around 45 minutes to flight times, or would involve flying over Iran. Increasing the flight time will require more fuel and staff hours and therefore the carrier will take a financial hit unless it raises airfares to compensate. Hundreds of flights pass over Iraq every day, including planes from British Airways, Emirates, Air France and Lufthansa. According to the Times, an extremely popular route passes directly above the Iraqi city of Mosul (The Week, 2014). Emirates offers flights to three destinations in Iraq, including Baghdad, Basra and Erbil. In March 2015, UAE carriers Emirates, Etihad and flydubai suspended flights to Erbil indefinitely after seeing a decline in security and stability in the region. Even though Qantas and Emirates have an alliance, they maintain separate

operations teams and the avoidance of a flight path by one does not mean the other is required to do so. Qantas has no plans to stop flying over Iraqi airspace on its Dubai-London flights. Qantas's two daily A380 flights on the Dubai-London route generally fly over Iraq at an altitude of 38,000 to 41,000 feet (The Sydney Morning Herald, 2014). Turkish Airlines is one of the most ambitious airlines in the world today and operates within Star Alliance (the largest global network), yet the country it calls home borders war-torn Iraq and Syria to the south and sits across the Black Sea from annexed Crimea and Russian-occupied Ukraine. The Turkish people, and to an even greater extent the passengers that Turkish Airlines carries, are a vast mix of ethnicities and religions – something the airline tries to celebrate and respect in the face of all the socio-political and religious conflict bubbling up around it. Turkish Airlines will not hesitate to terminate flights in and over any specific area where the situation becomes too risky. For example, Aleppo International Airport in Syria closed its doors in January 2013 because of civil war. The Syrian military eventually regained control of that area, and the airport has been operating again since January 2014, but without Turkish Airlines (Airspace Conflict Zones, 2015).

The fate of MH17 puts spotlight on tension between aviation safety and commercial profits. Malaysia Airlines, like many others, would have wanted to fly the shortest route between Amsterdam and Kuala Lumpur on that fateful night. It aimed to minimise the amount of fuel burned during the flight. So, it planned a direct route which took it over the Ukrainian territory. They had been told it was safe to fly above 32,000 feet because weapons known to be used in the conflict could not reach that height. Other airlines had also followed the same route without incident. Airline management cannot deny that costs are their major consideration and some airlines are known to have offered pilots financial rewards for cost saving. This practice is contrary to a proper safety culture and encourages operational decisions to be made on economic rather than safety considerations (The Sydney Morning Herald, 2015). There is a gathering awareness, in the legal direction, that Ukraine does bear ultimately responsibility for its airspace. Just as states desire to remain sovereign of the air that hovers above their territories, it follows that responsibility ultimately falls to countries to maintain the safety of its air routes. Once Ukraine ratified the Chicago Convention in 2003, it became a member of the ICAO, binding it to 'associated legal obligations.' As the Manual Concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations states, 'the responsibility for initiating the coordination process rests with the States whose military forces are engaged in the conflict' (para 10.2). Safety falls squarely on Ukraine's broad, if troubled shoulders. And just in case there was any doubt, poor coordination of such safety measures is no exemption. '[T]he responsibility for instituting special measures to ensure the safety for international civil aircraft operations remains with the states responsible for providing air traffic services in the airspace affected by the conflict, even in cases where coordination is not initiated or completed' (International Policy Digest, 2015). Indeed, sovereign states are responsible for ensuring the safety of civil aviation operations in their delegated airspace; and airspace users have the ultimate responsibility to decide where they are able to operate safely in a given region (Airspace Conflict Zones, 2015).

Airlines and their passengers are not the only ones examining flight paths in the wake of MH17. The Financial Times reported some airline insurers are now pressing for details of exact flight paths and considering the withdrawal of certain types of coverage for flights over hotspots in the Middle East and Africa. There is no proof to date that fighters in Iraq possess missiles capable of shooting down a civilian aircraft at cruising altitude, but The Times reported the US was urgently investigating whether they had been acquired from stockpiles in neighbouring Syria (The Sydney Morning Herald, 2014).

4. Conclusion

As mankind enters the third millennium, concern over aviation safety is stronger than ever. Such concern relates to the public perception of aviation safety, which is shaped essentially by news reports of aircraft accidents and other tragic events. The media tend to spotlight and give more headline coverage to fatal accidents or incidents involving aviation than to accidents involving other modes of transportation. Despite the full commitment of the industry to impose much more stringent standards than those used for other modes of transportation, the aircraft accident could hardly escape from the eyes of the media and the general public. Obviously, accidents in civil aviation raise much more public anxiety than other transportation accidents (Huang, 2009). Although the skies seem like a boundless, borderless domain, the paths flown by commercial aircraft are well beaten, constricted by a desire to conserve fuel and a system of waypoints that stand like figurative mileposts at 35,000 feet. 'Airlines overfly conflicted areas all the time, whether it's in the Middle East or wherever it might be,' said Kees Rietsema (as professor at Embry-Riddle Aeronautical University in Phoenix, USA). 'From a strictly legal perspective, you can overfly that closed airspace and there's no one telling you that you can't be there, but on the other hand I would say that you also are assuming the risk on your own that something untoward could happen' (The Washington Post, 2014). This article revealed several issues that we will further follow, our hope is that this research will spark new initiatives and discussions on this important topic.

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Litigation Risk and Class Action in Experimental Economics

Martin Kocúrek

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: martin.kocurek@euba.sk

Abstract

The corporate class action spending has been rising, showing a steady growth trend into the future. This paper provides literature review on group decision-making (board of directors) under uncertainty – litigation risk and class action from the perspective of experimental economics. There has not been a comprehensive article that investigates different developments of theories and research on litigation risk and class action; therefore, this paper contributes to existing literature by providing: (i) unique classification and categorisation of existing research on litigation risk and class action; and (ii) critical literature review for any possible further research in litigation risk and class action.

Keywords: experimental economics, litigation risk and class action, group decision making

JEL classification codes: D81, C92

1. Introduction

The corporate class action spending has been rising, showing a steady growth outlook into the future. More companies than ever before are experiencing class actions, representing serious risk for enterprises in various industries. Parallel, there have been cases of corporate wrongdoing in terms of violation of corporate governance and ethical rules around the World.

The objective of this paper is therefore to provide critical literature review and classification of existing research, predominantly focused on methods of experimental economics, in particular related to decision making of boards of directors under uncertainty – under the threat of litigation risk and possible class action, in order to investigate whether the risk of getting sued causes team decision makers (board of directors) to make sub-optimal decisions. To best of our knowledge, there has not been a comprehensive paper focused on this issue yet, therefore this paper contributes to the existing literature by (i) unique classification and categorization of existing research on litigation risk and class action and (ii) critical literature review.

Experimental economics provides useful framework for studying (i) behaviour of individuals and teams under controlled conditions differing with respect to the decision maker, (ii) impact of group membership and group identity on decisions taken and (iii) how group compositions and general conditions under which groups make risky or less-risky decisions.

The practical implications of this paper are predominantly in investigation of different developments of theories and research and a specific categorisation of existing research on litigation risk and class action. The paper provides comprehensive literature review for any possible further research in litigation risk and class action.

1.1 Experimental economics

Experimental economics uses economic experiments that involve real people in economic activities for real cash stakes. Harrison and List (2004) provide overview of experimental typology: (i) conventional laboratory experiments¹, (ii) artefactual field experiments², (iii) framed field experiments³ and (iv) field experiments⁴. The value experiments add to business and economics in similar way as in case of natural sciences, i.e. control. In experiments, rules of interaction, the flow of information, and the reward system can all be controlled in ways that are rarely possible in the field. The influence of these factors on behaviour and outcomes can be gauged through methodical, careful manipulation therefore the experimenter is not limited to established institutions. An environment, specifying the initial endowments, preferences and costs that motivate exchange is controlled according to Smith (1991) by using monetary rewards to induce the desired specific value/cost configuration.

Reflecting on Smith (1991), Selter (1989), Bolton (1991), Smith and Walker (1993), Cox and Smith (1992) and Plott (1987) the process of experiment could be split into following phases: (i) test a theory or discriminate between theories; (ii) exploration of the causes of a theory's failure; (iii) establishment of empirical regularities as a basis for new theory; (iv) comparison of environments; (v) comparison of institutions; (vi) evaluation of policy proposals; and (vii) the use of the laboratory as a testing ground for institutional design.

The popularity of experimental economics and the use of laboratory experiments has been growing over the past decades (Ochs, 1996), although its history according to Ortmann (2013) dates as back as to 1931 when Thurstone (1931) and Schultz (1933) measured the utility and demand functions. According to Servátka (2016), 1950s were characterised by experiments testing non-cooperative game theory as a way of predicting the outcomes of strategic interactions between a small numbers of people (Prisoner's Dilema). Sauerman and Selten⁵ (1959) tested the Cournot duopoly application of the Prisoner's Dilemma. Servátka (2016) notes that based on theory of the Expected Utility (von Neumann and Morgenstern, 1947), further experiments testing individual decision making were performed, proving failure of the 3 axioms of the Expected Utility Theory resulting to formulations of more generally descriptive theories.⁶ (Kahneman and Tversky, 1979). Vernon L. Smith is considered as one of the most remarkable scholar and a true pioneer in experimental economics who has authored and co-authored more than 300 articles (Eckel, 2004). As a graduate student at Harvard University, participated in the classroom experiment of Chamberlin (1948)⁷. Smith (1962) soon started to perform experiments studying competitive market behaviour in form of multi-trader auction. Main objectives of the research by Smith (1962) was to: (i) prove the feasibility of experimental economics, (ii) set a framework for a standard experimental design and (iii) establish basis for further, more complex research. Smith's paper Economic Theory and its Discontents (1974) could be considered to be a manifesto of the choice of experimental economics, as Smith provides his views on the change of the course of

³ Field context in commodity, task or information set particular subjects could use.

¹ Conventionally performed in laboratory conditions.

² With non-standard subject pool.

⁴ The environment where experiment is performed is natural for subjects, where they do not realise they are involved in an experiment.

⁵ Reinhard Selten was awarded by a Nobel Prize in 1994 for his pioneering analysis of equilibria in the theory of non-cooperative games (prisoner's dilemma) by refining concept to analyses of oligopolistic competition and the Nash equilibrium concept for analysing dynamic strategic interaction by removing unlikely equilibria (Nobel Prize Committee, 1994).

⁶ Prospect Theory of Kahneman and Tversky (1979).

⁷ That was used for teaching purposes by proving that markets do not work under the conditions of perfectly competitive models, e.g. Efficient Market Hypothesis (Eckel, 2004)

economic theory: "If there is a new economics in the future (and I predict that there is) it will not be born of sloppy new theory, any more than it will be born of old textbook theory" (Smith, 1974, pp. 320). In 2002, Daniel Kahneman and Vernon L. Smith were unexpectedly awarded by the Nobel Prize in Economic Sciences. This was a milestone for all experimental economists as their laboratory work had officially been recognised as the foundation for the field of experimental economics. (The Bank of Sweden – Nobel Press Release, 2002)

2. Litigation risk and class action

There has been a steady increase in corporate class action spending around the Globe, particularly in countries with high litigious environment, such as the United States of America (US) or the United Kingdom (UK). This trend of rising class action is proven by Carlton Fields (2016) in the US, providing a sizable exposure for enterprises and organisations from various industries. The research surveyed 381 executives in large US companies operating in 25 industries, totally spending \$2.1 billion on class action lawsuits in 2015. When enterprises assess the risk of class action, estimated exposure (cost and risk attitude) is the most important variable, determining the corporate strategy "defend at the right risk". The majority of companies chose "defend at the right cost" strategy, both in 2015 (33.9%) and 2014 (28.8%) as seen in Table 1. Companies settle almost 64% of class actions, often using arbitration clauses in contracts. Therefore the important measure of success are costs and cost containment. (Carlton Fields 2016),

Table 1 Class Action Philosophies

Policy Choice in 2014	Percentage (2014)	Policy Choice in 2015	Percentage (2015)
Defend at the right cost	28.8%	Defend at the right cost	33.9%
Take an Aggressive Stance	24.2%	Depends	21.0%
Depends	18.2%	Go Low	19.4%
Go Low	15.2%	Take an Aggressive	16.1%
		Stance	
Defend at All Costs	13.6%	Defend at All Costs	9.7%

Source: Carlton Fields (2016), The 2016 Carlton Fields Class Action Survey

When enterprises and organizations asses risk, the key variable they assess is total exposure and the ability to settle possible claim under estimated exposure is a determinant of success. Alongside with the trend of rising litigation and class action spending, there have been cases of corporate wrongdoing in terms of violation of corporate governance and ethical rules around the Globe which have boosted public, as well as academic discussions due to a huge scale of its economic and social costs.

Sometimes, the negligence in investment into safety measures is a source of exposure as moral hazard could occur which could possibly cause potential damage to the particular firm, its customers, clients, stakeholders or indirectly to any third party or even lead to company's bankruptcy. (e.g. Angelova et al., 2014; Dopuch – King, 1992; King – Schwartz, 1999, 2000; Kornhauser – Schotter, 1990).

Class actions could have a fundamental influence on companies finance from short-term as well as long-term perspective and their owners (Romano, 1991; Bhagat et al., 1994; Bizjak – Coles 1995; Bhagat et al., 1998; Bhattacharya et al. 2007; Gande – Lewis 2009; Malm – Kanuri, 2016). For the litigant companies and organizations, legal actions can result in significant monetary and reputational impact, harming companies' relationship with customers, investors, business partners, general public and other stakeholders. On the top of that, large class actions can even lead to enterprise bankruptcy (e.g. Skinner, 1994; Karpoff – Lott, 1993; Bizjak – Coles, 1995; Karpoff – Lee – Martin, 2008). There are many approaches

to decision making in economic theory, where a "decision maker" is mostly modelled as an individual. Many studies focus on individual decision making under risk (e.g. Deck et al. 2012; Conte – Hey – Moffatt, 2011; Lucarelli et al. 2015; Malul – Rosenboim – Shavit, 2013; Festjens et al., 2015). De Paola and Gioia (2016) incorporated also time pressure variable when performing research on individual decision-making under uncertainty.

An experimental design by Holt and Laury (2002) has become an important tool for the interpretation and design of experiments in which risk attitudes of an individual could play a role. Their most important result shows the effect of scaling up the stakes of the lottery choice task that is confounded by a possible order effect. They use their observations to argue that increased incentives appear to change risk attitudes, leading to greater risk aversion. Popular utility functions that do not allow for such effects are therefore misspecified. Building on this finding, they estimate a flexible utility function that characterizes their aggregate data well, but that does not assume constant (absolute or relative) risk aversion. Holt and Laury (2002) was extended and evaluated by Harrison et al. (2005).

Di Guida, Erev and Marchiori (2015) extended individual judgement and decision making under uncertainty into cross-cultural environment by studying the effect of two change-related cultural differences by comparing East Asian Culture (Taiwan) with Western Cultures (Israel and Denmark). A different perspective of individual decision-making from the neuroscience point of view is offered by Reimann and Bechara (2010). Their study focused on somatic marker theory⁹ and its underlying neuroanatomical and cognitive framework that helps explain the role of emotion in decision-making. They studied brain areas which are involved in decision-making. Furthermore, somatic marker theory is put in perspective to alternative explanations of emotion and decision-making, which are largely rooted in psychology, cognitive science, and behaviorism. A great deal of contemporary decision research in economics, business, psychology, and neuroscience now accepts the idea that emotions play a significant role in decision-making.

Another framework could be explained by the expected utility theory and its maximization (e.g. List and Mason, 2011; Aissia, 2016; Starmer, 2000; Hey, 1995). Particularly List and Mason (2009) performed research to identify if CEOs are expected utility maximisers by exploring CEO's preferences over small probability, high loss lotteries. Undergraduate students were used as experimental control group by analysing 1000 (4000) CEO (student) lottery choices. Results showed that both CEO and student subjects exhibit frequent and large departures from expected utility theory. On the top of that, as the extreme payoffs become more likely CEOs exhibit greater aversion to risk. List and Mason (2009) suggest that use of the expected utility paradigm in decision making substantially underestimates society's willingness to pay to reduce risk of the chance of the worst event for a typical CEO is very similar to the corresponding willingness to pay for a typical student in small probability, high loss events.

Very few studies compare individual and team, i.e. group decision making from strategic perspective and risk attitudes (e.g. Cooper and Kagel, 2005; Kocher – Strauß – Sutter, 2006; Sutter – Kocher – Strauß, 2009; Bixter – Luhmann, 2014).

However, in many everyday life situations, especially in the corporate world, the decisions are made by teams rather than individuals, such as group of experts, negotiators, boards of directors, legislatures or committees. The process of organisational decision making is

⁸ An order effect occurs when prior experience with one task affects behaviour in a subsequent task.

⁹ Damasio (1991), behaviour, particularly decision-making, is processed guided ,i.e. biased by emotional processes

complex, the decisions of groups are affected by a variety of phenomenon, e.g. personalities of group members or the institutional setting in which decisions are made (e.g. Cason – Mui, 1997; Cadsby – Servátka – Song, 2010; Morita – Servátka, 2013; Brookins – Lucas – Ryvkin, 2014; Bougheas – Nieboer – Sefton, 2015; Morita – Servátka, 2017; Dufwenberg – Servátka – Vadovič, 2017).

Another group of studies offer various perspectives from risk decision making in strategic choice situations. These could either be in studying Attitudes toward private and collective risk in individual and strategic choice situations (Brennan et al., 2008) or Willebrands, Lammers and Hartog (2002) evaluated risk attitudes of firm owners on business performance of small enterprises. Based on Sitkin and Pablo (1992) the key hypothesis was to examine if the conventional theory of risk taking and risk compensations result in better performance of company whose management is willing to take risks. Andersen, et al. (2014) evaluated trade-offs between risk and utility that economists traditionally assume. The added value of this research is application of a model of choice under uncertainty from psychology that has been neglected by economists, but which has many interesting features for decision making under uncertainty.

Brocas and Carrillo (2014) evaluates multi-process theories of decision-making that rely on the existence of several brain systems interacting with each other to revisit standard paradigms of choice. It proposes choices that fit the behavioural data better, and offer testable predictions. They illustrate that it is possible to unveil causes for bounded rational behaviour, identify mechanisms that lead to choices and, importantly for economics, predict choices in other related environments.

Another approaches for choice and decision-making under uncertainty are offered by Machina (1987) and Fudenberg, Levine and Maniadis (2014). Al-Ississ and Bohmet (2016) performed experiment on trust changes in cross-cultural environment in the level of the principal's betrayal payoff, but not in the responsiveness of trustworthiness. Experiment measures the effects of induced group identity and confidence judgments about one's group on within-group overconfidence.

Litigation risk from specific industries, in particular audit is provided by King and Schwartz (2000, 1999) investigating the impact of legal penalties on audit quality under different legal regimes. Seetharamana, Gulb and Lynn (2002) examining the relationship between litigation risk and audit pricing, Lam and Mensah (2006) in low-litigation environment of Hong Kong analysed if there is the litigation behaviour driven by the same factors as in the US and the impact on auditor decision making under the threat of litigation. Arel (2010) performed field experiment by using 89 practicing auditors from "Big 4" audit companies to examine how perceived auditor litigation risk and internal audit source affect external auditors' reliance decisions in an integrated audit environment under varying levels of risk of material misstatement.

Winden, Krawczyk and Hopfensitz (2011) analysed whenever we take a risk time passes between the decision to take the risk and the resolution of that risk. This time can be very short, as with on-the-spot lotteries, but it can also be very long, like in research for new drugs. Other examples: decisions concerning medical examinations or health and safety related activities. The experimental study is concerned with the impact of the timing of the resolution of risk on investment behaviour, with a special focus on the role of affect.

Litigation rates vary significantly across sectors and industries over time, litigation rates in the four FPS industries (biotechnology, computers, electronics and retail) are generally consistently higher than those in other industries (Kim and Skinner, 2012). Chung, Wynn and

Yi (2013) provided firm-level evidence on the effects of litigation risk on accounting quality and investment decision. Durand et al. (2015) studied litigation risk in relation to shared decision-making in medical practice. Lowrya and Shub (2002) examined the relation between litigation risk and IPO underpricing.

Based on literature analysed in this paper, we therefore suggest to classify the existing papers and literature of litigation risk and class action into following categories:

- 1) Individual decision making under uncertainty,
- 2) Expected utility and its maximization,
- 3) Group decision making under uncertainty,
- 4) Risk decision making and strategic choice situations,
- 5) Measuring litigation risk and specific industry application.

3. Conclusion

This paper provides a literature review of group decision making under uncertainty with the threat of litigation risk and class action from the perspective of experimental economics. The popularity of experimental economics and the use of laboratory experiments has been growing. The use of experiments in economics laboratories is simple, providing answers why a particular economic behaviour works or fails. If the tested economic does not perfectly work in the laboratory, it will not work in real-world environment for sure. A "decision maker" in microeconomics is mostly modelled as an individual. However, in many everyday life situations the decisions are often made by a group of people rather than by individual persons. Such groups are experts, negotiators, boards of directors, legislatures or committees. The process of organisational decision making is complex, the decisions of groups are affected by a variety of phenomenon, e.g. group member composition.

There has been a steady increase in corporate class action spending around the Globe, particularly in countries with high litigious environment. When enterprises and organizations asses risk, the key variable they assess is total exposure and the ability to settle possible claim under estimated exposure is a determinant of success. A rising trend of litigation and class action spending is connected with many cases of corporate wrongdoing, scandals and violation of rules of corporate governance and ethical rules. Sometimes, the negligence in investment into safety measures is a source of exposure as moral hazard could occur which could possibly cause potential damage to the particular firm, its customers, clients, stakeholders or indirectly to any third party or even lead to company's bankruptcy. Class actions could have a fundamental influence on companies finance from short-term as well as long-term perspective and their owners.

The practical implications of this paper are predominantly in investigation of different developments of theories and research and a specific categorisation of existing research on litigation risk and class action. The paper provides comprehensive literature review for any possible further research in litigation risk and class action.

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Approach to Grouping and Evaluation of Factors Influencing the Regulatory Policy in Ukraine

Irina V. Kolupaieva

Kharkiv Trade and Economics Institute of Kyiv National Trade and Economics University Otakar Yarosh Lane, 8

Kharkiv, 61045

Ukraine

E-mail: volirinawork@gmail.com

Abstract

The main purpose of the article is to determine groups of factors that influence the development and implementation of the state regulatory policy in Ukraine. Classification of factors was carried out in accordance with areas of regulatory policy as a whole. As it follows from the analysis, the model with 6 groups of factors, which have an impact on the Ukrainian regulatory policy, was investigated. Those six groups of factors include: factors of globalisation and integration; political and legal; economic; system; moral and professional; and the social ones. Each group of factors was represented by certain components. The analysis of factors was carried out in two directions: inter-group (comparing groups to each other) and intra-group (with analysis of the impact of each factor inside each group). Experts addressed in the research were representatives of local government authorities, executives, public organisations and the scientific community. Summary of research results concerning factors and groups were presented in a matrix placing groups of factors according to the degree of influence on the regulatory policy in Ukraine.

Keywords: regulatory policy, government regulation, impact of factors

JEL classification codes: L51, B49, H11

1. Introduction

Ukrainian economy at the present stage of development can be characterized as carrying out reforms, changing economic and socio-political institutions, implementing strategy for further integration into the world community. One of the important issues of policy is implementation of government regulation of the economy with establishment of critical limits of interference in market self-regulation, which is necessary, but such impact should be scientifically substantiated and up to the contemporary challenges. The form of such interference is the regulatory policy, paradigm of which is on its formation stage in our country.

The need of government interference in the market economy is an undisputed fact. One of the main tools of this process is the implementation of regulatory policy, the operation of which is possible only due to its mechanism that includes specific and general principles, functions, providing stages of the implementation of regulatory policy. The purpose of this mechanism is to achieve goals, and major tools are levers. It should be noted that the use of certain instruments (levers) depends mainly on the situation. So, the number of factors, both external and internal, influence on the regulatory policy.

The innovative development of the country is possible only with the active support of relevant economic sectors (high technology, energy efficiency, communications and information, etc.), implementation of effective investment and structural policies, provided by a set of appropriate regulatory policy instruments. On the other hand, significant influence of

the external environment and high dynamics of the national economy are the factors which determine the nature of regulatory policy. Thus, the first priority is to determine the degrees of influence of factors on regulatory policy that determines the relevance of this study.

Among the researchers, that have investigated the issues of regulatory policy and factors that caused regulatory policy M. Eisner (Eisner, M. A and Worsham, J. and Ringquist, Ev. J., 2006), R. Noll (Noll, R. G., 1989), L. Thurow (Thurow, L. C., 2008), Th. J. Lowi (Lowi, Th. J. 1979) and J. Nowaczyk (Nowaczyk, J. 2017) should be mentioned. These researchers have presented grouping of factors which influence on regulatory policy in fragments, and it is necessary to create the common system of these factors and to take into account dynamics of external and internal environment in case of the development and implementation of regulatory policy areas.

1.1 The Purpose of Research

The purpose of the research is to propose the new approach to the definition and evaluation of groups of factors and their components, which influence on the formation and implementation of regulatory policy.

2 Main Results of Research

2.1 The Analysis and Grouping Factors that Influence on Regulatory Policy

To determine the factors of influence on the regulatory policy it is necessary to define the areas that regulatory policy covers. It should be outlined, that state regulation covers all spheres of the national economy. This is due to the current needs of society and the political vector of state development.

The Law of Ukraine "On Principles of Regulatory Policy in Economic Activity" describes the scope of its implementation only in general terms - "legal regulation of economic relations and also administrative relations between regulators or other public authorities and entities" (2003). Instead, "The Concept of Improvement of State Regulation of Economic Activity" distinguishes the main ways to implement the priorities of improvement of state regulation of economic activities, which include: 1) the involvement of non-profit business associations to form the basic principles of state regulatory policy; 2) the absolute observance of the legislation of state supervision (control) over economic activity; 3) simplification of permit system and minimization of activities which must be licensed; 4) improvement of state registration of rights to immovable property system and its limitations and reducing administrative control in this area; 5) elimination of technical barriers for economic activities; 6) improvement of the tax system; 7) removal of unjustified barriers for business initiatives implementation; 8) the strengthening of financial and credit support of economic activity; 9) improvement of public authorities activities, responsible for the development of economic and regulatory policy (2007). Thus, these directions can be summarized as the following areas: state supervision (control), system of permits (licenses), property registration, technical barriers, taxation, financial and credit support, entrepreneurial initiatives.

Regulatory policy is carried out by the executive authorities at all levels and local governments in sphere of economic activities. Therefore, the factors, that determine the adoption of regulatory acts, depend on the features of activities on macro and meso levels, problems of areas and regions where they have been set, i.e. they are specific. But there are some common factors that determine regulatory policy and they are related to the regulators -bodies that carry out the regulatory policy.

Analysis of components of regulatory policy research has allowed selecting groups of factors: factors of external environment, that influence on regulatory policy outside the country and factors of internal environment that form this policy within the country. Researchers have distinguished a variety of factors that require further classification. We offer to group factors by the nature of their occurrence, including both external and internal. We have formed six groups, each of them has its own components.

- 1. Group of globalization and integration factors includes such components: state participation in the process of international economic integration, strengthening of competition of multinational companies, the impact of certain international regulatory organizations, membership in international trade organizations, governments of other countries, harmonization of Ukraine tax legislation with the provisions of international law, the impact of globalization in context of providing access to new product markets, searching of new technologies and techniques, changes in commodity structure of the world market for high-tech production technology and equipment, rapid growth in trade of services.
- 2. Group of political and legal factors includes such components: the impact of political organizations, state economic policy (the ratio of state regulation of economic relations with their market regulation), the level of corruption, the dominant ideology in society (socialism, liberalism), the existing economic legislation, and priorities of national security, political stability, public participation, and trade unions in the country.
- 3. Group of economic factors includes such components: the dynamics of national economic development, industrial structure, potential of the national export, inflation, the share of high-tech innovative products, the level of technical and technological base, the development of venture capital, offshore financial centres and "tax heavens", technologies and techniques, the economic crisis.
- 4. Group of system factors includes such components: the degree of regulation of development and adoption of the regulatory acts in the economic sphere, scientific apparatus (system tools, modelling, etc.), the level of bureaucracy of the state system, information and automation systems of adoption and effectiveness of regulatory acts, the level of communication support of regulatory policy
- 5. Group of moral and professional factors includes such components: the level of spiritual education, cultural level of the population, the level of responsibility and motivation of public servants, the knowledge, skills and training of the subject of regulatory activity, the morality of public servants.
- 6. Group of social factors includes the following components: unemployment, asymmetry in the labour market, the level of social protection of population, social tension in society, intergovernmental and interregional migration.

Taking into account that these factors impact mainly on the macroeconomic level and concern the components of regulatory policy, their estimation should be conducted using expert techniques.

2.2 Calculation of Inter-group and Intra-group Impact on the Regulatory Policy

As part of the proposed approach the calculation has been based partly on the Wilson method of evaluation of the external environment and approach proposed by the author (Sobolyev, V. G., 2016). As a result, we have received a model with 6 groups of factors, each of them has its own components. That is why it makes most sense to analyse in two ways:

inter-group - comparing impact of groups concerning to each other;

intra-group - analysis of the impact of each factor and determination the average concerning the number of answers for each criterion (strong impact on regulatory policy – "3", medium impact on regulatory policy – "2" and weak impact on regulatory policy – "1").

The research is a basis for the allocation of those factors that are more important for regulatory policy. The group of experts has been checked through analytical determination of their competency based on the results of professional activities. The experts in the research were representatives of local governments, executive powers, public organizations and scientific community, who conducted the evaluation as inter-group and intra- group influence. Number of experts depends on several factors and conditions, e.g. the importance and complexity of the problem to be solved, opportunities for development and others. To determine the number of experts the following formula (1) is used (Litvak, B. G., 1996).

Nemin =
$$0.5(3/n + 0.5)$$
, (1)

Nemin – minimum number of experts, people; n – possible error expertise results (0<n<1).

Degree of the impact of inter-group has been evaluated by ranking with calculation of degree of opinion consistency of experts by calculating Kendall's coefficient of concordance

For evaluation of the inter-group impact degree of particular groups of factors on regulatory policy Kendall's coefficient of concordance is calculated (Gnatienko, G. M., 2008) (Table. 1). Ranks of significance were put as following: the higher the impact, the higher the index, and the lower the impact, the lower the index (from "6" to "1").

For evaluation of the degree of experts' opinion consistency the coefficient of concordance is supposed to be used, being determined by formula (2):

W =
$$\frac{12\sum_{j=1}^{n} \left[\sum_{j=1}^{k} A_{ij} - K\left[\frac{(H+1)}{2}\right]\right]^{2}}{k^{2}(H^{3} - H)}$$
(2)

W – coefficient of concordance;

$$\sum_{j=1}^{k} A_{ij}$$
 - the sum of ranks, offered by experts;

K – number of experts;

H – number of ranging objects.

$$W = \frac{12 \times 9941 \quad ,33}{\left[30^{-2} \times (6^{-3} - 6) - 30 \times 204\right]} = 0.6523$$

This value of coefficient of concordance indicates the sufficiently high level of consistency of experts' opinions that allows using the results to evaluate the importance of factors.

Coefficient of concordance has vary value in the range 1 > W > 0. When W = 0, there is no consistency opinion of experts, and if W = 1, there is absolute consistency opinion of experts. Consistency is sufficient if $W \ge 0.5$. Thus, experts' opinions concerning the factors impacts on regulatory policy are consistent that allows to determine their priority.

Based on the results, it can be outlined that economic factors (24.77%) and social factors (22.21%) have the greatest impact compared to other groups, and it proves the theoretical definition of regulatory policy as an effective state influence on social and economic development of the national economy. The political and legal factors have less impact (19.34%). Globalization and integration factors follow them (15.26%), that indicates the prevalence of political elites influence over foreign economic priorities in the state development. Internal policy with its current problems is more urgent and it requires regulatory interference according to the nature of these problems. System group of factors (11.48%), moral and professional (6.95%) group of factors have got the lowest index, demonstrating a negligible impact. Concerning the moral and professional group of the factors, they are even imperceptible. Taking into account that most experts are public servants, the result demonstrates weaknesses in functioning of state regulatory policy mechanism and use of its tools.

The next stage is to determine the impact of each factor within the group which will reflect intra-impact carried out by questionnaire. Experts defined the influence degree of each factor. The whole impact, as noted, is defined as an average evaluation and number of responses that have been received.

Table 1 Evaluation of inter-group influence degree on the regulatory policy of groups of factors

	Groups of factors						011000015	
Experts	globalizat ion and integratio n	Political and legal factors	Economi c factors	С.,	Moral and professio nal	Social factors	Number of equivalues of rank (t_e)	ıal cs
1	3	4	6	3	1	5	(2^3-2)	6
2	3	5	5	2	1	4	(2^3-2)	6
3	3 3 3	5	6	3 2 3 3	1	4	(2^3-2)	6
4		4	6	3	1	5	(2^3-2)	6
5	3 3 3	4	6	2 2 3	2	4	$(2^3-2)+(2^3-2)$	12
6	3	5	5	2	1	6	(2^3-2)	6
7		4	6	3	2	5	(2^3-2)	6
8	4	3	6	2	1	4	(2^3-2)	6
9	3	4	5	2 3	2	5	$(2^3-2)+(2^3-2)$	12
10	4	5	6		1	4	(2^3-2)	6
11	3	4	5	4	2	6	(2^3-2)	6
12	4	3	6	2	3	4	(2^3-2)	6
13	3	6	5	2 3 2	1	5	$(2^3-2)+(2^3-2)$	12
14	3	5	6	2	1	6	(2^3-2)	6
15	4	5	6	3 2 3 3	2	5	(2^3-2)	6
16	3	4	5	2	1	6	(2^3-2)	6
17	3	5	5 5	3	2	4	$(2^3-2)+(2^3-2)$	12
18	4	4			2	5	$(2^3-2)+(2^3-2)$	12
19	4	3	5	4	2	6	(2^3-2)	6
20	4	3	5	2 2 3	1	4	(2^3-2)	6
21	3	4	6	2	2	5	(2^3-2)	6
22	4	5	4	3	2	5	(2^3-2)	6
23	3	5	6	2	1	5	(2^3-2)	6
24		5	6	2 3 2	2	4	(2^3-2)	6
25	3	4	6		1	5	-	
26	4	3	4	2	1	5	(2^3-2)	6
27	3	4	5	2	2	6	(2^3-2)	6

28	4	5	6	2	2	5	$(2^3-2)+(2^3-2)$	12
29	3	4	6	2	1	5	-	
30	4	4	5	3	2	5	$(2^3-2)+(2^3-2)$	12
$\sum_{j=1}^m R_{ij}$	101 (15,26%)	128 (19,34%)	164 (24,77%)	76 (11,48%)	46 (6,95%)	147 (22,21%)	$ \begin{array}{c} 662 \\ (\overline{d} = 110,3) \end{array} $	204
d_{j}	-9,3	17,7	53,7	-34,3	-64,3	36,7	Sum	
d_j^2	87,1	312,1	2880,1	1178,8	4138,8	1344,4	9941,33	

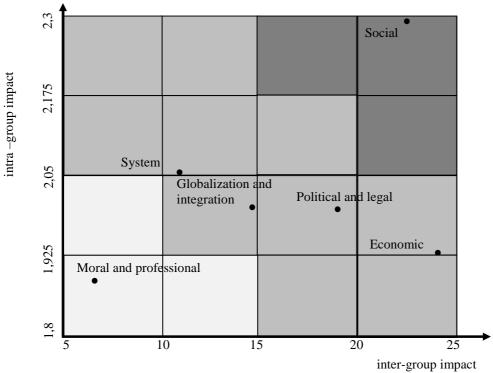
Source: authors own processing

Summary results have been presented on the matrix of placement of groups of factors according to the degree of influence on regulatory policy (Fig. 1). The dimension of the matrix has been determined according to calculations for appropriate visual presentation of the difference in influence degree.

On the basis of the research the results have been compared to illustrate influence degree of groups of factors on regulatory policy. In fact, social factors appeared to be the most influential that indicates the appropriate direction of implementation of regulatory policy instruments. Moral and professional factors have the least impact that reflects the lack of attention of authorities to staff support in development and implementation of regulatory policy acts and low spiritual and cultural level of population.

Figure 1

Matrix of placement of groups of factors in accordance to the impact on regulatory policy



Source: authors own processing

Economic factors despite their priority over other groups due to the lower value among the factors within the group have appeared to be lower on the matrix that shows their lower impact compared with social ones. All other groups of factors are within a matrix that reflects the balance between intra-group and inter-group influences. In fact, there is some feedback among four other groups: the higher the intra-impact, the lower the inter-group influence. It

demonstrates that each particular factor of these groups contributes more than the overall ranking and, as a result, shows the need of comprehensive system analysis.

3. Conclusions and Policy Implications

The new proposed model of grouping and evaluation of factors that influence on the regulatory policy is based on the definition of inter-group and intra-group impact (inter-group ranking actually allowed to prioritize influence and intra-group ranking allowed to determine general strength of influence), and positioning of selected groups on the matrix allows to determine the impact of external and internal environment on regulatory policy that should be taken into account in its implementation in the context of justification of implementing instruments complex.

For more detailed results of the impact of particular factors on the components of regulatory policies (leverages) in further research it is planned to do scenario of modelling by constructing cognitive maps.

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Integration of Cyber Security Concepts into the Functions of Management

František Korček¹, Vladimír Mlynarovič², Terézia Romanová³, Martina Beňová⁴

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: ¹frantisek.korcek@euba.sk, ²vladimir mlynarovic@euba.sk,

³terezia.romanova@euba.sk, ⁴martina.benova@euba.sk

Abstract

The rapid development of information and communication technology and computer networking has brought about new cyber security threats that concern managers of enterprises. Cyber security risks that arise from the combination of threats' likelihood and asset vulnerability might cause significant damages to enterprises. Therefore, managers must be aware of such risks and be able to allocate adequate resources to technological and organisational cyber security controls. Nowadays, it is crucial that cyber security concepts are integrated into the functions of management of each manager in order to maintain appropriate protection of digital assets. This paper provides a framework proposal that enriches the functions of management by the cyber security concepts aimed to keep confidential information safe. The framework increases managers' cyber security awareness and improves the security of the enterprises' digital assets.

Keywords: manager, cyber security, functions of management

JEL classification codes: M15, M19

1. Introduction

Currently, business theory and practice is based on a time-tested and widely used system framework that divides the management structure into several basic functions. Generally, the modern management theory still uses the following functions: planning, organising, staffing, directing and controlling. Such division is very useful as it provides a solid structure, in which new knowledge may be easily incorporated. The content of the functions of management is constantly evolving and reacts to changing environmental conditions. The environment is specific by its global availability of information and information and communication technology (ICT), the use of which has been rapidly growing (Kokles et al., 2015). The managers' need for relevant information and the ICT is crucial for efficient management and a proper decision-making process (Bolek, 2016). The increase in the number of new ICT users and the increase in ICT education are also related to the increase in cyber security threats and potential security incidents whose consequences are still growing. The increase in the occurrence of cyber threats affects the business environment. For this reason, the managers are called to address the issue of cyber security within their functions of management functions.

From the perspective of business management, cyber threats and security incidents can target critical confidential and sensitive information whose leakage, loss, damage or disclosure may result in substantial or even existential damage. According to PwC's (2016) worldwide research, 59% of respondents said that digitising an enterprise ecosystem affects

information security budgets. Cyber security, which aims to protect digital space, is perceived as a subset of information security. Attackers see potential in enterprises because they are forced to use the ICT actively. However, these enterprises are not forced to invest in safety standards and cyber security measures. Additionally, many businesses do not own sufficient material or financial resources for advanced measures. Any unprotected enterprise is an easy target for an attacker.

Security is only as strong as its weakest link. In terms of information security, the most common one is a human. A number of security incidents and threats can be eliminated by achieving an adequate level of education and security awareness. This statement is also applied in the area of business management, because if managers ensure compliance with organisational measures, the probability of threats significantly declines. According to a worldwide survey of ISACA (2015a) on a sample of 3439 managers and IT professionals, 53% of them plan to increase security awareness by trainings. 26% of the respondents said that although they will not organise these trainings, they should organise them. The survey identifies a lack of experienced professionals in the field of cyber security as confirmed by 86% of the respondents. Up to 83% argue that cyber threats are among the three most serious threats to today's organisations.

A manager, who works with ICT and has been granted access to enterprise information assets, is one of the most vulnerable persons in any enterprise. Management should understand not only the monetary penalties, but also the lasting harm to the enterprise due to reputational (brand) damage. Management that is security-aware better understands the risk factors to the enterprise's information (PCI DSS, 2014). While working with the ICT, any untrained and inexperienced manager may cause damage to an enterprise even without being aware of it. This paper aims to increase the managers' interest in the cyber security issue by integrating the cyber security concepts into the functions of management.

2. Objectives and Methodology

The main objective of the paper is to propose a framework for integrating cyber security concepts into the functions of management. By applying the framework in enterprises, managers raise their security awareness about the protection of digital assets and begin to promote cyber security requirements in their enterprises. The main objective is based on several partial objectives as follows:

- Identify appropriate cyber security concepts,
- Analyse the loss of enterprises' confidential data in the European Union,
- Evaluate current assumptions and perception of the functions of management.

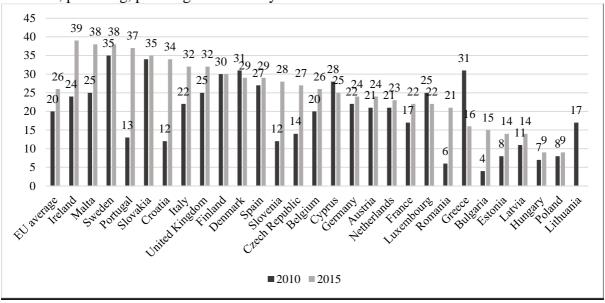
The objectives are achieved by using several general research methods. The operations such as analysis, synthesis or induction and deduction are used when processing and comparing the current state of the problem from scientific and technical resources. Analysed and compared statistical data are derived from the Eurostat database and the surveys conducted by organisations such as ISACA, PwC, Ernst & Young, etc.

3. Literature Review

The role of cyber security is confidentiality, integrity and availability of information. Information must be kept confidential, therefore the access to such information should only be granted to authorised people. Moreover, information must be intact in its original form and should be available whenever necessary (ISACA, 2015b). Technological or organisational measures, which need to be identified and approved by the management, may achieve these crucial characteristics of information.

Cyber security threats are found everywhere where the ICT is used. Businesses process data and information, many of which can be classed as confidential, sensitive or critical. Their disclosure leads to significant financial losses. Because the attackers know that the weakest link in any security system is a human, they prefer techniques focused on employees. According to Slovak Computer Security Incident Response Team (Csirt.sk, 2016), obtaining information (phishing, social engineering, etc.) is the most widespread security incident in Slovakia (27.5%). The software and services vulnerability follows (22.3%). Out of all security incidents, users are attacked the most. Nowadays, it is possible to meet with the threat of advanced and persistent attacks on an organisation called "Advanced Persistent Threat" that starts and runs by systematic gathering of information and access from employees, often without realising the attack (ISACA, 2013). A detailed analysis of disclosure of confidential data due to attacks focused on enterprises in the EU is shown in Figure 1.

Figure 1The percentage of enterprises that addressed the risks of disclosure of confidential data due to intrusion, pharming, phishing attacks or by accident in 2010 and 2015



Source: Eurostat, 2016

Notes: All enterprises, without financial sector (10 persons employed or more)

In 2015, Ireland recorded the largest proportion of enterprises that leaked confidential data due to social engineering techniques (39%). The fifth position in 2015 (35%) belongs to Slovakia. Compared to 2010, the rate increased by 1%. The EU average increased by 6% to 26% compared to 2010. In 23 EU countries, businesses recorded an increase in a leak in confidential data in 2015 compared to 2010. This may be caused by two factors. Either the countries improved their conditions for recording security incidents or the growth of incidents is in fact higher. Both factors may be correct at the same time as well.

3.1 Cyber Security Concepts

Cyber security concepts are addressed depending on how they influence security policies and procedures relating to cyber security threats. According to ISACA (2015b), the critical concepts are:

- Basic risk management (threat's likelihood and impact, asset value, vulnerability, risk, residual & inherent risk, approaches to risk),
- Common attack vectors and threat agents (types of attackers, attack process, attributes),

- Patterns and types of attacks (malware, advanced persistent threats, backdoor, buffer overflow, cross-site scripting, denial-of-service, social engineering, phishing, spoofing, etc.),
- Types of security policies and procedures (asset management, business continuity/disaster recovery, rules of behaviour, vendor management, compliance, communications and operations, personnel information security, access control, security incident response, etc.)
- Cyber security control processes (identity management, authorisation, access control lists, change management, configuration management, patch management, etc.).

The U.S. Department of Homeland Security (DHS) has identified the following cyber risk management concepts suitable for CEOs (DHS, 2013):

- Incorporate cyber risks into existing risk management and governance processes,
- Elevate cyber risk management discussions to the CEO,
- Implement industry standards and best practices, don't rely on compliance,
- Evaluate and manage your organisation's specific cyber risks,
- Provide oversight and review,
- Develop and test incident response plans and procedures,
- Coordinate cyber incident response planning across the enterprise,
- Maintain situational awareness of cyber threats.

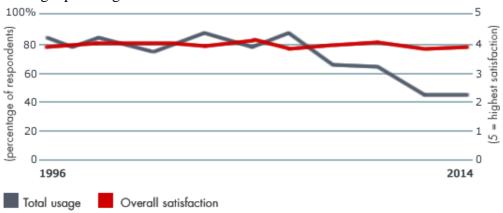
The cyber security concepts contain many activities to be undertaken in an enterprise to achieve an adequate level of cyber security. A manager is responsible for distributing these activities and tasks among specific employees. When designing the framework, we will adhere to the concepts developed by the U.S. DHS which are more detailed and are written in the form of specific activities.

3.2 The Functions of Management

3.2.1 Planning

Planning as the first management function has been criticised for the last period for a number of shortcomings particularly related to the turbulence of the business environment (Eriksson and McConnell, 2011). Bain & Company organisation (2015) conducted a survey in which the use and the satisfaction of strategic planning were examined. The survey shows that the greatest rise in the use of the planning function was in crisis years 2008 – 2010, when enterprises began to plan and think strategically. In the following years, decline in the use of strategic planning can be observed (Figure 2).

Figure 2
Strategic planning



Source: Bain & Company, 2015.

We link the decline in the use of strategic planning to the fact that results are reported slowly and only after a couple of years, while the enterprises that were affected by the crisis needed the results immediately. Therefore, they were not patient and inclined to short-term solutions. According to Professor Zeleny from the Fordham University, the strategic planning in today's turbulent environment cannot be the bureaucratic making of plans and objectives, but it is mainly a series of actions that dynamically react to changes in the surrounding environment and enable enterprises to obtain a competitive advantage. Moreover, manager's experience, which is generally considered as one of the key factors necessary in successful management, is also important taking the strategic planning into consideration (Hanák, 2016).

From the perspective of cyber security, the function of planning is not in contact with cyber threats whose implementation is unpredictable. However, managers can prepare enterprises to be aware of the threats, thus prepare strategic plans and allocate resources to implement security measures or enhance security awareness of personnel.

3.2.2 Organising

Building organisation which is as flexible as executive is probably one of the basic challenges that businesses face today. Enterprises that want to prosper in the business environment characterised by permanent changes and new situations have to proceed to different organisational changes leading to a reduction of their labour force. Because of reducing a number of employees, the enterprises optimised their organisational structures (lean, resp. flat structures). Nowadays, enterprises are operating with fewer levels of management and delegate more power to individual employees (QI et al., 2014). The traditional forms of the organisational structures are being abandoned and modern structures, which are characterised by a strong commitment of employees and the authority of expertise and knowledge, are coming to the forefront (Hahn et al., 2015).

Organising is now more focused on projects (Záležaková, 2012). It is important to create projects for enterprises because the current business environment is characterised by greater uncertainty and frequent changes, which reflects in the creation of new, so far unsolved problems and tasks. In response to difficult conditions and challenges new projects arise and the importance of project management, project organisational structures and structures based on teamwork grows (Pinto and Winch 2016). At the same time, there is a trend of strategic partnerships, networks, clusters, mergers and acquisitions. There are new possibilities for leakage of sensitive corporate data that need to be preserved, for example by incorporating the cyber security requirements into contracts. Within the function of organising, managers delegate specific tasks to employees to secure digital assets of their enterprises.

3.2.3 Staffing

In human resources management, a quantitative character of the position offered disappears. The importance is mainly assigned to the quality of human capital in the enterprise (Valentinovich, 2015). These facts are related to the development supporting of new expert roles in the field (Table 1).

Table 1The new human resource management roles

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Personal roles	S Characteristics				
Strategic partner	An initiator of changes and a representative of this function is a leader who				
Strategie partiier	is able to increase confidence in an enterprise.				
Administrative expert	He/she implements processes and applies methods that ensure efficiency of				
Administrative expert	human resources.				

Representative of employees	He/she ensures loyalty of employees towards an enterprise and focuses not only on the current needs of the employees, but also to prepare the employees for all upcoming changes.
Agent of change	He/she makes easy to create processes that allow an enterprise to identify key success factors and assess strengths and weaknesses in relation to each factor.

Source: ČESYNIENĖ, R. at al., 2013.

The attention of professional and scientific articles is devoted to the following human resource activities: assessment and training of personnel, layoffs, developing team skills, change management, personnel marketing, personnel leasing, outplacement, strategic human resource management. Trends in human resources call for alternative forms of employment in order to align the interests of employers and employees. Currently, employees do not always need particular space provided by an employer to perform their work due to the new ICT which enables them to work outside the enterprise (Gubová and Richnák, 2016). Professional literature presents several alternative contracts such as employee performance agreement, fixed-term contract, part-time contract, flexible working hours, weekend work, distance work, job-sharing, career breaks, temporary contract, business licenses and others (Kociánová, 2012).

According to foreign sources, the future of human resources is associated with "the freedom to work". A current trend in this area is a so-called ROWE system (Results Only Work Environment), whose priority is to remove restrictions (working hours, regular and long meetings, unnecessary reports, dress-code, etc.) for the purpose of electing the style that will allow employees to work in a way that fits them best. It is a managerial strategy in which employees are evaluated on the basis of their job performance, but not according to how much time they spend at work (Thompson and Ressler, 2013).

Choosing the right employees is in terms of cyber security significant. Personal qualities such as reliability, responsibility and discretion are especially valued. The manager's role is to create conditions for education in cyber security through various training courses, seminars, webinars, etc. Enhancing security awareness is a key activity to increase the protection of digital assets of enterprises.

3.2.4 Directing

Nowadays, managers are searching for a new direction and new strategies for their new or well-established enterprises. An issue of leadership stands out in this context. It is expected from leaders that they tackle the current situation, stand unfavourable positions with courage, are able to clearly and distinctly communicate corporate challenges, show confidence and thereby mobilise internal resources (Mako, 2012). Ljudvigová (2013) states that the idea of "a lonely leader with exceptional qualities and skills" and the vertical directing from top to bottom are being abandoned. The centre of attention belongs to the team leadership that uses knowledge, ideas and skills of all team members.

A manager as a leader should be able to guide his subordinates to proper resources considering their security awareness in order to perform their job duties better. Some of the duties may require various cyber security practices. Through the manager and based on his personal example, an employee is able to understand the importance of protecting enterprise's digital assets.

3.2.5 Controlling

In current economic conditions, management is under enormous pressure and its mission is to achieve maximum planned sales and profits, which is a very powerful motive to commit

fraud. Currently, the emphasis is placed on the monitoring of business operations. According to Ernst & Young (2009), only 24% of respondents on average believe that their managers always act honestly and in good faith (for example, only 13% of Czech and 12% of French and Italian employees). In Slovakia, 66% of respondents believe in honesty of the management. Only 3% of Slovak respondents are very confident that their management is willing to make ethical concessions in order to meet economic objectives (the European average is 30%). 58% of Slovak respondents believe that their organisation has strengthened the fight against economic crime in recent years. Internal audits (91%), external audits (81%), stricter checks, expenditure monitoring and an adopted code of ethics are the most frequently mentioned tools of controlling.

The internal audit has recently tended mostly to financial problems, but according to current understanding, it is an advisory tool for the detection of risks in enterprises (Zaharia et al., 2014; Munteanua and Zahariab, 2014). Although today's internal audit departments within national and international entities have significantly improved the ability to control their financial risks, they face new challenges generated by market trends and shareholders, namely aligning actions with the current level of risk management maturity.

Controlling is an integral part of management activities at all levels of governance. The importance of controlling is constantly growing and its purpose is not only providing regular information for managers, but mainly its preventive effect against potential problems, risks of the business environment (Jacobus, 2015). In the case of applied security policies and technological and organisational cyber security measures in enterprises, regular checks of compliance with established procedures are essential. The manager's role is to monitor the compliance in order to protect critical information.

4. Results

Table 2 shows the framework integrating the cyber security concepts into the functions of management, which is enriched by specific objectives and manager's tasks. By using the framework, the managers can appropriately delegate responsibilities to employees in order to increase their security awareness and promote cyber security requirements in the enterprise.

 Table 2

 The framework integrating the cyber security concepts into the functions of management

Function of Management	Cyber Security Concept	Objective	Tasks
	Incorporate cyber risks into existing risk management and governance processes	Prepare the strategic framework for cybersecurity risk management	 Plan cyber risk management implementation and strategy Plan business continuity requirements
	Implement industry standards and best practices	Select a cyber security standard at affordable costs	 Plan to select appropriate cyber security standards Plan necessary resources Plan to apply a risk based approach
Planning	Develop and test incident response plans and procedures Establish a CSIRT team in the enterprise		 Plan to select suitable employees Plan to make regular cyber incident response policies and procedures
	Coordinate cyber incident response planning across the enterprise	Integrate incident response policies with existing disaster recovery and business continuity plans	 Plan the cooperation with business leaders, continuity planners, system operators, lawyers, related employees, public authorities, etc. Plan to update disaster recovery and business continuity plans
Organising	Incorporate cyber risks into existing risk	Run the strategic framework for	Organise cyber security strategy implementation tasks

	management and governance processes	cybersecurity risk management	Organise risk management implementation tasks Organise tasks to develop business continuity plans
	Implement industry standards and best practices	Introduce cyber security standards at affordable costs	 Organise cyber security strategy implementation tasks Organise tasks to implement selected standards and suitable best practices
	Evaluate and manage your organisation's specific cyber risks	Evaluate cyber risks regularly	 Organise tasks to develop cyber security policies Organise tasks to identify critical assets and associated impacts Organise responsibilities for risk assessment, treatment, implementing specific controls
	Develop and test incident response plans and procedures	Enable the CSIRT team in the enterprise	 Organise tasks to develop cyber incident response plans, policies and procedures Organise employees to adhere to such policies and procedures
	Implement industry standards and best practices	Employ experts to introduce cyber security standards	Hire experts or select appropriate employees to work on the cyber security tasks and requirements
Staffing	Maintain situational awareness of cyber threats	Improve cyber security awareness in the enterprise	Hire experts or select appropriate employees to develop cyber security awareness programme and introduce trainings
Directing	Evaluate and manage your organisation's specific cyber risks	Manage cyber risks to an acceptable level	 Direct related employees to develop cyber security policies Direct related employees to identify critical assets and impacts Direct related employees to be responsible for risk management tasks
	Coordinate cyber incident response planning across the enterprise	Enable incident response policies and plans	 Direct to update and adhere to incident response policies, disaster recovery, business continuity plans Direct related employees to organise regular cyber security meetings
	Elevate cyber risk management discussions to the CEO	Enable communication with the CEO	Make the CEO familiar with the state of cyber security in the enterprise
Controlling	Provide oversight and review	Enable cyber oversight and review activities	 Monitor cyber security activities and task progress of related employees Monitor compliance with policies Monitor and evaluate cyber security budgets and risk assessment results
	Maintain situational awareness of cyber threats	Review cyber security awareness in the enterprise	Monitor progress in the cyber security awareness programme

Source: Authors' own work based on DHS, 2013.

Individual activities of the framework lead to fulfil the objectives and thus to realise the specific concepts. The effective implementation of all concepts in the functions of management is required to achieve the adequate level of cyber security, in other words, the protection of the enterprise's digital assets. Each management function is suitable for different cyber security concepts which consist of several manager's activities.

5. Conclusion

In today's business world with regard to the competitive market, the functions of management are one of the fundamental pillars for the survival and progress of enterprises. The subject of the paper is the sequential functions (planning, organising, staffing, directing and controlling) and their capability to integrate the cyber security concepts. Because the ICT still brings new threats with greater impact by its rapid development, the security awareness of managers must be raised. The managers become the aim of various attacks as they are handling confidential information and confidential digital assets. It is necessary to know and defend against these attacks by appropriate security measures. This paper identifies the cyber security concepts, the current perception of the functions of management and suggests the framework integrating the cyber security concepts into the functions of management together with the specific objectives and the manager's tasks. The integration of the concepts into the functions of management and the promotion of cyber security issues by managers in their enterprises lead to increase the cyber security to the appropriate level.

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Corporate Social Responsibility (CSR) as a Key Driver of Corporate Reputation

Mária Kozáková

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: maria.kozakova@euba.sk

Abstract

Corporate reputation encompasses the feelings individuals have towards a company. A favourable corporate reputation is considered as an intangible asset that offers a strategic competitive advantage to companies, leading to value creation and higher profits. One of the key drivers of corporate reputation is corporate social responsibility (CSR). In the contemporary business environment companies pay much more attention to CSR in order to improve their reputation and attract customers. This paper provides a theoretical analysis of reasons for CSR and main practices of CSR in relation to building a good corporate reputation; it describes how CSR activities are associated with corporate reputation, and presents the most reputable and socially responsible companies in the world according to the Reputational Institute and its annual Global Pulse Study.

Keywords: corporate reputation, CSR, reputation measurement, CSR ranking, evaluation of CSR

JEL classification codes: M14, M10, L1, L2

1. Introduction

Corporate reputation plays a very special role, because stakeholders make their decisions based on the corporate reputation. Defining the corporate reputation from different perspectives leads to considering the corporate social responsibility (CSR) as a precursor of corporate reputation and important factor influencing companies in a competitive market. In today's business environment, companies should pay attention to the social responsibility, because it affects the behaviour of customers, employees and investors as well as other stakeholder groups. CSR activities can be reflected into a better corporate reputation from the perspective of various stakeholder groups. However, analysis of CSR reasons and practices in relation to building good corporate reputation and the impact of CSR to corporate reputation still lacks attention.

2. The relationship between corporate reputation and CSR

Corporate reputation is a precious intangible asset and interdisciplinary construct with conventional meaning. It attracts research in fields as diverse as economics, marketing, management, psychology and sociology among others. That is the reason, why companies should carefully manage corporate reputation and try to understand the potential factors that can enhance corporate reputation. One of these factors is corporate social responsibility.

In recent time, the role of CSR has been an important topic studied by both scholars and practitioners and it has received increasing attention from the corporate world and it became an integral part of the business. A socially responsible image can differentiate a brand and

enhance customer loyalty. CSR helps to enhance sustainability of the hospitality industry and retain customers (Gao – Mattila 2014). Many companies are trying to define and integrate CSR into all aspects of their activities and CSR appears to be a factor that determines stakeholder's perception of the company, hence corporate reputation. Thus, CSR becomes the path chosen by companies to take advantage of the benefits commonly associated with a good reputation—i.e. fostering employee satisfaction, enforcing contracts and commitments, increasing intangible but not imitable capital, and improving financial performance.

According to the European Commission definition, CSR is understood as the voluntary integration of social and environmental concerns in the enterprises' daily business operations and in the interaction with their stakeholders (Benoit-Moreau – Parguel, 2011). CSR is often seen as a gesture or a sense of responsibility stemming from the everyday activities and their impact on society, business and the environment. The concept of CSR is not only about building good relations with the government, but also with all stakeholder groups. Concept of CSR covers a range of environmental, social, and ethical responsibilities. Therefore, the company should integrate CSR into core business strategy in close cooperation with its stakeholders. Mohr et al. (2001) viewed CSR as a company's commitment to minimizing or eliminating any harmful effects and maximizing its long run beneficial impact on society.

Corporate reputation has long been recognized as a significant source of competitive advantage (Ali et al. 2015). The concept of corporate reputation was described by Fombrun (1996, p. 36). According to him, corporate reputation is based on the set of values and principles of employees and managers associated with the company. A key aspect of corporate reputation is stakeholder groups' perceptions of organization's CSR, or more precisely, their perceptions of how well the organization's CSR initiatives and outcomes meet stakeholders' social and environmental values and expectations. In this context, CSR has the power to influence these perceptions, thereby contributing towards maximizing the earning potential of corporate reputation (Unerman, 2008). According to Husted and Allen (2007), building customers' and stakeholder groups' awareness of products, CSR value may affect the reputation of the organization positively. Schnietz and Epstein (2005) have identified reputation as antecedent of social responsibility. Lindgreen and Swaen (2005) argue that approaches relating to responsibilities are being entrenched within the relationships that fortify corporate reputation. Companies with good reputations are likely to attain more consumers. In addition, a favourable CR has been shown to positively affect behavioural outcomes of consumers (Gounaris – Stathakopoulos 2004).

Even if the extant literature has paid particular attention to the effects that both CSR and CR have on financial performance. It is thus not clear how CSR and corporate reputation interact. Does responsibility lead to a good corporate reputation? Or is reputation judged in terms of issues relating to responsibility and other characteristics? Many researchers generally agree that while these two concepts are different. But on the other hand, they are mutually enhancing as two sides of the same coin (Hillenbrand – Money, 2007). CSR is conceptualized as gesture that emerges as a sense of responsibilities and day to day fundamental activities and its impact on society, business and environment. In this context companies are using conception of CSR not only to build favourable relationships with government but also with all related stakeholders in order to ensure sustainable business performance.

Reputation is used by many companies to justify CSR initiatives on the grounds that they will improve a company's image and strengthen its brand. CSR as a key attribute of the corporate reputation creates a protective shield that averts negative emotions (Bhattacharya, 2007). Vice versa, strengthening corporate reputation can work as extrinsic motivation for companies to engage in CSR activities. Getting a positive reputation should be considered as a relevant result CSR (Garberg – Fombrun, 2006). Thus, social performance is amplifying

effect on the corporate reputation. Moreover, strengthening corporate reputation through ethical values can lead to the higher levels of trust and loyalty (Balmer – Greyser, 2006). CSR creates the greater ecosystem in which then all the variables influence and being influenced by corporate reputation. The relationship between the corporate reputation, CSR and strategy is bilateral, it may affect any of the other elements around them. Thus, CSR creates a positive ecosystem, through which companies could benefit greatly.

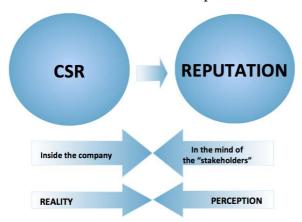
Corporate reputation is able to cause higher sales and revenues, reduce operating costs and bring financial benefits the company. Due to the fact, that social performance can strengthen the corporate reputation and its effects, there is connection between CSR, corporate reputation and financial performance of the company (Rose – Thompsen, 2004).

Demonstrating a high degree of social responsibility may require a diverse range of activities (including engagement in philanthropic activities, reduction of environmental impacts, and the introduction of practices that empower employees), each of which may have a separately identifiable impact upon reputation. Moreover, stakeholder groups have differing expectations regarding firm behaviour and the salience of each stakeholder group varies across industries.

3. Corporate reputation and CSR rankings

Reputational Institute measure the reputations of thousands of the world's most prestigious companies annually and the results are available through its annual Global Pulse Study. This study reports empirical tests developed to validate the seven dimensions that the RepTrak® System uses to predict corporate reputation and stakeholder support. The RepTrak® System recognizes the fact that a company's overall reputation is rooted in the perceptions of its stakeholders, each of which responds to different signals or informational inputs (Newburry, 2010). By examining the kinds of informational inputs that influence stakeholder perceptions of a company, we can better predict the dimensions that are likely to trigger stakeholders' emotional reactions of admiration, liking and trust toward a firm – its reputation. The key point is the difference between CSR and corporate reputation, two separate but connected elements: CSR is an internal corporate element, part of the company's facts, results and initiatives, whereas corporate reputation is to do with the perception of internal and external stakeholders, and how they respond to a series of factors relating to the company.

Figure 1Difference between CSR and reputation



Source: Reputation Institute. (2016b). 2016 CSR RepTrak® 100. [online]. Available at the URL: https://www.rankingthebrands.com/PDF/CSR%20Global%20RepTrak%202016,%20Reputation%20Institute.pdf.

The rated companies are selected on the basis of their total revenues. They had to have significant consumer presence and they should be known to the general public. The selected companies are rated in the 15 countries. Through the survey, consumers are asked to discuss about the companies and their reputations in their home country. The collected data can represent how consumers and customers perceive companies, which allows you to test the relationship between reputation and CSR. The survey results provide answers to the questions:

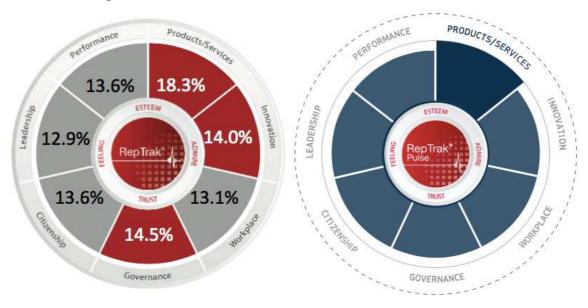
Which companies are best regarded by the general public?

What drives trust and support with general public?

How the top companies are living up to public expectations?

There have been identified seven different dimensions of company activity and its overall reputation. The pulse measures heartbeat and it reflects the public's good feeling about, respect for, and trust in a company. The public rate a selected company in terms of its performance (financial results), innovation (in products and the way they do business), products and services (quality and reliability), leadership (visibility and effectiveness), citizenship (causes and environmental protection), workplace (treatment of employees), governance (ethics, openness, transparency). The heart of the RepTrak® model is Pulse, i.e. the emotional factor, which makes it possible to create a link between stakeholders and the company and allows it to measure strengths based on four attributes: esteem, trust, admire and feeling. Figure 2 shows the relationship between the dimensions of company activity and corporate reputation.

Figure 2
2016 Global RepTrak® drivers and CSR Index



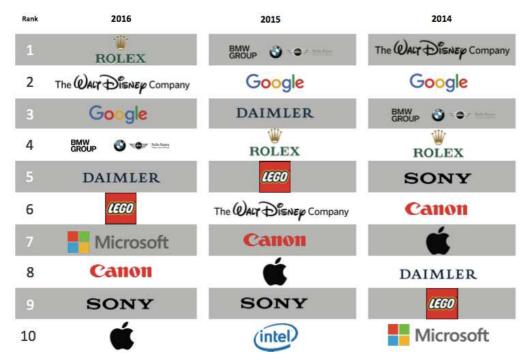
Source: 2016 *Global RepTrak*®100 - *The World's Most Reputable Companies*. Available at the URL: https://www.rankingthebrands.com/PDF/Global%20RepTrak%20100%20Report%202016,%20Reputation%20 Institute.pdf>.

In 2016 the ratings of products and services can be considered the most powerful driver of corporate reputation (18.3%). All stakeholder groups can be expected to develop perceptions of a company based on its products and services – the quality of its offering, the price at which it sells. The customer support provided and the belief in the company's willingness to

stand behind its products and services. Products and services are the most visible representation of the company in the market and very important indicator about behaviour of the company towards its consumers when purchasing products and services, seeing them in stores, media and so on. The next higher predictors of reputation are governance (14,5%) and innovation (14,0%).

The global top 10 list of the most reputable companies has remained stable for the past 3 years. Microsoft returns to the list after it dropped out in 2015. On the other hand, Intel drops off the list. Apple's position is on the decline. The company has dropped from seventh place in 2014's rankings to eighth in 2015's, and it now sits at 10th. The luxury watch brand Rolex is the most reputable company in the world.

Figure 3The 10 companies with the best reputation in the world in 2014-2016



Source: Reputation Institute. (2016a). 2016 *Global RepTrak*®100 - The World's Most Reputable Companies. [online]. Available at the URL: https://www.rankingthebrands.com/PDF/Global%20RepTrak%20100%20 Report%202016,%20Reputation%20Institute.pdf>.

There are different leaders by country. For example, in United States of America, Amazon ranks at the top. LEGO Group tops the RepTrak® UK list. China is different from the global community in reputation-gauging in that it places a higher priority on the Leadership category. The most reputable company in China is Intel. And for example, in Italy won the food company Ferrero.

Table 1The most reputable companies in different countries

Country	Company	RepTrak® Pulse	
Canada	LEGO Group	80,4 %	LEGO
China	Intel	76,2%	(intel)
France	Michelin	81,5 %	MICHELIN
Italy	Ferrero	85,8 %	FERRERO
Spain	BMW Group	83, 4 %	
The United Kingdom	LEGO Group	84,7 %	<i>LEGO</i>
The United States of America	Amazon	85, 4 %	amazon

Source: Own processing according to Reputational Institute

The Rolex has the best reputation around the world with consumers, according to Reputation Institute's 2016 Global RepTrak 100 study. Rolex remains the leader in products and services. Apple is considered the most innovative company for consumers and it is rated no. 1 for its leadership by consumers. Google came top in the performance and workplace categories this year, but it slipped from second place — which it had held in 2015 and 2014. And The Walt Disney Company is rated no. 1 for the best corporate citizenship and for governance by consumers.

Figure 4 The winning companies in 7 dimensions

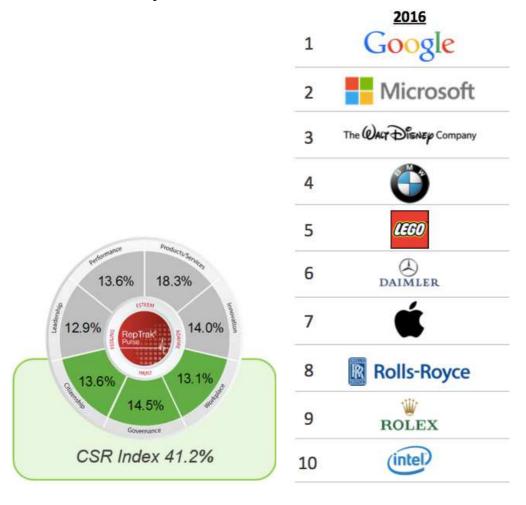


Source: Reputation Institute. (2016a). 2016 *Global RepTrak*®100 - The World's Most Reputable Companies. [online]. Available at the URL: https://www.rankingthebrands.com/PDF/Global%20RepTrak%20100%20 Report%202016,%20Reputation%20Institute.pdf.

Three key dimensions belong to the area of CSR: workplace, governance and citizenship. The quality of the workplace considers how the company is an attractive place to work, if it creates pleasant and rewarding workplace and if the company recognizes the ability of

employees. The second dimension of CSR is governance. It assesses stakeholder perceptions of a company as ethical, fair and transparent. The last dimension is citizenship. This dimension assesses stakeholder perceptions of a company as environmentally friendly, a supporter of good causes and a positive contributor to society. Reputational Institute through RepTrak® System measures the CSR perception. Ratings of three dimensions form CSR Index (workplace, governance and citizenship), which represents 41.2% of the variation in ratings of its reputation. CSR builds more than 40% of any company's reputation. Google tops the list of companies seen as the most socially responsible. Following Google is Microsoft, which take the two-spot after climbing two positions from number four last year. In third place is The Walt Disney Company.

Figure 5
CSR Index and Global CSR RepTrak® leaders over time



Source: Reputation Institute. (2016b). 2016 CSR RepTrak® 100. Available at the URL: https://www.rankingthebrands.com/PDF/CSR%20 Global%20RepTrak%202016,%20Reputation%20Institute.pdf>.

Ratings of CSR activities of companies across the 15 markets are different. The Lego Group tops the UK CSR RepTrak® 2016 ranking of the 150 most reputable companies in terms of their CSR performance. In US, Amazon is considered the most socially responsible company. Google is no. 1 in four countries, while Microsoft is top socially responsible company only in one country of the fifteen.

Table 2The most socially responsible companies by country

Country	Company	
Australia	The Walt Disney Company	The WALT DISNEY Company
Brazil	Google	Google
Canada	Google	Google
China	Intel	(intel)
France	Rolex	₩ ROLEX
Germany	LEGO Group	LEGO
India	BMW Group	
Italy	The Walt Disney Company	The WALT DISNEY Company
Japan	The Walt Disney Company	The WALT DISNEY Company
Mexico	Google	Google
Russia	BMW Group	
South Korea	Microsoft	Microsoft
Spain	Google	Google
The United Kingdom	LEGO Group	LEGO
The United States of America	Amazon	amazon

Source: Own processing according to Reputational Institute

3. Conclusion

Attracting profitable customers and retaining them is always a key element of a successful business. Both those in the industry and academia are consistently seeking ways to increase customer loyalty. Although this is a popular topic, there has been no agreement on the factors that generate superior loyalty. There are several considerations and ideas about the various elements that affect the corporate reputation and about the way they are linked to specific CSR activities. The aim of this paper is to describe how CSR activities are associated with corporate reputation according to the Reputational Institute and its RepTrak® System. RepTrak® System is used to predict corporate reputation and stakeholder support and represents difference between CSR and corporate reputation, two separate but connected elements. There have been identified seven different dimensions of company activity and its overall reputation: performance, innovation, products and services, leadership, citizenship, workplace and governance. Workplace, governance and citizenship are key dimensions belong to the area of CSR. The paper presents the most reputable and socially responsible companies and it shows that CSR builds more than 40% of any company's reputation. Socially responsible businesses have a better reputation. There is a positive relationship between CSR and corporate reputation, because CSR activities strengthen corporate reputation and protect against negative emotions. Organizations may engage in CSR activities because of positive effect on employee motivation, retention and recruitment or customerrelated motivations. Thus, CSR activities could improve overall reputation and financial performance as well.

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The Role of Ukraine in the One Belt One Road Initiative and Implications for its Relations with China

Michaela Královičová¹, Matúš Žatko²

University of Economics in Bratislava Faculty of Commerce Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: ¹mk.kralovicova@gmail.com, ²zatko.matus@gmail.com

Abstract

Ukraine has been at the crossroads between conflicting interests of the European Union (EU) and Russia for quite a long time. It is, therefore, understandable that it tries to search for trade partners outside of these traditional markets, which would subsequently allow it to reduce its own economic dependence from the EU and Russia. One of these potential trade partners for Ukraine is China that is one of the world's leading economies of the 21st century. The range of areas, in which Ukraine and China cooperate, is constantly being expanded. Historical development confirms that China is particularly interested in the Ukrainian agricultural sector. An important milestone in further development of Ukraine-China relations is Ukraine's participation in the One Belt One Road (OBOR) initiative, by which the Chinese government intends to connect and transform transportation corridors in the EU, Africa, Central Asia or the Middle East, in a way that would facilitate a transfer of Chinese goods to their final consumers and reduce the time needed for such a transfer. The research paper analyses the development of trade relations between Ukraine and China in a historical context and scrutinises the presence of Chinese investments in Ukraine. Subsequently, the paper also analyses Ukraine's role and significance for the OBOR initiative and highlights potential consequences that it brings for the future of Ukraine's relations with China.

Keywords: Ukraine, China, OBOR

JEL classification codes: F63, O11, F42

1. Introduction

In 2013, Chinese President Xi Jinping introduced a huge initiative called "One Belt One Road", which is also known as "The New Silk Road". The aim of this initiative is to build a massive rail and sea routes of connecting western China with the Central Asia with further extension to Europe. It envisages the construction of new infrastructure networks, ports and railways. The enormous range of this initiative is confirmed by the volume of planned investments. Through the mechanisms of the Asian Infrastructure Investment Bank (USD 100 billion) and the Silk Road Fund (USD 40 billion) and the involvement of private capital, the total volume of investments can go up to USD 1 trillion. Although the whole initiative is still being formed, a number of countries have already announced an interest in participating in it involvement in OBOR implies an inflow of significant volumes of investments and strategically important position. For China as a global power, OBOR means an important trade-policy instrument for promotion of its own interests, as it acquires considerable influence in the participating countries. (Lim & Tseng & Lim, 2016).

While many countries aspire to be a part of OBOR initiative, Ukraine belongs to those countries, that fall under special interest of China. As a non-EU member country, thus non-

participating at the EU-China summits and as a country non-participating on the 16+1 platform that serves as a "bridge" between China and 16 countries of Central and Eastern Europe, Ukraine has a special position in foreign relations of China. The importance of Ukraine for the OBOR initiative is unquestionable since without its involvement, the implementation of this initiative is practically impossible. Chinese interest in Ukraine being a potential member of OBOR initiative is driven by several factors, including:

- Market size Ukraine, with its 45 million consumers represents one of the largest markets in Europe;
- Geographical position of Ukraine Ukraine's position is very important from the geostrategic as well as business point of view. Ukraine is situated between the EU and Russia and due to its favourable geographical position has the potential to become a major hub and gateway to Europe under the OBOR initiative;
- Natural resources of Ukraine Ukraine has one of the best soils in the world.
 Ukrainian fertile black soils, which are characterized by high productivity, are an important source of agricultural commodities and also provide a good investment opportunity. The country has also rich deposits of minerals such as coal, oil, natural gas and iron ore;
- Pro-European orientation of Ukraine for China and its OBOR initiative, which is supposed to connect China with Europe, the European orientation of Ukraine is considered as a huge advantage of Ukraine. Ukraine has signed the EU Association Agreement with the EU, which includes a Deep and Comprehensive Free Trade Agreement (DCFTA). DCFTA helps to simplify mutual trade by reducing tariff and non-tariff barriers to trade, which is important for further expansion of China into the EU:
- Infrastructure Ukraine can make a use of a developed network of railway corridors and ports in the Black Sea;
- Bypassing Russia Ukraine's involvement in the project of the New Silk Road has its political reasons. The Chinese project is implemented not only at the economic level, but also at the geopolitical level. China is currently trying to build trade routes bypassing Russia and thereby solve several problems at once. The project will be immune from possible negative consequences of the sanctions imposed against Russia in relation with the events in Ukraine. Chinese companies also do not have to invest billions of dollars to modernize Russia's infrastructure. Bypassing Russia through Kazakhstan and other Central Asian countries will contribute to strengthening of Chinese influence in areas rich in natural resources;
- Educated and skilled workforce; state support of industry generating high added value; network of universities and scientific research centres, etc.

Ukraine has a potential to become an important part of the OBOR initiative. However, it needs to overcome several hindering factors. Firstly, although Ukraine has a relatively developed infrastructure, its quality is poor. This causes an increase in time and cost of transportation of goods through Ukraine. It will be therefore necessary to allocate a significant amount of investment into it. Secondly, the local business environment is characterized by a high degree of bureaucracy, corruption and poorly developed legislation. Moreover, the awareness about the OBOR initiative is not widespread among the Ukrainian business circles. At the present time, however, probably the highest risk inheres in the conflict that takes place in the east and southeast of the country between the government and separatist forces and at the border of Ukraine itself. Peaceful solution of the conflict that has been taking place since 2014 is still remote, and the number of victims is growing every day. Questionable is also the

attitude of Russia towards the expansion of China on the territory, which is extremely important for it from a geostrategic point of view.

As can be seen, for a successful implementation of OBOR initiative in Ukraine, it will be essential to overcome several obstacles through active participation of stakeholders. The aforementioned benefits of Ukrainian involvement, however, can act as a driving force for both sides. The aim of the article is therefore to assess the present state of the trade, investment and political cooperation between China and Ukraine, which will lead to a successful realization of OBOR initiative in Ukraine.

1.1 Model and Data

In order to fulfil objectives of this research article, various theoretical research methods have been used, with the most important ones being the method of abstraction, analysis, synthesis, induction and deduction. At the same time, numerous empirical methods have been applied, particularly the method of comparison that was used to compare trade flows between China and Ukraine. For getting a more comprehensive insight into developmental trajectories of foreign trade relations, special methods and techniques, such as exact or graphic display, have been used.

The intention to build the "21st Century Silk Road", which is also known as "One Belt One Road" initiative, was revealed by the Chinese government in 2013. Due to this relative novelty of the initiative, there is currently a lack of sufficient amount of relevant data and information, which would enable a conduction of comprehensive mathematical analysis of its impacts. Thus, also owing to dynamic and yet developing nature of OBOR initiative, mainly electronic sources of information were scrutinized in order to create this research paper. Important sources of information were, namely, China's news agency Xinhua, Chinese daily paper China Daily and Chinese ministry of trade MOFCOM. From book sources, of particular significance were those written by P. Baláž (Baláž et al, 2012) and T.W. Lim, K.H. Tseng, and W.X. Lim (2016). Of equal importance to this research paper were also numerous scientific and position papers as well as impact studies. Statistical data have been obtained from statistical systems of Ukraine and China. Data published by National Bureau of Statistics of China in statistical yearbooks between years 2007 and 2016 and data by UNCTADstat were used in order to analyse development tendencies of trade between Ukraine and China. Remaining data have been extracted from databases of the World Bank and Transparency International.

2. Development of trade and investment relations between Ukraine and China with regard to Ukraine's involvement in OBOR initiative

Ukraine increased its economic linkages with China during Viktor Yuschenko's presidency (2004 – 2010). The massive expansion occurred right after the financial crisis in 2008. After the collapse of the Ukrainian steel industry during the crisis, the country had to return to its traditional export article, the agricultural products. Increased Chinese demand for food brought it closer to Ukraine. Simultaneously, the EU and Russia were unwilling to provide economic assistance to Ukraine, which gave China an unprecedented opportunity to gain economic leverage over it. This influence ensured that Ukraine would be a useful actor on the Western fringe of China's New Silk Road initiative.

In 2011, China declared a Sino-Ukrainian strategic partnership even though the former president Yanukovych's emphasis on closer relations with Russia. Despite this complication, China expanded its investment in infrastructure projects such as the Kiev airport railway scheme. However, due to the Ukraine's economic collapse and soaring debt levels, China's

bilateral trade ties with Ukraine declined by 0.5 percent from 2011 to 2012, in contrast to the 36 percent annual growth recorded during Yushchenko's presidency. (Ramani, 2015)

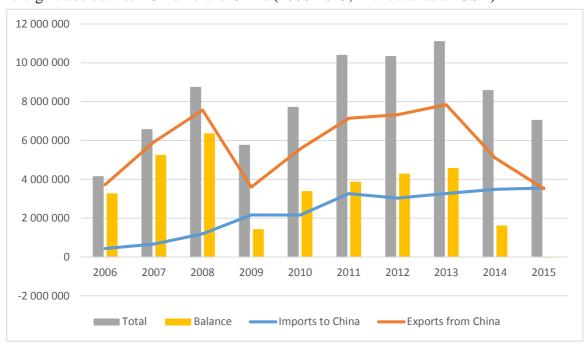
2.1 Foreign trade between Ukraine and China

Mutual trade ties between both partners are currently being fixed by the Trade and Economic Cooperation Agreement of 1992 (Embassy of Ukraine to the People's Republic of China, 2016). Presently, there are no effective free trade agreements or ongoing negotiations concerning such an agreement between these two countries (MOFCOM, 2017).

It should be noted that the trade between Ukraine and China had not always been characterized by trade deficits of Ukraine. For example, in 2002 and 2003, Ukraine had a surplus over China in its trade with goods. One year later, in 2004, Ukraine managed to achieve zero trade balance with China, however, it 2004 was also the last year of the previous decade in which Ukraine did not run a trade deficit with this Asian partner (State Statistics Service of Ukraine, 2017).

Figure 1 depicts the development of foreign trade between Ukraine and China in the period of 2006-2015. During this period, Ukraine's imports to China grew over eightfold, whereas Chinese exports to Ukraine decreased by over 5 percent. Total trade turnover between these partners increased by 1.7-fold. Chinese exports to Ukraine reached their maximum in 2013, when their value was USD 7.85 billion. Chinese imports from Ukraine were at their maximum in 2015 when their value was USD 3.55 billion. Trade turnover between these two countries reached its peak in 2013 when its value was USD 11.12 billion and it decreased in following years to USD 8.59 billion in 2014 and USD 7.07 billion in 2015. China has a long-term trade surplus with Ukraine. Over the period of 2006 – 2015, its cumulative value was more than USD 34 billion. (National Bureau of Statistics of China, 2017).





Source: author's calculations based on data from National Bureau of Statistics of China. [online]. Available at the URL: http://www.stats.gov.cn/>.

Development tendencies of foreign trade between both partners show that Ukraine has a higher trade dependency on China than it is the other way around. Even despite there has been a significant reduction of disproportion between Ukrainian imports and exports in 2014 and 2015, it should be noted that this development can be mostly attributed to implications of Ukrainian crisis and not to strengthening of Ukraine's position in mutual trade exchanges.

In 2015, the Chinese import from the Ukraine was dominated by commodity groups 2 - Crude materials, inedible, except fuels (46.8 percent), 0 - food and live animals (30.3 percent) and 4 - animal and vegetable oils, fats and waxes (17.9 percent). Chinese exports consisted mainly of commodity groups 7 - Machinery and transport equipment (32.9 percent), 8 - Miscellaneous manufactured articles (26.9 percent), 6 - manufactured goods (25.5 percent) and 5 - Chemicals and related products (10.9 percent). While Chinese exports to Ukraine consist mainly of processed industrial goods, export of Ukraine relies mainly on primary commodities (UNCTADstat, 2017).

2.2 Investment relations between Ukraine and China

Bilateral investment cooperation does not correspond to the financial capacity of China and the needs of Ukraine. The increase of the volume of imports from China is not accompanied by the intensification of investment cooperation. Similarly, Ukrainian investments in China, is also virtually absent. According to the Ukrainian statistics, Ukraine's economy attracted USD 17.8 million investment from China from January 2016 to October 2016 (from the beginning of year this indicator decreased by USD 0.8 million). The largest volume of investment is directed to enterprises in the agriculture, forestry and fishing – 39,6 percent, industry – 19,4 percent, wholesale and retail trade; repair of motor vehicles and motorcycles, and 11.2 percent, transport, warehousing, postal and courier activities – 11 percent. The volume of investments from Ukraine to China totalled USD 1.3 million during the same period (this indicator has not changed from the beginning of year). The bulk of these investments aimed at the industrial enterprises is 42.2 percent (USD 0.56 million) (Embassy of Ukraine to the PRC, 2017).

The main focus of Chinese investments in Ukraine is agricultural sector. Unlike numerous governments of particular member states of the EU or Australia that are applying various protectionism measures in order to protect agriculture and chemical sectors of their countries from the extensive inflow of Chinese capital (Baláž et al, 2012), Ukraine maintains a positive approach towards Chinese investments (China Investment Research, 2016).

Whereas the US has been historically the largest supplier of agricultural products for China, Ukraine is becoming of increasing importance when it comes to supplies of agricultural products to China and in 2015, Ukraine even overtook the US and became the largest supplier of maize for China. Additionally, China is presently the most important market for agricultural exports flowing from Ukraine (China Daily, 2017). In 2012, both countries also signed a contract within which China supplies chemical products (e.g. fertilizers) for Ukraine's agricultural sector, and China subsequently purchases the production of this sector. As a part of this contract, USD 3 billion loan, which is payable in 15 years, was approved for Ukraine. On top of mentioned trade facilitators, the currency swap worth over USD 2 billion was also established (China Daily, 2012).

Among the biggest Chinese direct investments in Ukraine's agricultural sector are processing facility for sunflower seeds and terminal for grains that not only serves to ship them abroad but also has a significant storage capacity (Mykal, 2016). Mutual cooperation between Ukraine and China has long-term favourable prospects as China is encouraging more

agricultural imports to feed its over 1.3 billion people and it is not expected that China will manage to become more self-sufficient in agricultural production in a foreseeable future.

Apart from investments in agricultural sector, Chinese companies are currently also concentrating on power generation sector, with their primary focus being the solar power. (China Daily, 2016).

2.3 Ukraine's role in OBOR and realized projects

Ukraine's involvement in the OBOR initiative is undoubtedly attractive for both sides. Despite a number of risks, the initiative has a potential to help Ukraine's economy, confirm its important strategic position and enable this country to become the gateway of Chinese goods and investments into the EU. Analysis of the current state of Ukrainian-Chinese relations highlights the positive prospects of this cooperation in the future. At the time when Western countries don't rush to invest in Ukraine, China can make use of this opportunity and strengthen its position in the region. Although the major part of China's investments in Ukraine within the OBOR initiative is a matter of the future, the first steps towards the realization of the project have already been taken.

In 2013, during the visit of Ukrainian President V. Yanukovych in Beijing, Ukraine announced its interest in becoming a part of an OBOR initiative. At that time, China was quite often exposed to offers for cooperation from Ukraine - not because of special interest in this territory, but due to the international isolation of V. Yanukovych. With the beginning of the Ukrainian crisis, however, came a suspension of numerous planned Chinese investments. The prospects of Chinese-Ukrainian relations got even worse in the context of Russian annexation of Crimea and emerging conflict in the south-eastern parts of Ukraine. However, the pessimistic forecasts were wrong. Euromaidan protests brought down Yanukovych and brought in a new Ukrainian president, Petro Poroshenko, who supports closer relations with the EU and China. As a result, China gained even closer trade-political relations with Ukraine.

Ukraine sees the OBOR initiative as a possible means towards improving infrastructure in various areas, from roads and energy projects to agriculture technology, such as grain storage and processing facilities and irrigation systems. One of the most important steps of Ukraine towards its involvement in OBOR occurred in May 2015, when it formally joined the Trans-Caspian international transport route.

Belarus Poland Russia Kazakhstan Ukraine Moldova Romania Caspian Sea Black Sea Albania Bulgaria Uzbekistan Georgia Kyrgyzstar Azerbaijan Macedonia Armenia Turkmenistan Turkey Greece Tajiristan China Mediterranean Sea Syria Iraq Iran Afghanistan

Figure 2Map of Trans-Caspian international transport route

Source: Own processing

At the end of January 2016 China lent its official support for a freight train from Ukraine to Kazakhstan and China, bypassing Russia at the end of January 2016. The container train route Ukraine-Georgia-Azerbaijan-Kazakhstan-China is considered as an offshoot of the New Silk Road. It is expected that the delivery time will be 10-12 days in one direction with the price being comparable to that of the China-Europe routes through Russia in the future. (ETS, 2016)

A view at the map of Central Asia (Figure 2) shows that railway journey from Ukraine to Kazakhstan without passing through Russia, demands to cross the Black Sea and the Caspian Sea. This, therefore, requires specialised ferries that are able to carry trains on both the Black and Caspian Sea routes. The train first crosses the Black Sea to Georgia, then passes by rail into Azerbaijan, then boards another ferry across the Caspian to Kazakhstan, where it switches back to rail for the onwards journey through Kazakhstan and potentially on to China. The importance of this new project is that it could form the first complete rail link between Europe and China that does not involve crossing of Russian territory. The journey from Ukraine to Russia is supposed to take 11-12 days, which if correct would be competitive with currently the fastest route that goes via Kazakhstan, Russia and Belarus. The entire route to China is 5,475 km. The first trial run left Ukraine on January 15, 2016 and in 15 days it reached the Kazakh-Chinese border. Specialists acknowledge that it will be possible to reduce delivery time to between nine and ten days. It was planned that the cargo train will run three times a week starting from March 2016. To ensure that the train is competitive with other routes (especially via Russia), all participating states have signed a protocol on a uniform tariff policy for cargo traffic from China to Europe through Kazakhstan, Azerbaijan, Georgia and Ukraine. However, the parties are still in the process of harmonizing and unifying international tariff policy. To ensure that the train is competitive with other routes (especially via Russia), all participating states have signed a protocol on preferential tariffs. As Minister of Infrastructure of Ukraine Andriy Pyvovarsky said, the train will go to China without examination and on a single rate basis. (Parkhomchik, 2016)

Recently, the Ukrainian involvement in the OBOR initiative has been discussed between the Ukrainian President Peter Poroshenko and Chinese President Xi Jinping during a meeting of the World Economic Forum 2017 in Davos. The heads of both countries expressed their interest in intensifying political dialogue at the highest level and deepening economic cooperation between the Ukraine and China. They also agreed to hold Ukrainian-Chinese Intergovernmental Commission on Cooperation meeting and the participation of the Ukrainian delegation at the forum of the initiative "One Belt, One Road", to be held in the spring 2017 in China. (WEF, 2017)

2.4 Differing views on implications of Ukraine's involvement in OBOR

There have been vast differences when it comes to expert opinions concerning Ukraine's involvement in OBOR initiative as well as further prospects of Chinese investments on Ukrainian market. One group of authors maintains that Ukraine has an irreplaceable position in OBOR initiative and these experts regard this country as the key territory for inland transfer of Chinese products to their desired markets within the integration grouping of the EU. Another group, however, supposes that risks associated with Ukraine's participation in the initiative are presently too high and highlight the fact that of particular significance for OBOR is only the Crimea region and that is not part of Ukraine anymore.

A study published by European Union Institute for Security Studies highlights potential opportunities for trade facilitation between the EU and China that can Ukraine's involvement in projects initiated by China generate. Major benefits would be the reduction of time needed

for delivery of products and elimination of risks related to their transport as such (Brugier & Popescu, 2014).

Similarly, A. Levchenko and M. Levchenko from Khmelnitsky National University in Ukraine are positive that even despite the huge burden, which will the adherence to signed contracts with China and their subsequent implementation bring for the Ukrainian government, Chinese investments will generate more positive than negative effects for the Ukrainian economy in the forthcoming years (Levchenko & Levchenko, 2015).

On the other hand, O. Timofeev from State University of Management in Moscow, emphasizes that Ukraine is not capable to effectively participate in OBOR initiative in short-term and medium-term horizons, which is namely due to its political instability and various other internal conflicts. Additionally, he also points out to the fact that geographically wise, Crimea has more of a significance to China than the whole area of Ukraine. However, Crimea has ceased to be part of Ukraine in 2014 and presently belongs to Russia (Timofeev, 2015).

Although O. O. Kim in his research directly does not address OBOR initiative, author raises several points that are of crucial importance to understanding of relations between Ukraine and China. He highlights Ukraine's overdependence on international trade (thus on China as well) when it comes to its development and lower competitiveness and resulting inequality perceived by Ukraine in this partnership. Contrary to traditional and yet popular concept of "laissez-faire", he quite controversially proposes that Ukraine should adopt import substitution strategy and boost its innovation potential on its own (Kim, 2014).

3. Conclusions and policy implications

Even despite relatively favourable development of mutual trade ties between Ukraine and China, and recent participation of Ukraine in OBOR initiative, any significant reduction of Ukraine's dependency on Russia and the EU cannot be expected in a foreseeable future. However, Ukraine tries to further intensify its trade ties with China, namely as a means of diversification of trade relations. Its commitment to do so is also demonstrated in target to increase trade volume between these partners by USD 2 billion in 2017 (China Daily, 2017). Seen in this light, the nurturing of multidimensional cooperation with China can generate numerous synergic effects for Ukraine and help it to utilize its yet hidden development potential. Nevertheless, the cooperation with China cannot be regarded as an "universal cure" for all the contemporary problems of Ukraine. OBOR can bring significant benefits to Ukraine, only provided that this country will be able to effectively and timely resolve its internal problems.

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Challenges Ahead: the Interest Limitation Rule

Milada Kuceková

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: m.kucekova@gmail.com

Tomáš Balco

Ministry of Finance of the Slovak Republic Taxation and Customs Section, International Tax Relations Unit Štefanovičova 5 Bratislava, 817 82 Slovak Republic

E-mail: tomas.balco@mfsr.sk, tombalco@yahoo.com

Abstract

Authors of this article review the interest limitation rule as introduced in the Anti Tax Avoidance Directive (ATAD) and inspired by the BEPS Action 4. They especially look at inefficiencies of this new rule and new challenges that this rule will bring to both the business and the tax authorities. Considerations, which may be relevant in the tax policy deliberations, are highlighted on the basis of practical examples and models. Findings of the authors indicate that if the ATAD rule is implemented with all the possible curve-outs and exemptions, it will become an interest deferral rule, rather than an interest limitation rule, and it will offer new possible tax planning opportunities rather than a protection of the tax base.

Keywords: interest limitation rule, BEPS project, EU

JEL classification codes: H26, M40

1. Introduction

The integration of national economies and markets has increased substantially in recent years, putting a strain on the international tax rules. Weaknesses in the current rules create opportunities for base erosion and profit shifting (BEPS). Internationally, the Organisation for Economic Co-operation and Development (OECD) is working on the BEPS project to close loopholes that facilitate avoidance, and to find solutions to today's tax challenges. On 5 October 2015, the OECD published the 13 final BEPS reports covering the 15 actions of the very ambitious and challenging BEPS action plan. Many EU Member States, in their capacity as OECD Members, have undertaken to transpose the output of the BEPS project into their national laws, and to do so urgently. Following the global standards developed by the OECD the European Union (EU) presented a new package against tax avoidance for fairer, simpler and more effective corporate taxation in the EU. It is essential for the good functioning of the Single Market that EU Member States transpose some of the OECD BEPS measures into their national systems in a coherent and coordinated fashion.

In an effort to reduce their global tax liability, groups of companies have increasingly engaged in BEPS, through excessive interest payments. The aspects of mobility and fungibility of money make it possible for multinational groups to achieve favourable tax results by adjusting the amount of debt in a group entity. The deductibility of interest is the

key attraction in debt financing compared to the equity financing. Taken the money can be easily shifted within a group of companies and loans can be introduced with a signature of a contract, debt financing became one of the key tax avoidance instruments already decades ago.

Countries have been combating the tax avoidance based on interest payment deductibility for decades already – by introducing the cap on the maximum interest rate, or special thin-capitalization rules and lately also using transfer pricing approaches to limit the interest deductibility. Slovakia is no different to other countries, which have been trying with more or less success to find a cure or a remedy to this phenomena.

As part of the 2015 output, the OECD has published a final report on action 4, which sets out a best practice approach for countries to prevent erosion of the tax base through the use of interest expense. Slovakia as a member of the EU will now have to adopt the common minimum rules areas a result of adoption of so-called Anti Tax Avoidance Directive (referred to as "ATAD" in this article). Content of the article is an analysis of the provisions regarding the limitations of the deductibility of interest in ATAD Directive with a constructive criticism of deficiencies of this rule as well as challenges that this rule may bring to non-expecting member states.

2. OECD BEPS project

The final report on Action 4 of the EBPS (OECD, 2015) project is setting out its recommendations for a best practice approach to the design of rules to prevent base erosion through the use of interest expense.

The final report identifies three basic scenarios in which BEPS involving interest and payments economically equivalent to interest can arise (OECD/G20, 2015):

- Groups placing higher levels of third party debt in high tax countries.
- Groups using intragroup loans to generate interest deductions greatly in excess of the group's actual third party interest expense.
- Groups using third party or intragroup financing to fund the generation of tax exempt income.

The recommended approach to address these risks is based on a fixed ratio rule which limits an entity's net deductions for interest and payments economically equivalent to interest (interest expense in excess of interest income) to a percentage of its earnings before interest, taxes, depreciation and amortisation (EBITDA). The Report suggests possible ratios between 10 and 30 percent.

In addition to the fixed ratio rule the Report recommends the use of a group ratio rule, which would allow groups that are more highly leveraged to deduct net finance expense in excess of the fixed ratio. This alternative restriction would permit a company an interest deduction up to the level of the net interest/EBITDA ratio of the company's worldwide group.

Other optional elements include the introduction of a de minimis threshold which carves out entities that have a low level of net interest expense, the carry-forward of unused capacity or disallowed interest expense, an exclusion for interest paid to third party lenders on loans used to fund public-benefit projects a and targeted rules.

The aim of Action 4 is to produce recommendations for best practice rules to prevent BEPS, although they do not represent a minimum standard.

3. Anti Tax Avoidance Directive in the EU

In July 2016 – during the Slovak Presidency in the EU Council, the Economic and Financial Affairs Council formally adopted the directive addressing tax avoidance practices commonly used by large companies so-called Anti Tax Avoidance Directive – ATAD (Council Directive, 2016). The Directive aims to create a minimum level of protection for internal market. It contains five legally-binding anti-abuse measures, which all Member States should apply against common forms of aggressive tax planning. Three of the five areas covered by the directive implement OECD recommendations, namely the interest limitation rules, the CFC rules and the rules on hybrid mismatches. The directive should ensure that the OECD anti-BEPS measures are implemented in a coordinated manner in the EU, including by 6 member states that are not OECD members.

The scope of directive covers all taxpayers that are subject to corporate tax in one or more member state, including subsidiaries of companies based in third countries. It can be noted however that the directive does not apply to those types of legal entities which are not subject to corporate tax in a Member State; that is, in particular, transparent entities. This is a fact, which can facilitate new opportunities to aggressive tax planning.

Interest limitation rule in the Directive covers both third party and related party debt. It is understood that the tax avoidance practices involve also situations with third party loans – especially cases, where the 3rd party debt is located in high tax jurisdictions or is used to finance exempt income and that is perhaps the reason, why the drafters of BEPS Action 4 chose to take this broad approach, which was later blindly copied into the ATAD directive.

Based on the opinion of the authors, the inclusion of the 3rd party debt into the general interest limitation rule achieves negative results especially due to the fact that also:

- the legitimate 3rd party investments are being affected by this rule of non-deductibility,
- there are specific industry sectors as well as projects dependent on 3rd party financing, which may lead to excessive third party financing despite little profitability in early stages of project, which may negatively influence existence and realization of certain investment projects, highly dependent on cash-flows.

It can be also noted that the fact the companies end up paying taxes, despite being legitimately loss making, can give a rise to constitutionality issues, especially in countries, which make the "ability to pay principle" or "principle of equality" one of the core constitutional issues in respect of taxation. It is no secret, that the very country, which invented the interest limitation rule as was copy pasted into the BEPS Action 4 report is currently facing a constitutional case, where already supreme court decided in favour of the taxpayer – declaring this very rule to be unconstitutional.

In line with the Directive, exceeding (or net) borrowing costs, will only be deductible up to 30 per cent of a taxpayer's earnings before interest, tax, depreciation and amortisation (EBITDA). Any tax exempt income shall be excluded from the adjusted tax EBITDA of a taxpayer. Given that the aim is to lay down minimum standards, Member States may, in order to establish greater protection, use low interest ratio or adopt an alternative measure referring to a taxpayer's earnings before interest and tax (EBIT).

Beyond of the basic rules, the Directive introduces the possibility of using exemptions which implementation in the Member States will be voluntary:

• The taxpayer may be given the right to deduct exceeding borrowing costs up to a fixed amount of EUR 3 million.

- The taxpayer that is not part of a consolidated group for financial accounting purposes and has no associated enterprise or permanent establishment (standalone entity) may be given the right to fully deduct its exceeding borrowing costs.
- Member States may exclude from the scope of the rule borrowing costs incurred on loans which were concluded before 17 June 2016 and loans used to fund a longterm public infrastructure project.

Further exemptions can be applied, if a taxpayer is a member of a consolidated group for financial accounting purposes. Directive contains the option for Member States to choose between two different group exclusion provisions. The taxpayer may be given the right either:

- 1 fully deduct its exceeding borrowing costs if it can demonstrate that the ratio of its equity over its total assets is equal to or higher than the equivalent ratio of the group and subject to the following conditions:
 - a) the ratio of the taxpayer's equity over its total assets is considered to be equal to the equivalent ratio of the group if the ratio of the taxpayer's equity over its total assets is lower by up to two percentage points; and
 - b) all assets and liabilities are valued using the same method as in the consolidated financial statements.
- **2** deduct exceeding borrowing costs at an amount in excess of 30% EBITDA by calculating in two steps:
 - a) first, the group ratio is determined by dividing the exceeding borrowing costs of the group vis-à-vis third-parties over the EBITDA of the group; and
 - b) second, the group ratio is multiplied by the EBITDA of the taxpayer calculated pursuant to letter a).

Member States may as well foresee a carry-forward (without time limitation) of exceeding borrowing costs as well as either a carry-back of exceeding borrowing costs for up to three years or a carry forward of unused interest capacity for up to five years.

Based on the opinion of the authors, the pitfall of the current Interest Limitation Rule in both ATAD Directive and BEPS Action 4 is the very starting point, which starts with the attempt to "catch all" the interest payments irrespective of whether they pose risk for BEPS or not and then to "exempt many" by various exemptions and curve out rules. But the problem is that you never manage to exempt all legitimate situations. So the risk becomes that while trying to exempt legitimate situations, you also *exempt many illegitimate situations due to high thresholds and broadly constructed exemptions*. This is issue for Slovakia as a small country as most taxpayers are SME compared to other jurisdictions and this is one of the key challenges, which is likely to have negative impact on tax revenues.

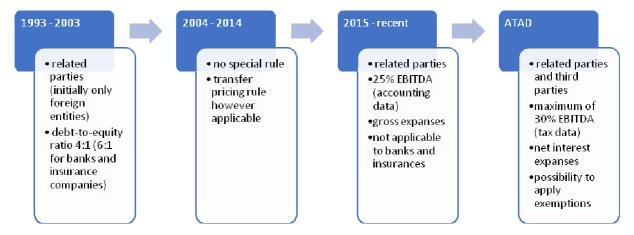
Findings of the authors indicate that if the ATAD rule is implemented with all the possible curve-outs and exemptions it becomes an interest deferral rule, rather than interest limitation rule and will offer new possible tax planning opportunities rather than protection of the tax base. As a result, the groups of companies may benefit from higher tax deduction due to permissible intra-group financing compared to the existing rules in Slovakia.

Finally, it is interesting to point out that the Member States that have national, targeted rules for preventing BEPS that are equally effective as article 4 in the ATAD are granted a transitional period. They can still apply those existing, targeted rules until the end of the first fiscal year following the date of publication of the agreement between the OECD Member States on a minimum standard with regard to BEPS Action 4, or, at the latest, until 1 January 2024.

4. Evolution of Interest limitation rules in the Slovak Republic

The Slovak Republic like many other countries, has been experimenting and exploring the optimum solution to the interest deductibility challenge. In the following, we will describe the different stages of the evolution of the interest limitation rule from the period of independence of Slovakia until today.

Figure 1 Evolution of interest limitation rule in the Slovak Republic



Source: Developed by authors

Early stage: 1993 – until the end of 2003

The first version of the thin capitalisation rule was applicable as of 1993 and it governed the tax deductibility of interest on loans paid to related parties. When the total of loans provided by related parties throughout the taxation period exceeded four times the equity of the recipient, the interest on the excess became tax non-deductible. If the recipient of the loan was a bank or insurance company, an increased 6:1 debt/equity ratio applied.

The period of 10 years of great vacuum: 2004 - end of 2014

In this period of time, no special rule for interest limitation applied. As a result, there was no limits to the amount of interest that could be charged as deductible expense as long as the general conditions for interest deductibility were met. There have been however cases reported, where the tax authorities have challenged taxpayers on the bases of transfer pricing rules – where the taxpayer was challenged based on transfer pricing principles – either in cases, where the interest rate was excessive or also cases, where the amount of debt was excessive compared to independent enterprises.

Current period: start of 2015 until now

In the current period, the new Section 21a of Income Tax Act applies as of 1.1.2015 and it contains rules, which are called the "Thin Capitalisation Rules" but in effect, they are actually the interest limitation rules based on the EBITDA limitation, similar to that advocated by BEPS project. There are however some important differences.

The key idea is that interest becomes non-deductible, where the gross interest payments exceed 25% of the EBITDA, which is calculated based on the accounting results rather than the tax base as advocated by BEPS Action 4. In addition, only the related party interest and interest paid on structured (back-to-back) arrangements is affected by this rule.

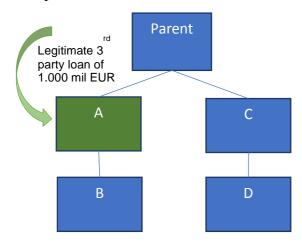
5. Critical analyses of BEPS Action 4/ATAD Interest Limitation Rule

On the following, the authors demonstrate the practical issues and challenges of the new interest limitation rule, which may give a rise to new tax planning opportunities due to permissible intra-group financing. For this purpose -2 similar cases are introduced for comparability purposes.

Case 1

Company A is a subsidiary of Parent Company and forms a group together with other companies Parent and companies B, C and D (Group Members). Company A obtains a legitimate 3rd party financing. The facts are depicted on the scheme below.

Figure 2 Group Members in the Case 1



Source: Developed by authors.

The group of companies have the following financial indicators. Each company has a positive EBITDA, which also equals the accounting profit, with the exception of company A, which has negative accounting result (loss), due to interest deductibility. The indicators are summarized in the table below.

Table 1Key finance indicators in Case 1

Case 1	Equity	Assets	Debt	Related Party Debt	Interest Expense	EBITDA
Parent	100	100*	0	0		20
A	100	1.100	1.000	0	60	20
В	100	100	0	0		20
С	100	100	0	0		20
D	100	100	0	0		20
Consolidated	500	1.500	1000	0	60	100

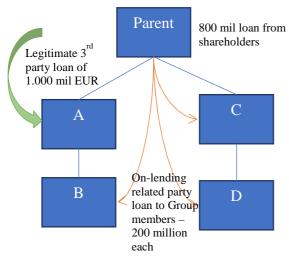
Source: Developed by authors

Notes: Amounts in Million EUR; Tax rate of 25% in all countries; No related party loans; Interest rate 6%; * P's assets net of consolidation effect; Safe Harbour – 3 million EUR; No depreciation nor amortization in any company; EBITDA = tax base (with the exception of company A) – accounting loss of (40).

Case 2

The facts in case 2 are almost identical as in case 1, with one exception. The Parent Company will obtain additional loan of EUR 800 million from shareholders, out of which it will further on-lend EUR 600 million to subsidiary companies B, C and D within the group as intra-group financing. The facts are depicted on the scheme below.

Figure 3 Group Members in the Case 2



Source: Developed by authors.

Table 2Key Finance Indicators in Case 2

Case 2	Equity	Assets	Debt	Related Party Debt	Net Interest Expense	EBITDA
Parent	100	300*	800	800	12	20
A	100	1.100	1.000	0	60	20
В	100	300	200	200	12	20
С	100	300	200	200	12	20
D	100	300	200	200	12	20
Consolidated	500	2.300	1.800	800	108	100

Source: Author's own processing

Notes: Amounts in Million EUR; Tax rate of 25% in all countries; Related party loans: 800 from shareholders, 600 on-lent to group members, 200 to each of them; Interest rate – 6%; * P's assets net of consolidation effect; Safe Harbour – 3 million EUR; No depreciation nor amortization in any company; Consolidated values (exclude intra-group).

The following overview at the Figure 4 provides the application of the application of the limitations and exceptions as introduced in the ATAD Directive.

Figure 4 Application of the Limitations/Exceptions

Case 1

- 30% EBITDA

 Article 4 paragraph 1 of ATAD

 20 x 30% = 6 million EUR
- Safe Harbor
 Article 4 paragraph 3 letter a) of ATAD
 3 million EUR
- Group Equity/Equity Assets

 Article 4 paragraph 5 letter a) of ATAD

 500/1.500 = 5/15 = 1/3 = 0.33

 A's ratio 100/1.100=0.09
- Group EBITDA exception

Article 4 paragraph 5 letter b) of ATAD Step 1: Group 3rd party interest/EBITDA

ratio - 60/100 = 6/10 = 0.6

Step 2: $0.6 \times EBITDA \text{ of A } (20) = 12$

Total permissible deduction is 12

Case 2

- 30% EBITDA
 Article 4 paragraph 1 of ATAD
 20 x 30% = 6 million EUR
- Safe Harbor
 Article 4 paragraph 3 letter a) of ATAD
 3 million EUR
- Group Equity/Equity Assets
 Article 4 paragraph 5 letter a) of ATAD
 500/2.300 = 0.22
 A's ratio 100/1.100=0.09
- Group EBITDA exception

Article 4 paragraph 5 letter b) of ATAD

Step 1: Group 3rd party interest/EBITDA ratio –

60/100 = 6/10 = 0.6

Step 2: $0.6 \times EBITDA$ of A, B, C and D (20) = 12 at

every company level

Total permissible deduction is 12

Source: Author's own processing on the basis of Anti Tax Avoidance Directive

Results

As can be seen in the following table, assuming the consolidated profit or loss of 40 per group and assuming the tax rate of 25% in all the countries, the Group is however having a consolidated tax base of 88 as a result of application of the interest limitation rule and thus pays a higher tax liability, while there was no illegitimate tax planning taking place in this case. This is especially due to the fact that while company A suffered economic loss, it has paid tax nevertheless.

Table 3Total tax payable as a result of interest limitation rule in ATAD in Case 1

Case 1	Interest Expense	EBITDA	Profit/Loss before tax	Permitted Interest Expense	Tax Base	Disallowed Interest	Tax Due 25%
Parent		20	20	Expense	20		5
A	60	20	(40)	12	8	48	2
В		20	20		20		5
С		20	20		20		5
D		20	20		20		5
Consolidated	60	100	40	12	88	48	22

Source: own processing

Notes: Amounts in Million EUR; Tax rate of 25% in all countries; Safe Harbour – 3 million EUR; 30% EBITDA rule: 6 million EUR; No depreciation nor amortization in any company; EBITDA = tax base (with the exception of company A) – accounting loss of (40), but taxable base of 8 million.

Summary Outcomes in Case 1

• Group economic result EBITDA: 100

• Group Economic result: 40

• Tax rate: 25%

Group Tax Expense: 22
Effective Tax Rate: 55%¹
3rd party: 60 interest expense

Company A: economic result - loss of 40Company A: tax due EUR 2 million

On the other hand, as can be seen from the following table, the special curve out rules and exemptions in the ATAD Directive can actually permit abusive intra-group on-lending, which may lead to a reduction of the tax base on the group level. This leads to a very positive effect in net tax liability and effectively leads to a possibility of using the interest financing to achieve cross-border tax consolidation, where the Group in a comparative situation as in Case 1, however uses the shareholder loan and its on-lending to come up with a tax payable of 10 rather than 22 as was the case in the Case 1.

Table 4Total Tax payable as a result of tax planning opportunities in ATAD in Case 2

Case 2	Net Interest Expense	EBITDA	Permitted Interest Expense	Tax base /Economic Loss	Disallowed Interest	Tax Due 25%
Parent	12	20	12	8		2
A	60	20	12	8/ (40)	48	2
В	12	20	12	8		2
С	12	20	12	8		2
D	12	20	12	8		2
Consolidated	108	100	60	40/ -8	48	10

Source: own processing

Notes: Amounts in Million EUR; Tax rate of 25% in all countries; Safe Harbour – 3 million EUR; 30% EBITDA rule: 6 million EUR, Group EBITDA: 12 million EUR; No depreciation nor amortization in any company; EBITDA = tax base (with the exception of company A) – economic loss of (40) but taxable base of 8 million.

Summary Outcomes in Case 2

- Group economic result EBITDA: 100
- Real group net economic result: 40
- Aggregated Tax optimized economic result of the group loss of 8 (reduced from 40 due to permissible intra-group financing)
- Tax rate: 25%
- Group Tax Expense: 10

(reduced from 22 due to permissible intra-group financing – tax impact on other countries of the group)

- Effective Tax Rate: 25%²
- 3rd party: 60 interest expense leads to high group ratio
- Company A: economic result loss of 40
- Company A: tax due EUR 2 million
 - Off-set by reduced tax expense by savings of 12 in other countries due to tax planning opportunity created by the proposed rules.
 - Strict rules in one country are off-set by tax savings in other countries and permitting higher deductions of interest using the group limitations.

 $^{^{1}}$ tax expense 22/group economic result 40 = 55%

 $^{^{2}}$ tax expanse 10/real economic result of 40 = 25%

- Additional benefit of ongoing carry over of unutilized excess interest expense in Country A.

6. Conclusions

The conclusion of the authors is that the current rules try to address the legitimate concern of deduction shifting to high tax jurisdictions and similar abusive practices by extension of the interest deduction limitation also to 3rd party loans. This however leads to extreme results, where the companies or groups of companies engaged in no harmful tax avoidance practices end up paying higher tax than would be reasonable taken their net economic outcomes and true economic profit. On the other hand, the attempts to off-set potential negative spill-overs on legitimate situations by safe-harbour rules and exemptions, may lead absurdly to new tax planning opportunities, where abusive intra-group financing may be safe-guarded by the special safe-harbour rules or group ratio curve outs.

The authors therefore conclude that there are 2 eminent negative impacts possible from the implementation of the ATAD rule on interest limitation:

- Limitation of legitimate interest deduction leading to higher tax paying situation in legitimate tax/economic loss situation.
- Abuse of exemption and safe harbour rules which may lead to excessive related party loans deductions thus it can lead to new tax planning opportunities.

It is also the conclusion of the authors that the companies will have to resort to tax planning if they want to offset negative implications of this rule.

Acknowledgement

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Comparison of Different Types of Project Research Funding – the Case of Slovakia

Alexandra Lešková

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: alexandra.leskova@euba.sk

Abstract

Public research is in many countries performed by universities. There are actually more ways of funding research and finding the optimal one requires constant monitoring and comparing models already used in practice. Countries in Europe, and even beyond, use different systems and combine them as well. Slovakia, as one of many countries, uses a performance-based model for funding universities and their research; universities have a possibility to propose research projects to four different agencies providing a competitive mechanism for supporting research and development in Slovakia. This paper analyses the support of two of those agencies (their support being very similar) in the period of 2007 – 2015 with regard to 18 public universities, and it answers the questions how allocation of resources among universities was provided, and whether there are any differences in funding from these two sources. The paper concludes that besides the amount of grants and concentration of one agency on better performers, there are indeed no significant differences in the way of funding or allocation of resources. Therefore, it suggests that it is worth to consider whether just one research and development supporting agency would be more efficient also in stimulating researchers to be more competitive.

Keywords: research, funding, comparison, institutions funding R&D

JEL classification codes: H52, I28, G28

1. Introduction

Public research plays a very important role in innovation systems by ensuring new knowledge. It is primarily funded by public money and carried out by research institutions. The fundamental justification for government support of research is given by the classical market failure argument claiming that the market does not provide sufficient incentives for private investment in research (www.OECD.org). Investment in research and development (R&D) leads to an output – the knowledge of how to make new goods and services. A firm that came with new knowledge can hardly keep it for itself in secret, therefore, the knowledge might be used by another firms. The returns of the investment cannot be appropriated by the firm undertaking this investment. Hence the firm is more reluctant to invest. Additionally, the utility of this knowledge is higher for a whole society than just for a firm, therefore, the argument says the research should be complemented by a public support. However, this argument so far has been developed, modified and extended in many ways (www.OECD.org, Hall, 2002).

Actually public research can be in addition led to meet specific needs of national interests. In many OECD countries are as the main performers of public research considered universities (www.OECD.org). So, we agree that the government funding is an important

source for R&D funding and universities may play a key role. Let's now see what kind of support R&D institutions, like universities, can obtain to conduct research.

There are several ways how to classify funding models for university research. The sources can be divided into internal including governmental core funding and a university assets and external composed of public project funding or grants provided by public funding agencies and contracts with public administration (Auranen – Nieminen, 2010). We can also consider it as either institutional funding or competitive project mechanism. Institutional funding, so-called block grants, is the traditional funding instrument for money allocation which considers various criteria like performance indicators or budget negotiations. Supported institutions are in this case provided with stable funding over the long term and get a certain degree of autonomy in research as well (www.OECD.org). The system can increase stability of organization by covering the salaries and basic infrastructure expenditures (Auranen – Nieminen, 2010).

Researchers can develop and express their potential in ways of their own choosing and even the unknown quality performers get a chance to conduct research. On the other hand, it can bring a sensitivity to changes in the allocation mechanisms and lead to inefficiency (Geuna, 2001; Auranen – Nieminen, 2010). Another way of R&D funding is to introduce the competitive R&D project grants. This instrument is based on competitiveness of researchers from research universities and public research institutions. The advantage of the latter lies in putting more emphasis on outcomes and quality of the research because if money is given to the best performers, it should end up by producing better results. It even creates a general incentive to achieve better results and become competitive (OECD, 2017; Auranen – Nieminen, 2010). Although this selective funding approach is efficient in the short term, the long-term consequences for society could be negative because it prevents new scientists with bright ideas working in less esteemed institutions from developing their potential (Geuna, 2001).

Policy makers must deal with finding the best strategy that ensures an efficient allocation of public funding. Some countries put more emphasis on competitive funding (Belgium, Portugal, Japan) and some on performance-based funding (Czech Republic, Greece, Slovakia)¹. Countries like The Netherlands, Germany, Norway, Denmark, Sweden, Finland, UK or even Australia combine the funding models. The differences can be found then in the shares of sources and responsible institutions (Auranen – Nieminen, 2010). But combining the models may cause that due to competitive character the grants will be allocated towards the top universities which also receive the largest share of money by reaching the best values of indicators. So it increases concentration of resources. On the other hand, more sources of funding may help to offset the danger of scientific sclerosis in established ideas set by agency in monopsony position (Geuna, 2001).

From the European Commission viewpoint is institutional funding with a competitive element an answer – e. g. conducting an ex post assessment of the output and performance of universities (EC, 2012; Cruz Castro et al., 2010). This approach can lead to improvements in research performance by selecting the best research groups, promoting research themes and cooperation and competition among the researchers (Braun, 2003). But even if all countries introduce legislative reforms and include recommended model, the efficiency and performance effects will not be the same due to the differences in the quality levels of public research systems and of national research performers (Bleiklie – Michelsen, 2015).

¹ OECD Science, Technology and Industry Outlook Policy Database

As we have shown, there are different types of R&D funding. In order to find the optimal model for a country, it is necessary to watch and compare the models that are already used in practice. In case of Slovakia, Šipikal et al. (2015) have already paid attention to the issue of financing the universities from another possible sources based on competitive element provided by the European Union and highlighted its role and reallocation in less developed regions.

Different types of universities funding in Slovakia have been compared in another study (see Šipikal, Némethová, 2016) where the authors focused on reallocation of the sources from the state agencies and EU structural funds which are based on competitive project mechanism and the sources of the Ministry of Education within the performance-based model. The study concludes that there are indeed differences in distribution of the financial sources - mainly in the structural funds, and even in case of similar schemes of state agencies - the concentration of support distinguishes from each other.

This paper focuses only on the competitive R&D project mechanism in Slovakia, where the financial sources are provided by four different agencies as a supplement for performance-based funding of universities. The paper deals with the support of two agencies and identifies the differences in agencies support and its allocation among the universities by watching distribution also on faculty levels.

1.1 Research and Development funding model in Slovakia

Slovak funding model is based on performance indicators. However, the universities have also an option to propose for funding their research projects from public agencies. The Ministry of Education, Science, Research and Sport of the Slovak Republic (Ministry of Education) provides a financial support to researchers through four existing agencies: the Scientific Grant Agency (VEGA), the Cultural and Educational Agency (KEGA), the Slovak Research and Development Agency (APVV) and the Agency of the Ministry of Education of the Slovak Republic for the Structural Funds of EU (ASFEU). VEGA is an internal grant system for the education sector and Slovak Academy of Science focusing on science while KEGA supports applied research in the fields of education and creative and performing arts. APVV focuses on basic and applied R&D and techniques carried out by the public sector, the universities, the business sector and non-profit sector within the Agency's programs. Recipients of funds are public, state, private universities and colleges, government and business sector R&D and individuals conducting R&D within the meaning of the trade law. The last agency – ASFEU fulfils the role of an intermediary authority for operational programs of Education and Research and Development (www.minedu.sk).

VEGA and APVV fund projects of the science and technology fields from the sources of the State Budget what makes them similar to each other. Let's now find out what are their functions and differences. APVV is a non-profit organization which revenues and expenditures are connected to the state budget through the budget category of the Ministry of Education. The Agency has been established on base of the Act of the National Council and provides funds for implementations: R&D projects in all fields of science and technology, projects within Agency's programs and projects under international agreements on scientific and technological cooperation projects within international programs and initiatives in the field of research and development including costs of their preparations. The Agency's programs are proposed by Minister of Education and adopted by the government. The second body that focuses on funding R&D in Slovak Republic - VEGA is a joint advisory body of the Minister of Education, and an auxiliary body of the presidium of the Slovak Academy of Sciences for projects selected for funding from institutional finance resources under two sub-

chapters of the State Budget: the university-based science and technology, and the Slovak Academy of Science.

The VEGA is an advisory body in field of implementation of science and technology policies, financing basic research and evaluation of research projects. Both these agencies operate on the same bases where all researchers interested in funding must wait until the call for project proposals is made and then can propose. All projects are subsequently evaluated by commission and the best ones receive a financial support determined by the agencies. Since this might be considered as the case of competitive funding model let's find out how this money allocation looked like. Did the support concentrate in certain universities or faculties? Was the allocation the same within the disciplines? Were there any differences in agencies' targeting? This paper analyses on a sample of 18 public universities how the support from both agencies was allocated, which fields were at the forefront and what were the main differences in agencies funding (Statute VEGA and Statute APVV²).

1.2 Methodology

The analysis is based on the argument that public research can be funded in many ways and looking for the optimal one requires watching the models already used where identifying their positive and negative aspects is important. As we already said public universities are in many OECD countries considered as the main performers of public research (www.OECD.org). Even our own calculation shows that in case of Slovakia were public universities supported by 95,84 % of all grants designed by APVV and VEGA agencies for research and development support from 2007 to 2015. Therefore, we conduct the analysis on a sample of 18 public universities. All private and state universities have been excluded from the analysis because primary is the research in Slovakia ensured by the public institutions like public universities or Slovak Academy of Sciences. However, we had to exclude from our analysis also two public universities since the structures of the institutions are different and we were not able to determine a faculty level. We started the analysis by watching the grants that universities received from APVV and VEGA over the period of 2007 – 2015. That means we have included in case of VEGA even the projects that started before 2007 but only the amount assigned for 2007 has been taking into account. In case of APVV only the projects proposed since 2007 were watched. That is because the APVV agency does not assign the amount of grant on a yearly basis.

All information about the projects are available on the websites of the agencies. Thanks to the specific codes of projects, we could identify a faculty (where was necessary to add) and a field of each faculty that were assigned in accordance with the Fields of science and technology classification defined by the Ministry of Education. We set as an indicator of quality an accreditation coefficient given to faculty considering its performance by the Accreditation Commission by taking the best results for each faculty since faculties are awarded by each field they focus on. This allowed us to see whether the universities of higher quality were more successful. The accreditation coefficients were assigned in accordance with the Schedule of subsidies from the State Budget for public universities for 2017³.

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² This part was written in accordance with publicly available Statutes of agencies. Links are listed in the literature at the end of this paper.

³ This document is publicly available on the website of the Ministry of Education. The link is listed in the literature at the end of this paper.

2. Results

From the very beginning let's see how much the agencies provided to the universities in period of 2007 – 2015. As we already know there is not a big difference in the mechanism of APVV and VEGA support. But when we look at the amount of money given to universities in Table 1, we do see differences.

Table 1 Financial sources from APVV and VEGA in 2007 – 2015

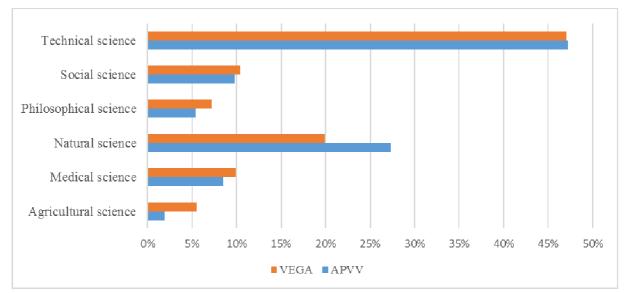
Sources	Grants
APVV	99 027 843,00
VEGA	72 400 384,96
TOTAL (€)	171 428 227,96

Source: Own calculations based on the list of supported projects published on the Ministry of Education website

The APVV sources were about 15 % higher comparing to VEGA. On the other hand, VEGA supported more than 80 % of all projects granted in this period.

Let's now take a look which fields were mostly funded from the agencies.

Figure 1 Grants allocation considering the fields



Source: Own calculations based on the list of supported projects published on the Ministry of Education website

Figure 1 shows the grant allocation and we can see that the order of supported fields was the same in both agencies. The most funded disciplines were the technical science and then the natural science.

University of Zilina University of Ss. Cyril and Methodius University of Presov University of Economics in Bratislava Trnava University in Trnava Technical University of Košice Technical University in Zvolen Slovak University of Technology in Bratislava Slovak University of Agriculture in Nitra P. J. Šafárik University in Košice Matej Bel University in Banská Bystrica J. Selye University Constantine the Philosopher University in Nitra Comenius University in Bratislava Catholic University in Ruzomberok Alexander Dubček University of Trenčín Academy of Performing Arts in Bratislava Academy of Arts in Banská Bystrica 5% 10% 15% 20% 25% 30% ■VEGA ■APVV

Figure 2Grants allocation among universities from VEGA and APVV

Source: Own calculations based on the list of supported projects published on the Ministry of Education website

The lowest funds were given to the agricultural science. Considering the number of projects proposed in each field, the order is also very similar to each other and to the grant allocation shown in the Figure 1.

Figure 2 shows that the highest financial support went in both cases to the Comenius University in Bratislava on the first place and the Slovak University of Technology in Bratislava on the second one. These two universities according to the results of accreditation belong to the four best ones in Slovakia with the Comenius University on the top⁴. But watching the variance of distribution among the universities we can conclude that the APVV resources were more concentrated in certain institutions. Interesting would be to compare these results to the number of researchers in each project. Unfortunately, it is difficult to obtain such a data.

To see how grants were allocated within the universities let's take a look more deeply on example of the most supported object – the Comenius University in the Table 2. We cannot say that the grants either from APVV or VEGA were distributed very differently. They basically focused on faculties in a similar proportion and the most funded were the Faculty of Natural Sciences and the Faculty of Mathematics, Physics and Informatics. These faculties also had one of the best results in accreditation process. But even if the university received the highest financial support, the variance among faculties was significant and higher in case of APVV sources.

⁴ In accordance with the Schedule of subsidies from the State Budget for public universities for 2017. The link is listed in the literature at the end of this paper.

Table 3Grants allocation in Comenius University in Bratislava

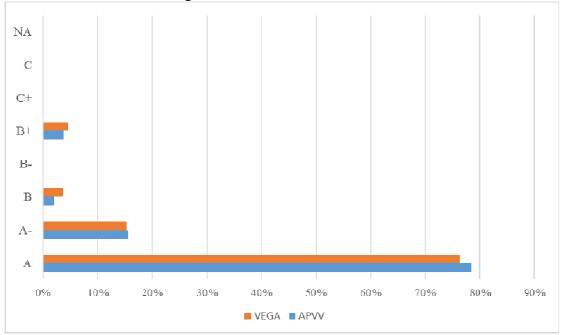
Comenius University in Bratislava	APVV	VEGA
Evangelical Faculty of Theology (UK)	0	0,16%
Faculty of Arts (UK)	8,92%	9,86%
Faculty of Education (UK)	1,33%	1,60%
Faculty of Law (UK)	3,88%	0,93%
Faculty of Management (UK)	0,51%	0,36%
Faculty of Mathematics, Physics and Informatics (UK)	19,92%	14,90%
Faculty of Medicine (UK)	9,80%	11,67%
Faculty of Natural Sciences (UK)	41,27%	38,11%
Faculty of Pharmacy (UK)	1,88%	8,18%
Faculty of Physical Education and Sports (UK)	0,41%	2,59%
Faculty of Social and Economic Sciences (UK)	2,73%	0,93%
Jessenius Faculty of Medicine in Martin (UK)	9,34%	10,43%
Roman Catholic Faculty of Theology (UK)	0,00%	0,27%
Variance	0,013518519	0,011043057

Source: Own calculations based on the list of supported projects published on the Ministry of Education website

Let's see what the variance looked like in another case by watching resources allocation among universities' faculties. Out of 18 universities only in two cases was variance higher in VEGA sources. Since there was a case when just one faculty of one university received grants, the rest of 15 universities proves that APVV did concentrate more on certain faculties. While VEGA supported 96 faculties of 18 universities, APVV provided grants just to 78 faculties of 17 universities.

To see how resources were reallocated taken into consideration the quality expressed by accreditation coefficient we can conclude that the faculties that received the coefficient A were given the highest and significant share of grants. This is shown in the Figure 3.

Figure 3Grants allocation considering the accreditation coefficient in VEGA and APVV



Source: Own calculations based on the list of supported projects published on the Ministry of Education website

The support was indeed allocated in order starting from the best coefficient (A) and ending by (C). We had to exclude 2 faculties out of 98 that have not gone through the accreditation process yet. From 96 faculties 34 % were accredited by coefficient A.

Table 4Percentage of faculties within each accreditation coefficient

Accred. Coefficient	Percentage of faculties
A	34%
A-	27%
B+	18%
В	17%
В-	2%
C+	1%
C	1%

Source: Own calculations based on the list of supported projects published on the Ministry of Education website

By watching the correlation or, in other words, the relationship between the amount of grants that each faculty received and the accreditation coefficient expressing its quality we do get result 0,470204. That means there is a moderate uphill expressing positive relationship.

3. Conclusions and policy implications

At the very beginning, it is important to say that even if Slovakia has two agencies with the same functions operating on the same basis, they do reallocate sources quite differently. First of all, the resources they provided to support R&D were not equivalent and APVV had about 15 % more grants to reallocate. But having more resources did not lead to more equivalent allocation. Actually the grants provided by APVV were more concentrated in certain universities and faculties. Both agencies provided grants to the fields in the same order but APVV allocated a little bit more in the most supported disciplines. Additionally, APVV reallocated sources into less than 20 % of all projects so we can conclude that these grants were much higher. Watching the performance of universities, we saw that the highest amount of grants went to the best universities taking into account the accreditation results. But watching the faculties among universities, the support was again concentrated to a few best performers. More than 75 % of whole grants in case of both agencies went to the best faculties awarded with the coefficient A. And it was just 34 % of these faculties. Even the result from correlation moderately confirm that the better performer is, the higher grants receives. However, we are aware that using the accreditation results from 2015 did not have to correspond with the situation during the period of 2007 - 2015. For next research would be in fact interesting to compare the changes in accreditation coefficients. Other challenges of this research lie in watching more factors that influence the allocation and comparing the results with the number of researchers in each project. Additionally, it might worth it to also compare the results to the other countries that use different mechanisms for R&D support.

Anyway, for the policy comes a question if it is necessary to support R&D by two agencies. Even the costs on operation of both may be uselessly paid. Since agencies focus on the same fields, same universities and faculties regarding the quality results, should it not be more efficient to have just one? Considering the fact that project competitive mechanism should focus on top research and we have shown that APVV concentrates more on the best performers, it seems more efficient to keep the way of allocation that APVV agency provides. With higher amount of grants possibly taken from the VEGA sources, APVV could help to

develop the competitive mechanism established in Slovakia by stimulating researchers to be even more competitive so the research might become more ambitious under the worldwide conditions. In such a case is important to adjust a performance-based model used in Slovakia so scientists working in less esteemed institutions get a chance to develop their potential, though.

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Business Environment of Small- and Medium-Sized Enterprises in the European Union

Jakub Lukáč

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: jakub.lukac@euba.sk

Abstract

Small and medium-sized enterprises (SMEs) are an integral part of the business environment in developed economies worldwide. They are regarded as main promoters of innovation and employment, as well as social and local European integration. The economic and financial crisis of recent years has left significant traces in the segment of small and medium-sized enterprises, which led to different developments in individual countries of the European Union (EU). Creating and systematic improvement of the business environment is an important part of supporting the development of start-ups and existing enterprises. The aim of this paper is to evaluate the current state of the business environment for small and medium-sized enterprises in the EU.

Keywords: business environment, small- and medium-sized enterprises, SMEs in the EU

JEL classification codes: G30, G32, O44

1 Introduction

The role of small and medium enterprises is worldwide acknowledged for their unique contribution to the economic development. Both the developed countries and the ones in course of development realize that the SMEs and the entrepreneurs play a vital role in the industrial development of a country. In an international context characterized by continuous structural changes and by a growing competition pressure, the role of small and medium-sized enterprises becomes more important as opportunity creators and key players of local and regional community prosperity. So there is no surprise that the political strategists have often thought that the SMEs can become the "seed" of an economic revival. However, small enterprises in comparison to large companies have a number of weaknesses that prevent from expanding their activities. The development of SMEs is largely dependent on the business environment in which they operate. The business environment is a reflection of the overall situation in society and their existence depends on the economic, political and social development in the country. Creating a business friendly environment for existing small and medium-sized enterprises and potential entrepreneurs should be one of the main objectives of European policy.

2 Methodology

Source of the paper are mainly foreign and domestic book publications in material and electronic form from own archive, the Slovak Economic Library in Bratislava and the Wirtschaftsuniversität Library in Vienna. The findings from scientific publications are complemented by insights from professional journal articles, online publications dedicated to the issue, and studies by renowned international institutions. The information source and the

basis for the practical part are data from the Slovak Business Agency, European Commission and Eurostat. In the paper are used following methods of investigation:

- comparison is used to compare definitions, theoretical approaches of individual authors, country performance and macroeconomic indicators;
- deduction used to draw partial conclusions from general knowledge;
- analysis is used to evaluate business environment in Slovakia and other countries of the European Union;
- abstraction is another method that is used in the practical part of abstracting entities with incorrect financial statements;
- synthesis is applied to determine the relationships and links between the different categories of SMEs and to define general conclusions.

3 Small and medium-sized enterprises in the European Union

3.1 Definition of SMEs

After a period of relative decline and neglect, the small business sector and entrepreneurship are recognized today as key elements in national economic growth. Comparisons of the profiles of the business population in developed countries indicate a clear and continuing trend towards larger companies. But what exactly is a small business and when does it become medium-sized or large? SMEs have certain characteristics and management issues in common that distinguish them from other organizations. In practise, it is hard to define these characteristics and even harder to draw a precise line that separates small from large firms. To overcome some of these difficulties in a definition, qualitative definitions have been proposed that try to single out the essence or differentiating characteristics of a small business. Small firms may be difficult to define precisely on paper, but most are easy to recognize once they are seen in operation. There seem to be fundamental differences in practice which enable us to distinguish between small and large firms. The Committee of Inquiry on Small Firms set up by the UK government recognized this in a report which became known as the Bolton Report from 1971. The Report proposed that a small firm has three essential characteristics:

- It has a relatively small share of the market in economic terms;
- It is independent in the sense that it does not form part of a larger enterprise;
- A small firm is managed by its owners in a personalized way.

Although these characteristics formed the basis of much research in subsequent years, they are open to several criticisms, because low market share is not always a characteristic (small firms can operate in highly specialized niches or limited geographic markets, where they have a relatively high share) and independence is difficult to measure. Wynarczyk et al. (1993) identified three key aspects in which small and large firms differ: uncertainty, innovation and evolution.

- Uncertainty is a persistent feature of small firms which tend to have small customer bases and limited resources:
- Innovation of either very new products is a key factor in the success or failure of new business start-ups;
- Evolution refers to the state of constant structural and market changes which small firms are likely to experience as they struggle to survive and develop.

This definition has not been widely used because it lacks clarity and clear differentiation from larger companies. It can be argued that uncertainty, innovation and evolution are also a crucial part of the business environment of a large corporation in today's dynamic world.

Some definitions focus on numerical parameters in order to differentiate between smaller and larger enterprises. The European Commission initiated an important set of definitions of the small and medium-sized enterprise that introduced a further category of the "micro" enterprise to reflect the growing importance of very small businesses. The definition is based on the number of people employed, turnover and balance – sheet value, as shown in the Table 1.

Table 1Definition of SMEs according to EU recommendation 2003/361

Category	Num. of employees	Turnover	Balance sheet total
micro	< 10	< 2 mil. €	< 2 mil. €
small	< 50	< 10 mil. €	< 10 mil. €
medium-sized	< 250	< 50 mil. €	< 43 mil. €

Source: EU recommendation of 6 May 2003 concerning the definition of SMEs (2003/361/EC)

These quantitative thresholds are important because they are used throughout the European Union for policy purposes. For example, they might be used to determine the eligibility of a business for certain types of grant or other assistance. They are also widely used by national government institutions.

3.2 Significance and functions of SMEs

Small and medium-sized enterprises can be considered very heterogeneous firms, whose properties are different – depending on the industry, products and markets in which they operate. They focus on the production of specialized products and services, that are not willing to manufacture or provide large companies and also strengthen the position of middle-class by reducing regional disparities. Within the developed countries, SMEs are the most flexible, progressive and effective form of business. According to Veber, SMEs have many social and economic benefits:

- **Guarantee of freedom** SMEs are the guarantee of the fundamental freedoms;
- **Representation of local capital** SMEs are usually closely linked to the region;
- **Flexibility** due to less administrative complexity of operational activities and direct contact with consumers are SMEs more flexible than large enterprises;
- **Opposite of monopoly** SMEs are the opposite of big multinational corporations, thereby have a greater chance to succeed in local markets;
- **Integral part of economy** performance of SMEs significantly contributes to employment and creation of value added.

Small and medium-sized enterprises play a very important economic and social role, both through their significance in the economy and job creation. SME development offers many job opportunities which can help to lower the unemployment rate and address the demographic challenges posed by growing populations. In addition, the development of the SME sector can help to increase competition and productivity, which stimulates the growth of income. In 2015, just under 23 million SMEs generated €3.9 trillion in value added and employed 90 million people. They accounted in 2015 for two thirds (67 %) of EU28 employment and slightly less than three fifths (57 %) of EU28 value added in the non-financial business sector. The vast majority of SMEs are micro enterprises with less than 10 employees – such very small firms account for almost 93 % of all enterprises. The structure of employment and value added of enterprises in the EU28 in 2015 shows a figure:

Employment 30% 20% 33% micro small ■ medium 43% VA 21% 18% 18% ■ large 0% 20% 40% 60% 80% 100%

Figure 1Structure of employment and value added of enterprises in EU28 in 2015

Source: European Commission

According to Fetisovová, SMEs have several functions in the economy of a country:

- **Economic** based on prompt response to market changes and increasing competitiveness in the market;
- **Social** based on the principles of a democratic social system in which every citizen can act independently and responsibly without coercion by a third party or the state;
- **Supplying** SMEs are active in the market as suppliers and subcontractors of goods and services not only for consumers, but also for large companies;
- **Structural** SMEs reduce regional disparities in the supply of goods and services, salaries and jobs, risk of acquiring a dominant position of large companies;
- **Staffing** this function of SMEs is based on creating new and maintaining existing jobs;
- **Innovative** SMEs lay on product innovation, which often attributed greater importance than process innovation;
- **Export** SMEs have still a significant share in export especially in industrialized countries as subcontractors for large companies;
- **Supply** flexibility, adaptability and direct contact with customers allow SMEs to respond more flexibly to customer's needs. This competitive advantage allows them to search and find new markets;
- **Educational** this function of SMEs is based on close cooperation and communication between management and employees.

3.3 Business environment in the European Union

The basic space for functioning of a company is its surroundings. The term business environment means all elements of the environment, which are connected to the enterprise. Despite the fact that environment influences an enterprise in just about everything, the opportunity to influence environment by the enterprise is limited. Business environment in the EU has changed in the 1970s of the 20th century – from continuous to turbulent. Enterprises began to be increasingly confronted with growing competition, changing life cycles and new facts in the economic cycle. Creating and systematic improving of the business environment is an integral part of the development of start-ups and also existing enterprises. Companies, in order to maximize profit, often review the conditions that countries offer. Political stability of the country, tax burden, geographical location, quality of infrastructure and other factors have an impact on the success of their business. In 2008 were in the EU and its member states adopted first politics frame for SMEs called "Small Business Act" (SBA), whose explicit

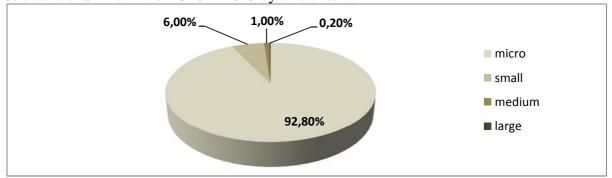
objective is to establish concrete measures and principles for improving the European SME environment.

The Small Business Act should make it possible to identify and remove the barriers to unlocking the potential of small businesses by stepping up the drive for simplification, increasing access to credit and framing appropriate rules on energy and the environment. The SBA strives to foster SME development and remove obstacles to SME growth. It does not constitute a legal requirement but a series of guidance measures that can be adapted to suit each country's specific needs. This guidance is underlined by ten core principles:

- **1. Entrepreneurship -** creating an environment in which entrepreneurs and family businesses can thrive and entrepreneurship is rewarded;
- **2. Second chance -** ensuring that honest entrepreneurs who have experienced bankruptcy and promptly given a second opportunity to succeed;
- 3. Think small first designing rules modelled on the "think small first" principle;
- **4. Responsive administration -** making public administrations responsive to the needs of SMEs;
- **5. State aid and public procurement** adapting public policy tools to suit SME needs:
- **6.** Access to finance facilitating SMEs' access to finance and developing a legal and business environment conducive to the specific requirements of SMEs including timely payments in commercial transactions;
- **7. Single market** helping SMEs to benefit more from the opportunities offered by the EU single market;
- **8. Skills and innovation** promoting the enhancement of skills in the SME workforce and all forms of innovation;
- **9. Environment** enabling SMEs to transform environmental challenges into economic opportunities while acting sustainably;
- **10. Internationalization** encouraging SMEs to benefit from the growth of global markets and supporting them in this pursuit.

The importance of SMEs for the countries of the European Union is huge. SMEs are absolutely predominant in the economy of EU countries – 99.8 % of all enterprises are small and medium-sized enterprises. European SMEs accounted for 66.8 % of employment and 57.4 % of value added in 2015. Micro enterprises made up almost 93 % of all enterprises in 2015. In the non-financial business sector, the five most important SME sectors in terms of employment in the EU28 were accommodation and food, construction, manufacturing, business services and wholesale/retail trade.

Figure 2
Structure of SMEs in the EU28 in 2015 by size criteria



Source: own processing according to the European Commission's data

The share of particular categories of SMEs in a total number of enterprises which operate in the European Union is mentioned below:

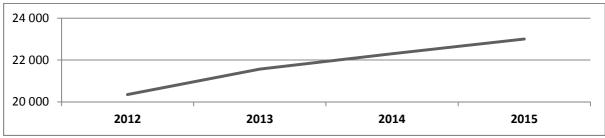
Table 2 Share of particular categories of SMEs in EU28 in 2015

Category (number of employees)		Number of enterprises (in thousands)		
	abs.	%		
Micro (0-9)	21 340	92,8		
Small (10-49)	1 380	6		
Medium (50-249)	230	1		
Large (more than 250)	50	0,2		
Total SMEs (0 – 249)	22 950	99,8		
Total enterprises	23 000	100		

Source: own processing according to the European Commission's data

Development of small and medium-sized enterprises in the European Union had an upward trend from 2012 to 2015. In this period, the number of SMEs in the European Union increased by 12 % from 20,5 mil. to 23 mil. Increase in 2013 was partly influenced by admittance of the twenty-eighth member of the Union – Croatia. Development trends of small and medium-sized enterprises in the EU are represented in the figure:

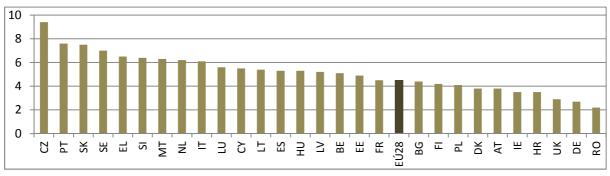
Figure 3 Development of number of SMEs in the EU28 (in thousands)



Source: own processing according to the European Commission's data

The number of SMEs per 100 inhabitants is also an important indicator of SME expansion. Across Member States, the density of the SME population varies greatly across the EU28. According to the calculation of this indicator, SMEs are the most widespread in the Czech Republic (9.4 SMEs/100 inhabitants), Portugal (7.6) and Slovakia (7.5). The lowest number of SMEs per 100 inhabitants can be found in Romania (2.2), Germany (2.7) and UK (2.9) – see figure below.

Figure 4Number of SMEs per 100 inhabitants in EU28 in 2015



Source: European Commission, Eurostat

A few indices compare a quality of business environment in countries worldwide. One of the most prestigious is "Doing Business" published by World Bank. It measures aspects of business regulation for domestic firms through an objective lens. The focus of the project is on small and medium-sized enterprises in the largest business city of an economy. Based on standardized case studies, Doing Business presents quantitative indicators on the regulations that apply to firms at different stages of their life cycle. The results for each economy can be compared with those for 189 other economies and over time. It provides quantitative indicators on regulation for starting a business, dealing with construction permits, registering property, getting electricity, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. According to the results of Doing Business, countries with the best business environment in the world are Singapore, New Zealand, Denmark, Hong Kong and Korea. Excluding Denmark, we can find other European countries in the group of ten countries with best results – UK (6.), Sweden (8.), Norway (9.) and Finland (10.).

3.4 Barriers to SME development

Small and medium-sized enterprises have in comparison to large companies a number of weaknesses that prevent from expanding their activities called barriers to SME development. These barriers arise from the essence of SME existing and the specific conditions of doing business in the country. According to Subertova, barriers to SME development can be divided according to three criteria – in terms of the environment, time and reason. In terms of the environment, we distinguish these barriers:

- **External** come from outside the company (e.g. legislation);
- **Internal** come from inside the company (e.g. labour code).

Major problems of small and medium-sized enterprises in their development are caused by external barriers that cannot be affected by managers. Internal barriers can be affected by managers and relatively easily overcome.

In terms of the time, we can define the barriers to SME development to:

- **Long-term** barriers with a length of more than one year (e.g. inappropriate infrastructure);
- **Short-term** barriers with a length of up to 1 year (e.g. currency conversion).

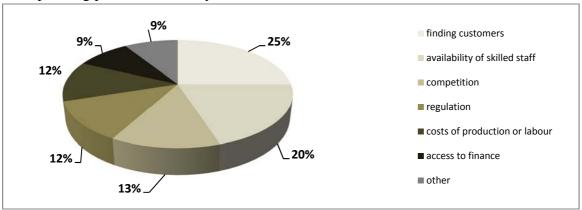
Strazovska also defined the barriers to SME development with respect to reason to:

- **Objective** e.g. the instability of the legal environment, lack of state aid bureaucracy, difficult access to finance:
- **Subjective** e.g. the lack of management education, social barriers, psychological barriers.

The European Commission in cooperation with the European Central Bank annually realize a survey of the business environment focused on the main problems in the development of small and medium-sized enterprises. Finding customers remained the most pressing problem for European SMEs. Although in more recent years the number of enterprises reporting this as their most pressing problem had decreased, this trend reversed between 2014 and 2016 with the number of enterprises reporting "finding customers" as their more pressing problem rising by five percentage points. The availability of skilled staff or experienced managers was the second most pressing problem. Over 20 % of SMEs reported this was an issue in Belgium, Croatia, Latvia, France, Finland, Luxembourg, the Netherlands, Slovakia, Poland and the UK. Only 9 % of enterprises reported "access to finance" as their most pressing problem. However, in Cyprus and Greece this remains a major issue for SMEs

with over a quarter of them reporting this as their most pressing problem. At the Member State level, the importance of issues faced by SMEs varied considerably.

Figure 5Most pressing problems faced by SMEs in EU28 in 2016



Source: own processing according to the European Commission's data

4 Conclusion

Small and medium-sized enterprises are an essential element of economic development, representing a substantial proportion of national economies worldwide. European SMEs accounted 66.8 % of employment and 57.4 % of value added in 2015. The dynamic development of business environment is one of the basic preconditions for the improvement of small and medium-sized enterprises, because of their absolutely predominant quantity and significant contribution to basic macroeconomic indicators – GDP, employment and value-added. Continual supporting and creating suitable conditions in business environment for existing small and medium-sized enterprises and potential entrepreneurs is the way of increasing prosperity in all member states.

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Inline Extensible Business Reporting Language as the European Single Electronic Format and its Influence in the Slovak Republic

Anton Marci

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: anton.marci77@gmail.com

Adriana Stanková

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: stankova.adriana22@gmail.com

Abstract

The European Securities and Markets Authority (ESMA) pointed out in its statement dated 21 December 2016 the digital format, which issuers in the European Union (EU) must use to report their company information as of 1 January 2020. ESMA stated that this European Single Electronic Format (ESEF) will be the Inline Extensible Business Reporting Language (iXBRL). The main reason for adoption of the iXBRL is its readability for machines and humans alike. The aim of this paper is to explore possible influence of its adoption on issuers operating in the Slovak Republic with the obligation to prepare and report consolidated financial statements in accordance with the International Financial Reporting Standards (IFRS). ESMA has received a variety of opinions from diverse groups of stakeholders in the process of adoption of the ESEF, implying that different European countries in different stages of economic development perceive its adoption in opposing ways and this correlates with previous findings about the usage of the Extensible Business Reporting Language (XBRL) in relation to the development status of any given economy in the EU. Businesses and other stakeholders in the countries with more developed economies overall tend to accept and adopt the XBRL or iXBRL, while businesses and other stakeholders in less developed economies tend to reject and not to adopt the XBRL or iXBRL, with few exceptions of course.

Keywords: Inline Extensible Business Reporting Language, European Single Electronic Format, business reporting

JEL classification codes: M40, M41, M48

1. Introduction

The European Securities and Markets Authority (ESMA) has to choose European Single Electronic Format (ESEF) in order to fulfil certain requirements of the Transparency Directive 2004/109/EC as last amended by Directive 2013/50/EU (further referred to as "TD") and in accordance with the regulation ESMA has to state which ESEF will be used from January 1st 2020. To fulfil requirements of regulation a Consultation paper (further

referred to as "CP") was issued in the year 2015 and its aim was to receive feedback on Draft Regulatory Technical Standard (further referred to as "RTS") on ESEF. Consultation period was then closed in the beginning of the year 2016 after receiving 161 responses from accounting bodies, auditors, preparers, regulators, statistical offices, service providers, users and the representative bodies of these groups of entities as well as from key ESMA stakeholder consultative body (further referred to as "SMSG") composed of individuals from diverse member states of the European Union (EU).

Based on the conclusion from the consultation ESMA proposed approach for the ESEF which meant that annual financial reports for all issuers in the EU shall be prepared in the Extensible Hyper Markup Language Format (further referred to as XHTML) to achieve readability by machines and humans alike. Entities preparing annual financial reports which contain consolidated financial statements drawn up in accordance with the International Financial Reporting Standards (IFRS) shall label the information using XBRL in a way that allow to embed XBRL data directly into XHTML document. The IFRS Taxonomy allowing extensions is chosen to mark-up the data in financial statements. Therefore iXBRL will allow machine and human readability and global comparison of financial statements reported in accordance with IFRS.

Issued feedback statement provided to the statement from December 21st 2016 summarizes not only ESMA's pick of ESEF, but also provides full and exhausting explanation of the draft processes, answers to calls from stakeholders and ESMA's responses to these feedbacks, but also includes cost-benefit analysis from the year 2015 and another cost-benefit analysis prepared by Business Reporting - Advisory Group in the year 2016 issued at November 23rd 2016. Findings of cost-benefit analysis can be summarized as favourable for usage of iXBRL for number of reasons. iXBRL has full compliance against all specified criteria as a standard, a neutral reference model for member states of EU, as a tool for allowing automated retrieval of data for production of annual financial reports or their parts, as a tool facilitating accessibility to issuer information across the EU, as a tool facilitating operational governance and control of changes over time and as a tool for strengthening opportunities of reusing data. iXBRL has significant compliance against all specified criteria as a tool harmonizing ESEF across member states, as a tool to which member states and National Competent Authorities are able to contribute, as a tool involving significant majority of stakeholders, as a tool beneficial for investors and competent authorities, as tool making reporting easier. iXBRL has partial compliance against all specified criteria as a tool beneficial for issuers themselves. Estimated costs differ rapidly by chosen approach of implementation of iXBRL and also by the type of entity implementing iXBRL.

2. Methodology and data

Statistical data, official pages of ESMA and research of the research papers and literature about the adoption and use of XBRL or iXBRL provided us with valuable information for creation of the main dataset to work with, which you can see just below. The data were collected for the year of 2014 as it was the last year where almost all the needed data were publicly available for each of chosen development indices and those were relative gross domestic product (GDP) in comparison to the EU and EEA-member states combined average GDP and the Social Progress Index (SPI) which includes wider variety of sub-indices for establishing its value on the scale from zero to one hundred. From the indices mentioned just the SPI for Luxembourg and Malta were missing due to size criteria of these EU-member states and due to lack of some data which are normally able to work with for the rest of EU-member states according to explanation from the portal of The Social Progress Imperative.

Information gathered by ESMA helped us with the data needed to estimate costs of preparing the consolidated financial statements of a given business entity in iXBRL format, which will be the first stage of adoption of iXBRL. It is important to note that estimated cost in the Table 3 can vary rapidly in accordance with the approach and size criteria of any given entity preparing financial statements and other reports in iXBRL format and therefore it is hard to estimate total costs for all entities.

Table 1EU and EEA economic development indicators, XBRL jurisdictions and usage

Index (EU28 = 100)	GDP per capita in PPS	Social Progress Index	National XBRL Jurisdiction	XBRL reporting allowed
Austria	130	84,45		NO
Belgium	119	82,83	XBRL Belgium	YES
Bulgaria	47	70,19		NO
Croatia	59	73,3		NO
Cyprus	82	77,45		NO
Czech Republic	85	80,59		NO
Denmark	125	86,63	XBRL Denmark	YES
Estonia	76	80,49		YES
EU 28 members	100	79,82	XBRL Europe	NO
Finland	110	86,75	XBRL Finland	NO
France	107	80,82	XBRL France	NO
Germany	124	84,04	XBRL Germany	YES
Greece	73	74,03		NO
Hungary	68	74,8		NO
Iceland	119	87,62		NO
Ireland	134	84,66	XBRL Ireland	YES
Italy	96	77,38	XBRL Italy	YES
Latvia	64	74,12		NO
Lithuania	75	74		NO
Luxembourg	266	N/A	XBRL Luxembourg	NO
Malta	84	N/A		NO
Netherlands	131	86,5	XBRL Netherlands	YES
Norway	178	88,36		NO
Poland	68	77,98		NO
Portugal	78	81,91		NO
Romania	55	68,37		NO
Slovakia	77	78,45		NO
Slovenia	83	81,62		NO
Spain	91	81,17	XBRL Spain	YES
Sweden	123	88,06	XBRL Sweden	NO
Switzerland	162	87,97	XBRL Switzerland	NO
UK	109	84,68	XBRL UK	YES
Year	2014	2014	2014	2014

Source: Own elaboration according to used databases

For precise estimation of costs of implementation of iXBRL for business entities in the Slovak Republic is needed to find out how many entities is obliged to prepare annual consolidated financial statements under the IFRS. Registry of financial statements provided us with information about consolidated financial statements in different Slovak counties. Number of counties in the Slovak Republic is limited, therefore we were able to sum the number of accounting entities with the obligation to prepare and report consolidated financial statements. Some accounting entities are reporting consolidated financial statements in accordance with different sets of standards then IFRS, these need to be later on eliminated from the data set used in the paper.

Table 2Number of entities preparing consolidated statements in any given county

Name of the county in the Slovak Republic	Consolidated financial statements
Banskobystrický kraj	178
Bratislavský kraj	202
Košický kraj	166
Nitriansky kraj	192
Prešovský kraj	235
Trenčiansky kraj	155
Trnavský kraj	147
Žilinský kraj	190
SUM:	1465

Source: Own elaboration according to used databases

Feedback statement provided by ESMA included a variety of estimates and different approaches of implementation of iXBRL as a reporting standard and we have chosen for the purposes of this research data estimates of costs for preparation of any given iXBRL report with integrative approach, which means that business entities will integrate iXBRL as a part of theirs internal software solutions to ease their preparation in the future.

Table 3Estimated minimal, maximal, average and median costs of filling iXBRL with integrating approach

Type of filling	Lowest	Highest	Average	Median
First filling	2 700,00 €	40 000,00 €	13 000,00 €	11 500,00 €
Subsequent fillings	100,00 €	1 000,00 €	500,00 €	500,00 €

Source: Own elaboration according to used databases

Tests of Pearson's Correlation were used to test the correlation between level of development of the economy of the national state and existence of national XBRL jurisdiction and to test the correlation between level of development of the economy of the national state and existence of XBRL reporting allowed in national states. The hypotheses were constructed as follows:

H0: the correlation coefficient is statistically insignificant,

H1: the correlation coefficient is statistically significant,

the testing statistic formula is:

$$r = \frac{\sum xy - \frac{\sum x \sum y}{N}}{\sqrt{(\sum x^2 - \frac{(\sum x)^2}{N})(\sum y^2 - \frac{(\sum y)^2}{N})}}$$
(1)

Symbol *r* stands for Pearson's correlation which is calculated on variables *x* for chosen development index and variables *y* for existence of XBRL jurisdiction in the national state for *N* number of samples in the search for correlation between development index and existence of XBRL jurisdiction. Symbol *r* stands for Pearson's correlation which is calculated on variables *x* for chosen development index and variables *y* for existence of XBRL or iXBRL reporting allowed in the national state for *N* number of samples. Dataset from the Table 1 above was used to search for correlation firstly between existence of XBRL national jurisdiction and gross domestic product per capita in EU-member states and EEA-member states. Correlation search continues between the existence of XBRL national jurisdiction and the SPI. The same approach was used when searching for correlation between XBRL reporting possibilities allowance and chosen development index. Firstly, correlation of GDP and XBRL reporting possibilities were conducted and then separately correlation between XBRL reporting possibilities and SPI.

For the total costs estimation of issuers we used simple mathematical formula as follows:

$$\sum C=N_e*c_t$$

Symbol C stands for total costs, N_e stands for number of entities (business entities) and c_t stands for type of costs, first filling or subsequent filling for average costs.

3. Results and Discussion

It is possible to see from the Table 1 that in EU-member states and EEA-member states are many states with national XBRL jurisdiction and they usually have GDP and SPI higher from the EU and EEA average scores of chosen indices.

Table 4Correlations between XBRL Jurisdictions and development indicator

	XBRL Jurisdiction				
Index	Pearson Correlation	2-tailed p-value	Correlation		
GDP	0,436	0,014	Significant		
SPI	0,304	0,109	Significant		

Source: Own elaboration according to used databases

Table 4 provides us with information that correlation between the existence of XBRL jurisdiction is significant for all chosen development indices and the strongest correlation is made with GDP. Confidence level for correlation analysis was established at 95%.

Table 5Correlations between XBRL reporting allowance and development indicator

XBRL reporting allowance				
Index	Pearson Correlation	2-tailed p-value	Correlation	
GDP	0,127	0,496	Insignificant	
SPI	0,2996	0,1143	Significant	

Source: Own elaboration according to used databases

Table 5 provides us with information that correlation between the allowance to do reports in XBRL format is significant for one out of two development indices and the strongest correlation is made with SPI, which incorporates not only economic indices, but counts in the account development of the society of the state. In this case it is important to notice, that GDP does not seem to be significant enough in correlation relationship with possibilities of usage of XBRL. Confidence level for correlation analysis was established at 95%. Despite there is significant, but mostly just moderately strong, correlation, there are examples of Italy and Estonia, which behave differently. Italy has lower GDP level than average GDP level and other countries with XBRL jurisdiction are above average when comparing GDP levels. Both Estonia and Italy have possibilities for businesses to use XBRL for reporting purposes, but theirs GDP levels are lower than average and Estonia is the only country from the EUmember states and EEA-member states without national XBRL jurisdiction, but Estonian business are able to report financial and non-financial data in XBRL format.

Out of total 1465 entities sending annual consolidated financial statements to Registry of financial statements in Slovak Republic we estimated that just around 20% of these consolidated financial statements were made in accordance with IFRS by business entities. On the basis of this estimate we can state that the estimated average costs of first filling in iXBRL should be for all of these 293 business entities 3 809 000 EUR and the estimated costs of subsequent fillings for next years should be for all of these 293 business entities 146 500 EUR pre filling. It is also important to note that not all of these companies are active as a part of capital markets and therefore it is not completely clear the extent of influence of ESMA on these types of business entities.

4. Conclusions

The aim of this paper was to explore possible influence of iXBRL adoption for issuers operating in the Slovak Republic with the obligation to prepare and report consolidated financial statements in accordance with IFRS. As is possible to see above, without influence of ESMA would be hard to establish Slovak XBRL jurisdiction in current status of economic development of the country, but because the implementation of iXBRL will be mandatory, businesses preparing theirs annual consolidated financial statements in accordance with IFRS will need to prepare theirs information systems for this legislative obligation which will with high probability have short-term negative effect on theirs cash-flows and profits. Technical specifications for requirements by ESMA are currently unknown with the possibility of completion in the end of the year 2017.

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Impact of the Solvency Capital Requirements Calibration on Investment Activities of Insurance Companies

Patrik Marcinech

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: patrikmarcinech@gmail.com

E-mail. paulkmarchiech@gmail.com

Abstract

Solvency II is a new regulatory framework, which aims to control all risks affecting activities of insurance companies. One of the most important ones is market risk arising from volatility of the investment portfolio of insurance companies. Through calibration of the standard formula calculation of solvency capital requirements (SCR) Solvency II aspires to modify in some way investment activities of insurance and to prevent its future failure. The aim of this paper is to point out the SCR calibration within the market risk module as well as its impact on investment activities of insurance companies and the potential rebalancing of their investment portfolios. The motivation to achieve this goal is to create an overview of current knowledge concerning the new regulation regime's impact on rebalancing of investment portfolios and its subsequent use.

Keywords: Solvency II, SCR, investments, market risk, rebalancing, portfolio

JEL classification codes: G22, G23, G28

1. Introduction

Solvency II is the new regulatory framework, which aims to regulate and harmonize the activities of insurance companies in the European Union. Regulatory regime is based on the management of all risks that affect the activity of insurance companies. In the context of the risks is important to manage the risks associated with the investment activity. This is particularly important given the scale of investment in the insurer's balance sheet and the impact of investment results on insurance profitability. The new regulatory regime governs the investment activities of insurance companies through the calibration of capital requirements (Solvency Capital Requirement – SCR), which must insurance companies create to cover the risks associated with investments in various asset classes. The calibration is associated with the standard formula calculation of the SCR. This calculation method is used by the majority of insurance companies. EIOPA is trying, through the calibration predefine the composition of the portfolios of European insurers. That is why in this contribution we focus on the impact of the market risk module calibration. The aim of this paper is to point out the amount of SCR associated with investments in selected asset classes and their potential impact on the rebalancing of investment portfolios of insurance companies.

The Contribution is divided into 4 parts. In the first we closer define the calibration of capital requirements for various risk sub-modules. The second part will focus on the creation of a review of the literature dedicated to the issue of investment activities under Solvency II. The third part will be devoted to the impact of SCR on the potential rebalancing of the portfolios.

2. Solvency II and the calibration of the standard formula

The total solvency capital requirement (SCR) consists of the Basic Solvency Capital Requirement (BSCR), which is reduced by the capacity of technical provisions and deferred taxes absorb risk and increased by the SCR for operational risk. BSCR consist of six risk modules. According to the QIS5 is the most significant market risk module that represents the insurance risks associated with its investment activity. Its share was 69% of BSCR.

The market risk module is subdivided into six sub-modules: interest rate risk, credit spread risk, equity risk, currency risk, property risk and concentration risk. SCR, which must the insurance company form, are within the standard formula calibrated depending on the size of stress scenario (maximum potential loss) that which asset class. The stress scenario represents a risk of a decrease of the insurer's basic own funds resulting from the volatility of market prices of investment instruments (Gondová, 2015).

Table 1The composition of the market risk module

Risk	Definition of sub-module and calculating the SCR	
sub-module		
Interest rate	The risk arising from the sensitivity of assets and liabilities to changes in risk-free interest rate. Size of stress scenario represents the change in BOF caused by applying upward or downward shock on the risk-free rate curve. Specific shock values depend on the duration of assets and liabilities. These are closer characterized and specified in the EIOPA (2014a). SCR _{IR} is the only capital requirement which must insurance form to cover investments in government bonds of EEA countries. These are exempted from the credit spread risks.	
Equity	The risk arising from the volatility and changes in the market value of equities. Basic stress scenarios are divided by type of equities into two groups:	
	1. 39% of the equities of the first type. This group includes equities traded on regulated markets of the EEA and the OECD	
	2. 49% of the equities of the second type. These include equities that are not traded on regulated markets of the EEA and OECD, unlisted equities, hedge funds, commodities and other alternative investments.	
	The value of the stress scenario is for both types of equities adjusted for symmetric adjustment mechanism, by a maximum of +-10%. This is closer characterized in the CEIOPS (2010).	
	Both capital requirements are aggregated via correlation matrix, through a fixed correlation coefficient of 0.75. Within this sub-module can be SCR reduced in two cases. The first are investments in strategic participations, where the SCR is at 22%. Strategic interests is meant the share of 15-50%. The second is a reduction due to the so-called transitional measures. These can be applied to equities purchased before 01/01/2016. In this case is the SCR also reduced to 22%. The condition is holding of equity over the next seven years at least. During this period, the SCR will increase from the initial 22% to 39% (Mee, 2015).	
Credit spread	This sub-module includes changes in value of assets and liabilities caused by changes of the value of the credit spread and volatility of credit spreads against the risk-free yield curve. SCR for this sub-module is composed of three sub-SCR:	
	- Bonds and loan (SCR _{bonds)} - this group includes government and corporate bonds and loans (excluding mortgage loans that are included in	

	Counterparty Default Risk Module)	
	- Credit derivatives (SCR_{cd}) - this group includes, for example, CDS structured credit products (bonds whose underlying assets outstanding bank loans).	
	- Securitizations ($SCR_{sec)}$ - this mainly include ABS (Asset Backed Security)	
	The resulting SCR for this sub-module is the sum of partial SCR. Mee (2015) mentions some specific examples of the amount of SCR for various instruments belonging to the risk sub-module. In the context of our work is an important SCR for corporate bonds (A-rated, 10 year duration), which is 10.5%.	
Property risk	The risk posed by the sensitivity of assets and liabilities to market price volatility of real estate. SCR to cover this risk is determined at 25% of the value of investments.	
Concentration risk	It includes assets in the interest rate, equity, property and credit risk sub-module. In this sub-module is assessed risk of accumulation of exposures to a single counterparty, it does not include a geographical or sectoral concentration of holdings. Also does not include the risk related to counterparty default. The calculation is divided into three steps: identifying excessive exposure to a single counterparty depending on the credit quality of the counterparty, factor calculation of risk for one counterparty and their aggregation (Gondová, 2015).	
Currency risk	SCR is determined by the loss of basic own funds (BOF), due to changes in foreign currency against the EUR. The source of this risk is the insurer's investment portfolio, respectively the items denominated in a different currency. SCR to cover this risk is 25% of their value.	

Source: EIOPA. (2014). Commission delegated regulation EU. [Online]. Available at the URL: http://ec.europa.eu/internal_market/insurance/docs/solvency/solvency/delegated/141010-delegated-act-solvency-2_en.pdf. [Accessed 26.1.2017].; EIOPA. (2014a). The underlying assumptions in the standard formula for the Solvency Capital Requirement calculation. [Online]. Available at the URL: http://eiopa.europa.eu/Publications/ Standards/ EIOPA-14-322_Underlying_Assumptions.pdf. [Accessed 18.1.2017].; NATIXIS. (2015). Solvency II Capital Requirements for Debt Instruments: Impact of Solvency II on the Debt Markets. [Online]. Available at the URL: http://www.nam.natixis.com/Content/Documents/ Publications/ Research%20paper/SII%20Debt%20Instruments%20Final.pdf, [Accessed 30.1.2017], GONDOVÁ, A. (2015). Regulácia kapitálových požiadaviek v poisťovníctve. In: Biatec, 9/2015. [Online]. Available at the URL: http://www.nbs.sk/_img/Documents/_PUBLIK_NBS_FSR/Biatec/Rok2015/09-2015/biatec_09_2015_

Partial SCR are for the purpose of calculating the SCR_{mkt} (market risk) aggregated by a fixed correlation matrix whose form varies depending on used upward or downward shock in the interest rate risk sub-module. The correlation matrix and both variants of correlation coefficients are shown in EIOPA (2014b, p. 139). The correlation matrix and both variants of correlation coefficients are shown in EIOPA (2014b, p.139). Consequence of the application of the following correlation matrix is the creation of diversification effects. This results in a reduction of the final SCR. This is less than the sum of the parts SCR formed to cover risks of different investment instruments.

3. The investment behaviour of insurance companies under Solvency II

Due to the calibration of the Solvency II standard formula is the allocation of insurer's investment funds very important. Clarke, Mitchell and Phelan (2014) identified the following four groups of activities, which the insurance company under the new regulatory regime may adjust the amount of its capital requirements and its profitability:

 Table 2

 Investment strategies of insurance companies

	Asset-liability management (ALM)
Investment strategies	Hedging and derivatives
investment strategies	Rebalancing investment portfolios
	Unit-linked matching or hedging the annual management charges

Source: CLARKE, S. – MITCHELL, S. – Phelan, E. (2014). *Capital management in a Solvency II world*. [Online]. Available at the URL: http://www.milliman.com/uploadedFiles/insight/2014/capital-management-solvency-II.pdf. [Accessed 4.2.2017].

Note: In this contribution we will focus on rebalancing of investment portfolios, with which, however, is closely related ALM. Its essence lies in the best possible harmonization of the structure and duration of cash flow arising from investments and cash flow needed to cover existing liabilities of the insurance company. The aim of rebalancing is the reallocation of investment resources either to reduce the SCR that the insurance company is obliged to create or to increase the return of its investment portfolio.

As we mentioned in the introduction EIOPA is trying in some way to predefine the shape of investment portfolios of insurance companies, covered by Solvency II regulatory regime. The calibration favours allocation to government bonds of EEA countries, while disregards the differences arising from the different risk situations of individual countries (Unigestion, 2016). Investments in these "traditional" instruments are, however, in the current economic environment, under threat of low interest rates. The problem concerns mainly life insurance companies, which cannot from low income arising from investments in government bonds to cover the existing needs of the insured, as well as to ensure sufficient profitability of its portfolio. The consequence of this situation is a potential future increase of investments in alternative asset classes. The condition for such allocation is the creation of larger SCR. Benefits stemming from the increase of accepted risk is higher return on investments. Each of investments in alternative assets requires a different amount of SCR. The most risky is, in terms of calibration of the standard formula, equities. As mentioned in the second part, the insurance company is obliged to create the SCR of 39% respectively 49%, depending on the type of equity. However, it make apply a reduced factor 22%. This applies to the strategic interests and equities fulfilling the terms of the so-called transitional measures. These must be held by insurance companies until at least 2023. The creation of such an SCR causes a reduction in the SCR, but at the expense of opportunities for active management of its equity portfolio. The conclusions of the individual authors, based on empirical research are in the opinion on the rebalancing in favour of equities differently. Older studies rejected the allocation of resources in favour of equities (e. g. Van Bragt et al. (2010) and Rundshuck et al. (2010)). Some actual paper respectively analyses point to the fact that insurance companies will due to low returns forced to maintain and increase the share of equities in their portfolios (e. g. Unigestion (2016). The potential benefit of investing in equities is also mentioned in the analysis of KPMG (2012). According to them, the equities are encumbered highest SCR. Given the diversification benefits are marginal capital requirements of adding these instruments into the portfolio much lower and their expected rate of return much higher than for other financial instruments. Within the alternative investments will be an important class of corporate bonds. Fitch Ratings (2011) is expected due to the implementation of the new directive increase in demand for these debt instruments. Due to the calibration of the standard formula will be crucial in their view increase the proportion of funds invested in governments bonds of EEA countries and high-quality corporate bonds, at the expense of the decline in share of equities, real estate and other alternative investments. Evidence of the rebalancing found also company Oliver Wyman (2010), according to which insurers will seek short-term corporate bonds with good credit ratings. Attractiveness and increased demand for corporate bonds also confirmed AXA (2012). The company states that it will be the instruments in investment grade with short duration.

Monitoring of the development and possible reallocation of investment portfolios will be from the perspective of insurers and regulators very interesting. In the next part of the contribution we will focus on selected indicators of investment instruments, which could lead to the favouring of selected asset classes.

4. The impact of the standard formula calibration on the rebalancing of insurer's investment portfolios

Calibration of the standard formula will most likely have a major impact on the future allocation of investment by insurance companies. The aim of this paper is to show on the amount of SCR associated with investments in selected asset classes and their possible impact on the rebalancing of insurer's investment portfolios. Rebalancing is a fundamental issue, not just for the companies themselves but also the stability of the financial market and the economy as a whole. Examination of this issue deals with many authors. Selected empirical evidence both scientific works and practical analysis we mentioned in the third part. The most important will be in possible reallocation of insurance company assets, amount of SCR, needed to cover investments in the various asset classes and their returns. In this contribution, we focused mainly on the difference of the SCR of each asset classes. Possible reallocation of assets will cover two areas. The first is the ratio between "traditional" investments (government bonds and "alternative" investments – equities, corporate bonds, real estate. The second is a change of ratios inside the alternative asset classes. This insurance company used primarily to enhance the profitability of its investment portfolio. The most discussed is in the second area, in particular the ratio between the share of equities and corporate bonds.

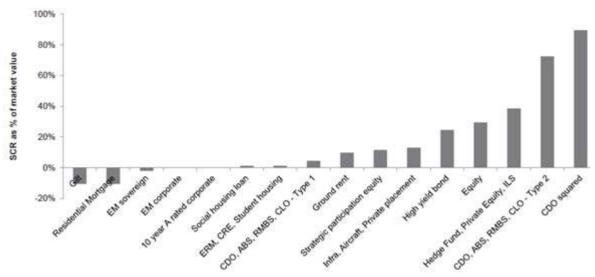
Detailed view on the riskiness of the various instruments within the standard formula calibration, created in its analysis Mee (2015). In this they are focused primarily on risk analysis (size of SCR) of non-traditional investment instruments – alternative investments. Its construction is based on the determination of the benchmark SCR, which is then compared with SCR for other asset classes. This benchmark is typical corporate bond with credit rating A and a duration of 10 years. SCR for this is 10.5% of their value. SCR for negative values in graph is lower than the capital requirement for corporate bonds, for positive values higher. Graph 1 indicated on several facts:

- The least risky are investment in Gilt (a type of national bonds) and in residential mortgage loans (those belonging to the sub-module counterparty default risk).
- Creation of SCR to cover government bonds of EEA countries is around 7%. However, these can be reduced thorough application of ALM. Due to the calibration of the standard formula we would argue that the aim of the regulatory authority is increase the interest of institutional investors in the debt instruments of EEA countries.
- The insurance company needed to cover "traditional" investments smallest amount of capital (within the standard formula), but problematic is their return. This is in an environment of low interest rates for insurance companies insufficient.

- Way to increase the return on investment is the use of alternative asset classes. Within these are the most attractive corporate bonds with lowest SCR. Is followed by specific classes of structured products and securitization. Important is to compare the attractiveness of corporate bonds and equities. Clearly, the mere formation of SCR covering corporate bonds is significantly lower. Benefit of using equities is very nature of this investment instruments. Equities may not (with the exception of applications so-called transitional arrangements) insurers to hold for a strictly limited period of time, corporate bond essentially yes. A crucial indicator to prioritize one of these alternative investments will be the current returns of the instruments. For the insurers may be interesting also to use private equities with interesting returns.
- The least attractive from the perspective of the creation of SCR, is investments in structured products and securitization of the second type.

Conclusions of their findings are presented in the Graph 1.

Graph 1SCR for certain investments compared to 10 year A-rated corporation bond



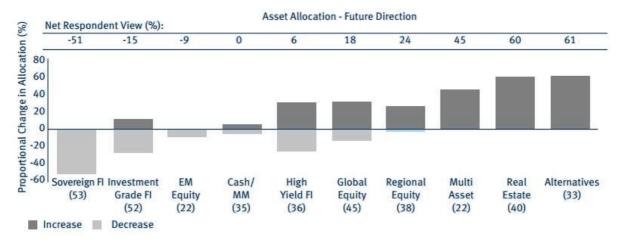
Source: MEE, G. (2015). *Non-traditional investments: key considerations for insurers*. [Online]. Available at the URL: https://www.cambridge.org/core/journals/british-actuarial-journal/ article/div-classtitlenon-traditional-investments-key-considerations-for-insurers-abstract-of-the-london-discussiondiv/4FF75AA32A540C359A76655CFE25E5C2>. [Accessed 25.01. 2017].

The issue of reallocation of investment portfolios due to the implementation of Solvency II is devoted quite a large number of authors. One of them is the company Standard Life Investments (2015), which carried out independent research, which aimed to identify a long-term impact of low interest rates and the implementation of Solvency II on the insurance companies and their investment strategies. One of the questions was: Do you expect your new allocations to each asset class to increase, stay the same or decrease over the next three years?

On the basis of the answers can be deduced that European insurers are not currently able to generate sufficient revenues to meet its obligations to policyholders. Most of them therefore intends to increase its risk appetite and exposure to risky assets. Many insurers expect a decline in investment in government bonds, investment grade and the proportional increase in allocation to alternative classes and equities. More detailed results of the research are shown in Table No. 3. The survey shows that more than 50% of respondents expected to reduce the allocation in fixed income instruments with a proportional increase in favour of

alternative investment classes. More than 30% of respondents expect an increase in demand for corporate bonds and global and regional equities. Within the amendment of the allocation of investments in favour real estate and other alternatives (e. g. derivatives, hedge funds or private equity) is expected to increase more than 60% of respondents.

Table 3 Expected future change in asset allocation over the next three years



Source: STANDARD LIFE INVESTMENTS. (2015). *European insurance: Unprecedented pressure and change*. [Online]. Available at the URL: http://www.standardlifeinvestments.com/Insurance_Survey_Europe_UK_TCM/getLatest.pdf. [Accessed 10.02.2017].

Conclusion

The contribution is focused on the definition of capital requirements that must form the insurance company under the new regulatory regime. In this, we were more devoted to the market risk module and six sub-modules that are part of it. The market risk module relates to the creation of capital requirements needed to cover investment activities of insurance companies. The new regulatory regime through the calibration of the standard formula determines different levels of SCR which an insurer must create in order to cover risks arising from specific asset classes. Given the above, it is therefore highly probable that due to the implementation of Solvency II will occur to reallocation of investment portfolios of insurance companies.

With potential reallocation was also related to aim of contribution. Thereby was to show the on the amount of SCR associated with investments in selected asset classes and then assess their impact on the rebalancing of investment portfolios of insurance companies.

Based on empirical the survey of the empirical knowledge of various authors that dealt with these issues and analysis of two decisive papers, we came to several conclusions:

- Investments in government bonds are from the perspective of the regulatory regime Solvency II and SCR creation the most favourable for insurers. 51% of respondents in the survey, however, expected to reduce their share in the portfolios of insurance companies. The main reason is the continuing low level of interest rates.
- Insurance companies will, due to the low return on government bonds increase exposure to alternative asset classes. Given the level of SCR will in our view, give priority short-term corporate bonds with a good credit rating.
- Equities will also be an attractive investment class. Rebalancing in their favour will be, despite relatively high capital requirements, an upward trend. The advantage of

this instrument is its structure and the way of buying and selling. The insurance company may reduce through these so-called duration gap. Investments in this asset class will be particularly attractive for insurers and insurance groups which calculate capital requirements through internal models. Therefore not subject to the calibration of standard formula.

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Accounting of Cryptocurrencies

Tomáš Matuský

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1
Bratislava, 852 35
Slovak Republic

E-mail: tomas.matusky@gmail.com

Abstract

The article analyses the legal base of accounting of cryptocurrencies as a new phenomenon. A cryptocurrency is a virtual currency in the digital form that is used as a means of payment or for trading. Based on available literature and statements of regulatory authorities around the world we identified a lack of general regulation of cryptocurrencies as such. The usage of cryptocurrencies is generally not prohibited, but authorities of countries draw attention to the risk related. We also identified a lack of regulation in the area of accounting of cryptocurrencies. Governments and organisations that publish international accounting standards did not disclose any legal act or guidance that could assist in accounting of cryptocurrencies. The article describes our point of view on how cryptocurrencies are to be accounted for under the legal regulation of accounting in the Slovak Republic.

Keywords: cryptocurrency, bitcoin, accounting

JEL classification code: M41

1. Background and functionality of cryptocurrencies

Cryptocurrencies, often called as virtual currencies or digital currencies, are a form of virtual medium of exchange. However, as virtual currencies can be considered also other forms of virtual means of payment usually used in the area of virtual gambling or video games. There can be bought for such a currencies various virtual goods or services, they can be sold to another user and in certain extent they can be exchanged for one of traditional currency. Example of such a currencies could be "gold" in several of online and mobile games as World of Tanks, World of Warcraft and Candy Crash saga.

Biggest advantage of cryptocurrencies is short time to maintain the transaction and low transaction costs as result of fact that individual transactions are not verified by third party, but every user from currency net. The biggest transaction costs connected to trading with cryptocurrencies are fees payed to currency exchange by selling or buying of cryptocurrency for fiat money usually in the sum of one percent of exchanged amount. Nevertheless, these costs are considerably lower than fees payed to bands for bank payment to another state or even domestic payment.

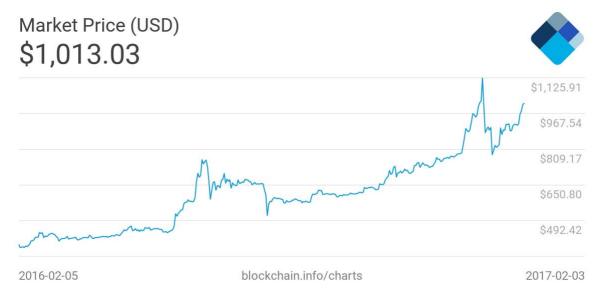
Despite of the fact that individual transactions are verified by every user of currency network the anonymity of participant of transaction is still maintained. For public are available only public keys of users in the form of group alphanumerical letters unique for each user. In some cases by very effort there is a chance that some users can be identified based on public key and online footprints on the internet. We consider the anonymity of cryptocurrencies as advantage in comparison to electronic money where individual accounts

are directly connect to concrete person and the intermediary of transaction has information about each person involved in the transaction.

In comparison to traditional fiat money cryptocurrencies are not centrally govern and their production named "mining" is fixed as programed algorism. The developer of cryptocurrency can set up into code of cryptocurrency units a yearly-fixed increment, increment with decreasing base or the increment of cryptocurrency units completely ban. The most famous cryptocurrency bitcoin has the increment programed on decreasing base with limit of 21 million of bitcoins units. Every four years is the increment of bitcoin units reduced to the half which should copy decreasing increasing increment of mined resources in time as for example the mining of gold or silver. Actual the amount of available bitcoin units exceeded 16.15 million of units what is after conversion into currency euro equal to approximately 15.5 billion of euro. The restriction of inflation of cryptocurrencies in exactly fixed amount is another advantage of cryptocurrencies. In consequence the inflation has no impact on purchase value of cryptocurrency units.

The purchase price of cryptocurrency unit is based on supply and demand on several exchange platforms. Cryptocurrencies are not regulated by government and therefor the purchase price of cryptocurrency units cannot be directly influenced by policy of government. Cryptocurrencies are global mean of exchange and they are the same in every country in the world no matter of differences in jurisdiction, law and maturity of country economics. As result of stated reason the cryptocurrencies are not influenced by macro-economic conditions as interest rate or inflation in the country where user of cryptocurrency is seated. In short-time period cryptocurrencies react to facts that may pose a threat to cryptocurrency system by decreasing their purchase value. Long-time period development of exchange rate of most widespread cryptocurrency bitcoin is showed in the Figure 1.

Figure 1 Development of exchange rate of bitcoin to USD (in USD for one bitcoin unit, last available year as to February 4, 2017)



Source: Bitcoin Block Explorer – Blockchain. (2017). [Retrieved on February 4, 2017]. Available at the URL:
 <blockchain.info>

With using of cryptocurrencies is connected high risk on what the representatives of governments, central banks and regulatory authorities of states draw attention. The risk

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connected to cryptocurrencies can be divided to legal risk, credit risk, liquidity and operational risk.

On the first place is legal risk. As cryptocurrencies themselves and their usage is not legal cover by laws and is not guaranteed by governments, by using cryptocurrencies users have to fully trust the cryptocurrency developers. On the other hand there is a risk that governments will prepare laws which could limit the usage of cryptocurrencies or the usage fully ban.

The legal risk follow other types of risk. Operational risk, which represent risk of cessation of trading with certain cryptocurrency, is connected with need for certain platform for use as on the side of seller as well as the side of purchaser of cryptocurrency. Cryptocurrencies are not backed by gold or by other commodity and their convertibility for fiat money are not guaranteed by government or other authority as result of which there could arise risk of liquidity as the owner of cryptocurrency units would not find another user of such cryptocurrency that would be willing to buy cryptocurrencies for fiat money or sell goods or services for cryptocurrency units. Therefore, cryptocurrency units would be unusable. Last is credit risk connected with decrease of purchase value of a cryptocurrency. In case of decrease of purchase value the owner bear the loss on own account.

2. Legal base of cryptocurrencies in the world

Cryptocurrencies are still relative new mean of payment and trading between participants of market. Their usage is not widespread into public and only limited amount of users participate in trading with cryptocurrencies. As consequence of above state there is a lack of attention of legislators of individual countries for their definition, integration into trade relationships and their regulation.

European Union in their law does not cover the usage of cryptocurrencies itself. European Central Bank published in October 2012 report where were cryptocurrencies identified as one of three types of virtual currencies and subsequently pointed on fact connected with individual types of virtual currencies. In introduction European Union warn about using of virtual currencies and thus cryptocurrencies. They are not cover in law, they are not regulated by any authority and they do not pass the definition of legal tender. In the report is stated definition of virtual currency, which is a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community (European Central Bank, 2012).

Table 1 A money matrix

Legal status	Unregulated	- Certain types of local currencies	- Virtual currency		
	Regulated	- Banknotes and coins	- E-money - Commercial bank money (deposits)		
		Physical	Digital		
		Money format			

Source: European Central Bank. (2012). Virtual Currency Scheme. p. 13. [October 23, 2012]. [online]. Available at the URL: http://www.ecb.europa.eu/pub/pdf/other/ virtualcurrencyschemes201210en.pdf>. [Accessed 23.11.2016].

Court of Justice of the European Union (2015) has given in press release number 128/15 for tax court proceeding in case C-264/14 Skatteverket v David Hedqvist precedence in manner of cryptocurrency consideration in connection to unified legal interpretation of value added tax legislation in the area of European Union. Under Court of Justice of the European Union are transactions with cryptocurrencies as mean of payment used on similar legal bases as traditional payment methods. Transactions with cryptocurrencies where the cryptocurrency units are exchanged for traditional currency units are subject of value added tax as consequence of providing of service for consideration based on fact that intermediator of exchange is charging exchange fee. The service itself fall into provision of Council directive 2016/112/EC of 28 November 2006 on the common system of value added tax article 135, which exempt transactions connected to currency, bank notes and coins used as legal tender from value added tax.

European Union warn about high risk connected to using cryptocurrencies for illegal operations. In the time of Slovak presidency of European Union there were agreed action plan. One of actions was to amend Commission Directive on combating terrorism, introducing a comprehensive criminal offence of terrorist financing with accent on usage of cryptocurrencies for such a financing. The intention of European Union is to remove the anonymity of users of cryptocurrencies by regulation of virtual exchanges and virtual cryptocurrency wallets administrators (European Commission, 2016).

On the risk connected with usage of cryptocurrencies for legalisation of incomes from criminal activities and terrorist financing draw attention also Ministry of finance of the Czech Republic which warn about notification obligation of payments in specific amount also for payments with cryptocurrencies (Finanční analytický útvar Ministerstva finance, 2013). Czech National Bank in statement is warning that cryptocurrencies do not constitute cash or investment instruments and additionally transactions carried by cryptocurrencies do not constitute payment services or exchange services under Czech law. However, if certain subject execute trades with cryptocurrencies related to providing of payment transactions between third parties, the permission and supervisory of Czech National Bank is necessary.

In legal coverage of cryptocurrencies is the most advanced Germany which as only country cover cryptocurrencies in law as mean of exchange. In statement of German authorities claim that recognition of cryptocurrencies as mean of exchange does not have effect on fact that cryptocurrencies are not classified as traditional currency or cash and thus as foreign currency.

Similar to European Union consider cryptocurrencies Norway. Based on Norwegian tax authorities bitcoins and other cryptocurrencies do not fall into definition of cash or currency. Cryptocurrencies are constitute as asset and they are subject to capital gain tax (Mohsin, 2013). Similar approach adopted also other countries from Europa.

With amended act about payment services in Japan in November 2016 was adopted definition of virtual currencies which part are also cryptocurrencies. Under the definition are cryptocurrencies understand as property value that can be used by unspecified persons for payment of equivalent value for purchased goods, rental fees, or services, that can be purchased by or sold to unspecified persons, and that is transferable via an electronic data processing system (Umeda, 2016).

The approach of Russia to usage of cryptocurrencies is more negative as in European Union, Norway and Japan. Under Russian law is usage of currency other than Russian ruble for domestic payment is prohibited what means that cryptocurrencies are prohibited too. Against usage of cryptocurrencies made statement also Central Bank of Russia which the usage of cryptocurrencies connect to money laundering and terrorists financing. In recent

months is the approach of Russian government changing in connection to preparation of amendment to law where should be allowed the purchase and sale of cryptocurrencies only for purpose of payment in foreign country (Маркелов, 2016). The usage of cryptocurrencies in Russia will remain prohibited.

2.1 Accounting regulation of cryptocurrencies in the world

The area of legal accounting regulation of cryptocurrencies is not regulated by any legal act in the world as today. Individual countries and international organisation that publish accounting standards made only researches and case studies that cover the cryptocurrencies and problems with their usage in praxis. Subsequent steps to regulation of accounting of cryptocurrencies was not available.

In December 2016 there was a meeting of Accounting Standards Advisory Forum which role is to help International Accounting Standards Board by creation and amendment of International Financial Reporting Standards (IFRS). One of the points that was discussed in the meeting was consideration of need for regulation of cryptocurrencies reporting under IFRS. For the purpose of the meeting Australian Accounting standards Board (2016) prepared study about possibilities how to regulate cryptocurrencies under IFRS and analysis of possible problems related to the regulation.

In the study are stated four possible options of categorising of cryptocurrencies. However, any of identified options does not provide clear answer to question how to consider cryptocurrencies from accounting perspective. In the study as well as in statements of majority of government authorities from countries in the world the experts agree that cryptocurrencies are asset of an entity. Cryptocurrencies are the result of past event (purchase, "mining"); the entity have control over them and can sell them or purchase goods or services for them what constitute the flow of economic benefits to the entity.

First category of asset of the entity in which should be categorised cryptocurrencies based on the study is cash. IFRS do not define cash thus we need to issue from generally accepted definition in economic theory where cash perform function of mean of exchange, unit of account and store of value (Lisý et al., 2011). Experts agree that cryptocurrencies do not fall into definition of cash as store of value and therefore it is not possible to categorise cryptocurrencies as cash. Another argument against categorisation of cryptocurrencies as cash is the fact that they are not recognised by governments as legal tender and regulatory authorities as central banks warn about risk related to their using.

Second option of possible categorisation of cryptocurrencies into assets of entity is financial asset – financial instrument. Financial instrument under IAS 32 – Financial Instruments: Presentation is a contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity. From the definition of financial instrument itself it is clear that cryptocurrencies do no fall into the definition as result of any contractual agreement between users of cryptocurrencies will arise.

If we do not consider cryptocurrencies as cash, cryptocurrencies do pass requirements for identification under IAS 38 – Intangible Assets. Intangible assets are identifiable non-monetary asset which is without physical substance. Based on opinion of Australian Accounting Standards Board the accounting treatment of intangible assets under IAS 38 – Intangible Assets is not applicable by perception of cryptocurrencies as investment.

Last category of assets in which should be categorised cryptocurrencies is inventory. Inventory are under IAS 2 – Inventory defined as assets held for sale in the ordinary course of business (finished goods), assets in the production process for sale in the ordinary course of

business (work in process), or materials and supplies that are consumed in production (raw materials). If we would consider cryptocurrencies as current asset which we sell in short-time period, we could consider cryptocurrencies as intangible asset hold for sale. The problem by classification cryptocurrencies as inventory will arise when the entity decide to hold cryptocurrencies for purpose of investments with assumed income from changes of their exchange rate for traditional currencies.

2.2 Possible application of actual accounting regulation in Slovak Republic for accounting of cryptocurrencies

As in the world also in Slovak Republic is not published any legal act or guidance note that could specify requirements for accounting of cryptocurrencies. Ministry of Finance of the Slovak Republic (2016) on the web portal published statement in which from accounting perspective declined possibility of treatment of cryptocurrencies as cash or foreign currency units and calculation of exchange differences from their purchase value. However, there is no concrete guidance on classification and accounting of cryptocurrencies.

Therefore, we need to follow general provision and rules of legal regulation of accounting in Slovak Republic by accounting about cryptocurrencies. The usage of general provisions of accounting regulation is not clear. For limited scope of the article we will analyse only double-entry method of accounting of entrepreneur in Slovak Republic.

Under Act No. 431/2001 Coll. about accounting as amended (further referred to as the Accounting Act) assets of the entity are economic resources that are result of past events from which is expected flow of economic benefits in the future. Based on available literature, the cryptocurrencies pass the definition of assets. The entity is buying cryptocurrencies or is "mining" them what means past events. The entity can sell or use cryptocurrencies for purchase of goods or services what indirectly influence the flow of economic benefits of the entity by using purchased goods or services by own business activity.

By categorisation cryptocurrencies inside assets we should base our understanding on presumption that cryptocurrencies can be reliably measured and that they are assets. In accordance to provisions of Accounting Act we should use the cost of acquisition.

The assets are divided into current and non-current assets based on time of use. In accordance with Opatrenie Ministerstva financií SR č. 23054/2002-92 zo 16. decembra 2002, ktorým sa ustanovujú podrobnosti o postupoch účtovania a rámcovej účtovej osnove pre podnikateľov účtujúcich v sústave podvojného účtovníctva (further referred to as the Accounting Guidance) are non-current assets such assets which time of use, agreed time of payment or settlement in other way is longer than one year. In case above stated time is no longer than one year, the assets should be considered as current assets.

From this provision arise two ways of how to look at cryptocurrencies. First one is look at cryptocurrencies as mean for purchase and sale of inventories or services. In that case cryptocurrencies are considered as current assets. In category of current assets we should think only about cryptocurrencies as inventories with non-tangible substance. Based on statement of Ministry of Finance of the Slovak Republic cryptocurrencies cannot be considered as cash and in addition they do not pass requirements for accounting in account group 25 - Current financial assets.

The entity do not change cryptocurrencies after purchase or "mining" of them, the entity held them for sale in non-changed form, the entity do not use them and do not make any technical improvements until the day of realization. Cryptocurrencies would have for the entity character of intangible goods. The entity have the possibility to create analytical

account to synthetic account 132 - Goods in stock and shops or create new synthetic account inside the account group 13 - Goods where only cryptocurrencies will be accounted for. During the financial year and as to day of preparation of financial statements there is no revaluation possible, but the entity is obligated to account for impairments as for the day of preparation of financial statements for compliance with true and fair presentation of information in the financial statements. The entity can transfer the decrease of fair value of cryptocurrencies (exchange rate) into profit and loss through impairments In the case of exchange of cryptocurrencies for tradition currencies or in the case of purchase of goods or services for them, the entity should account for acquisition of assets in the form of exchange of assets. The differences between the cost of "to be sold" assets and the fair value of "to be bought" assets as consideration is consequently transferred into profit and loss.

Second way how to look at cryptocurrencies is use them for purpose of long-term investment for gain the income from changes of purchase value of cryptocurrencies. In this case are cryptocurrencies non-current assets. Based on characteristics and substance of assets accounted as non-current financial assets the cryptocurrencies acquired as investment should be considered based on our understanding as non-current financial assets as in case of art, collections, item from precious metals or land. The Accounting Guidance includes exhausting list of non-current financial assets and cryptocurrencies do not fall in any type of non-current financial asset. From above stated reason, the entity should account for cryptocurrencies as non-current intangible account which is accounted for on the account 019 - Other non-current intangible assets or the entity can create new synthetic account in account group 01 - Noncurrent intangible assets where will be separately accounted for cryptocurrencies. By sale of cryptocurrencies for tradition currencies or by purchase of goods or services for cryptocurrencies the entity accounts on expense account for sale of non-current intangible asset the cost of acquisition of cryptocurrencies and at the same time the income on income account for incomes from sale of non-current intangible assets the fair value of acquired consideration. The difference between expense and income by realization of sale of cryptocurrencies will be transferred into profit and loss.

In both cases the entity take into account in profit and loss changes in purchase value of cryptocurrencies after their realization. Thus, in accordance to actual legislation it is not possible to proceed like in case of cash or in case of financial instruments and account for differences from revaluation into profit and loss before realization. Based on precautionary principle the entity is allowed to account only impairments from cryptocurrencies.

3. Conclusions and policy implications

Based on analysis of available literature and legal regulation of cryptocurrencies we discovered the lack of regulation or guidance in this area. The reason for that could be relative short time period when are cryptocurrencies used in the world, low knowledge of public or fact that many people do not understand principles of operation of cryptocurrencies. Professional public did not conclude definitive opinion how to consider cryptocurrencies on the background of economic theory. It is new product of informatics age and globalisation which is so specific that do not fall under classical definitions of elements of market.

The same lack of legal regulation we see also in the area of accounting. Cryptocurrencies have from theoretical point of view character of cash, but by practical application fail by tests of classical cash. We had analysed in the article the issues of legal regulation of cryptocurrencies accounting under IFRS and regulation in the Slovak Republic. In both cases we discovered missing definitions of cash which consequence is uncertain application of definition in case of cryptocurrencies. In given case we need to follow general accounting

assumptions and statements of authorities of individual governments that cryptocurrencies are not legal tender and therefore are not cash in narrow meaning.

The entities that own cryptocurrencies or make transactions with cryptocurrencies have to follow general provisions of legal regulation of accounting. General provisions of legal regulation of accounting do not take account of specific characteristics and cases of usage of cryptocurrencies. Thus the question arise, if the information disclosed in financial statements of the entity about cryptocurrencies pass the requirements for true and fair presentation of information about the entity.

Actual legal regulation of accounting do not take account for changes of purchase value of cryptocurrencies which will arise before day of realisation. From long-term period the purchase value of cryptocurrencies is increasing. Based on our understandings, in the case of usage of cryptocurrencies for purpose of store of free funding for gain an income from changes of their purchase value the non-realised measurement differences should be presented for compliance with true and fair presentation of information about entity as well. The fair value of cryptocurrencies can be determined as market price on the cryptocurrency exchange, which fall into definition of active market with cryptocurrencies. In addition, by purchasing of cryptocurrencies for purpose of long-term investment it is not possible under Slovak regulation of accounting to apply provision about non-current financial assets where cryptocurrencies should fall based on intention with which they were purchased. Non-current financial assets are is in the Accounting Guidance defined as exhausting list and do not reflect new options of investments of the entity. We propose to amend definition of non-current financial assets by general provision that would allow to classify non-current assets as noncurrent financial assets based on intention of purchase, existence of active market with the assets, high potential of the price increase, regardless of substance and form of the assets.

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Zákon č. 431/2002 Z. z. o účtovníctve v znení neskorších predpisov.

Finding the Most Proper Term Deposit for 24 Months in the Slovak Republic Using Multi-criteria Decision-making Methods

Marek Meheš

University of Economics Faculty of Business Economics with seat in Košice Department of Economics Tajovského 13 Košice, 041 30 Slovak Republic e-mail: marek.mehes@euke.sk

Slavomíra Stašková

University of Economics Faculty of Business Economics with seat in Košice Department of Quantitative Methods Tajovského 13 Košice, 041 30 Slovak Republic

e-mail: slavomira.staskova@student.euke.sk

Veronika Ragányová

University of Economics Faculty of Business Economics with seat in Košice Department of Economics Tajovského 13 Košice, 041 30 Slovak Republic e-mail: veronika.raganyova@student.euke.sk

Abstract

In this article we deal with the problematics of selecting of term deposits as a traditional banking product for appreciation of funds in Slovak Republic. In cooperation with experts from the field of banking, we have defined the selection criteria of term deposits, assessed their importance and then we have arranged term deposits for 24 months offered in Slovak Republic according to achieved score. For this purpose, methods of multi-criteria decision making were used. For final ranking of term deposits, taking into account the weights of the criteria, was used the TOPSIS method (Technique for Order Preference by Similarity to Ideal Solution).

Keywords: savings, banking products, term deposits

JEL classification codes: E21, G21

1. Introduction

Citizens of Slovak Republic are in general conservative savers. For this reason, they prefer traditional forms of appreciation of their free funds. One of the typical, traditional products designed for such purpose are term deposits. Term deposits (also TD) are used to deposit free funds for a predetermined period of time. This time period is referred to as the time of commitment. Its length varies usually from one month to several years. Term deposit is a product suitable for long-term savings, which advantage is its higher returns compared to the other bank deposit products (e.g. savings accounts). For the establishment and management of term deposits banks usually do not charge any fee, but one of the conditions for its establishment could be the obligation to have a current account in the bank. At the beginning, it is also necessary to deposit a minimum amount of money, which each bank sets according to its needs, because for the bank these term deposits are stable source of funding for its activities. It is generally hold, that the higher the deposit and time of commitment, the higher the interest rate. The interest rate is usually guaranteed for the whole period of commitment. During fixation client usually cannot deposit additional funds to the account. Increase or decrease the amount of the deposit or cancel the term deposit free of charge is possible only on the day of renewal / maturity (Janda, 2011). Because of the popularity of term deposits in Slovak Republic (Statistical Office of the Slovak Republic, 2016) we have decided to find the most proper term deposit on the basis of pre-determined criteria. To complete this objective, we have examined the offer of term deposits of banks in Slovakia in 2016 and have decided to analyse them within 1 group – term deposits for 24 months.

1.1 Methodology

To meet our goal to find the most proper term deposit in Slovak Republic we have used the methods of multi-criteria evaluation of options. These methods are used in decisionmaking situations where among the set of admissible alternatives (options) is selected one alternative (option) based on multiple criteria. The various criteria and options are before assessments grouped into criterial matrix $Y = (y_{ii})$, where the lines represent options of a_1 , $a_2,..., a_m$ and columns represent criteria $f_1, f_2,..., f_n$. They must be quantitative in nature. Otherwise, there are methods to transform the qualitative criteria like scoring, marking and so on. Particular term deposits' selection criteria were defined together with experts from the field of banking. After defining all relevant criteria it was necessary to assign weights to each criterion in order to determine their importance. According to these weights we can say how much one criterion is more preferred over the other. In order to determine weight to each criterion the Saaty's method was used (Saaty, 1977). Saaty's method or quantitative method of paired comparison, is the most complex and the most widely used method for determining the weights of the criteria. The result of this method is called as objectified weight, because the aim is to reduce subjectivity. Saaty's method is based on paired comparison – compares each pair of criteria and results enters into the so-called Saaty's matrix $S = (s_{ii})$, where i, j = 1, 2, ..., n. The elements of matrix s_{ij} can be interpreted as estimates of the proportion of weights of i-th and j-th criterion (Jablonský, 2007):

$$s_{ij} \approx \frac{v_i}{v_j}, \qquad i,j = 1,2,\ldots,n.$$

(1)

For elements of the matrix S is valid, sii = 1, i = 1, 2, ..., n, that means, there is value of 1 on the diagonal, and it is also valid that sij = 1/sij, i, j = 1, 2, ..., n, so that the elements under the main diagonal have the value of the inverse value of elements above this diagonal (Brožová – Houška, 2002):

$$S = \begin{bmatrix} 1 & s_{12} & \dots & s_{1n} \\ 1/s_{12} & 1 & \dots & s_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ 1/s_{1n} & 1/s_{12} & \dots & 1 \end{bmatrix}$$
(2)

To express a size of preference, the Saaty's point scale ranging from 1-9 was used. A value of 1 means, that two criteria are of equal importance and value of 9 means, that the

importance of one criterion exceeds the absolute importance of the other. There is also an advantage that preferences can be expressed in verbal way. Saaty's (Saaty, 1977) interpretation of individual point values can be seen in the Table 1.

Table 1Saaty's scale of importance

Intensity of importance	Definition	Explanation
1	Equal Importance	Two activities contribute equally to the objective
3	Weak Importance	Experience and judgement slightly favour one activity over another
5	Essential or strong importance	Experience and judgement strong favour one activity over another
7	Demonstrated importance	An activity is favoured very strongly over another; its dominance demonstrated in practice
9	Absolute importance	The evidence favouring one activity over another is of the highest possible order of affirmation
2, 4, 6, 8	Intermediate values between the two adjacent judgements	Where compromise is needed

Source: According to Saaty (1977)

There are many methods that are used to choose the compromise option from the set of all possible options. In this paper the TOPSIS method was used (Ishizaka – Nemery, 2013). It is a method that requires cardinal information about preferences between options. It offers a configuration of set of options and it is also intended to select one option. There is an advantage, that the computation has always the same number of steps no matter the magnitude of the problem. Its principle is to minimize the distance from an ideal option and maximize distance from the basal option (Velasquez – Hester, 2013).

Before the calculation it is fair to note one important thing. Some sources say, that it is necessary in the initial criterion matrix y_{ij} convert minimization criteria to maximization criteria. However, the original version of the TOPSIS method from authors Hwang and Yoon (1981), does not perform this conversion. According to Houska, Domeova and Berankova (2012) this conversion can significantly distort results. In our paper are therefore these calculations carried out without conversion. The procedure of applying TOPSIS method is as follows (Muntean – Muntean, 2010; Pekár – Furková, 2014):

Step 1: We create a standardized matrix $R = (r_{ii})$ according to formula:

$$r_{ij} = \frac{y_{ij}}{\sqrt{\sum_{i=1}^{m} y_{ij}^2}}, \qquad i = 1, 2, ..., m, j = 1, 2, ..., n.$$
 (3)

Step 2: We create weighted criterial matrix $W = (w_{ij})$ according to formula:

$$w_{ij} = v_j r_{ij}. (4)$$

Step 3: From the elements of the matrix W we determine the ideal option H with the criterion values $(h_1,...,h_n)$ and basal option D with values $(d_1,...,d_n)$, where:

$$H_i = \max(w_{ij}) \ D_i = \min(w_{ij}), \ j = 1, 2, ..., n.$$
 (5)

Step 4: We calculate the distance of each option from ideal and basal option:

$$d_i^+ = \sqrt{\sum_{j=1}^n (w_{ij} - h_j)^2}, \qquad i = 1, 2, ..., m,$$
(6)

$$d_i^- = \sqrt{\sum_{j=1}^n (w_{ij} - d_j)^2}, \quad i = 1, 2, ..., m.$$
 ...(7)

Step 5: We calculate indicator ci as a relative distance of options from basal option:

$$c_i = \frac{d_i^-}{d_i + d_i^+}, \quad i = 1, 2, ..., m.$$
 (8)

Values ci are from interval <0,1>, while value of 0 takes basal option and value of 1 takes ideal option. If we arrange the options ci in ascending, we will get comprehensive configuration of these options.

2. Establishment of criteria

Criteria for comparison of term deposits were chosen after studying the available information about them. Subjective view cannot be removed completely, but we tried to reduce it also with consultation with experts in the field of banking. Experts' opinion on "usual" clients' criteria when choosing term deposits was quite beneficial. After consultation with experts we have determined the final set of criteria f_1 , f_2 ,..., f_n which are shown in the table 2.

Table 2The list of criteria for selection of term deposits in Slovak Republic

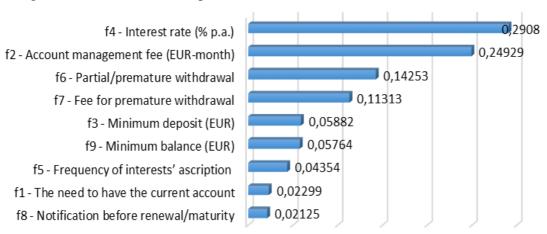
$f_n(24M)$	Criteria	Nature of criteria
f_1	The need to have the current account (qualitative criterion)	MIN
f_2	Account management fee (EUR/month)	MIN
f_3	Minimum deposit (EUR)	MIN
f_4	Interest rate (% p.a.)	MAX
f_5	Frequency of interests' ascription (qualitative criterion)	MAX
f_6	Partial/premature withdrawal (qualitative criterion)	MAX
f_7	Fee for premature withdrawal	MIN
f_8	Notification before renewal/maturity (qualitative criterion)	MAX
f_9	Minimum balance (EUR)	MIN

Source: Author's calculations

2. Assessment of weights of selected criteria for term deposits for 24 months

At the beginning it was necessary to create Saaty's matrix S. We have filled in the matrix in cooperation with expert in the field of banking, who helped us to assess the importance of predefined criteria. Since this is a pairwise comparison of criteria, the matrix indicates preferences among them. So, we have created Saaty's matrix, from which the weights of values of selected criteria were calculated by using MS Excel addition – Sanna. The values of the weights of selected criteria are shown in the Figure 1.

Figure 1 Weights of criteria for term deposits for 24 months



Source: Authors' calculations

The interest rate has a weight of 0.29080 and account management fee 0.24929. Weight of third most important criterion partial/premature withdrawal has reached the value of 0.14253. These three criteria together represent more than 50.0 % on the weight scale, that means, that these criteria are the most considered factors when the term deposits are selected.

3. Final evaluation of term deposits for 24 months

The last step before the analysis of term deposits was entry of data into the criterion matrix. 16 term deposits with this period of commitment were compared. Values of each criterion f_1 , f_2 ,..., f_9 , for every term deposit a_1 , a_2 ,..., a_{16} are shown in the Table 3.

Table 3 Criterion matrix for term deposits for 24 months

enterion matrix for term deposits for 24 months									
a_m	f_1	f_2	f_3	f_4	f_5	f_6	f_7	f_8	f_{9}
a_1	0	0,00	500,0	0,40	2	1	75,00	0	500,0
a_2	0	0,00	150,0	0,75	2	1	37,16	0	150,0
a_3	0	0,00	500,0	1,10	1	1	172,81	0	1,0
a_4	1	3,90	500,0	1,50	1	0	235,89	0	500,0
a_5	0	0,00	500,0	0,50	1	0	78,55	0	500,0
a_6	0	0,00	250,0	1,70	2	1	168,14	1	250,0
a_7	0	0,00	300,0	1,30	3	1	70,45	0	0,0
a_8	0	0,00	500,0	0,40	1	0	61,27	0	500,0
a ₉	0	0,00	0,00	0,20	2	1	0,00	0	0,0
<i>a</i> ₁₀	0	0,00	99,0	0,40	2	1	40,11	0	99,0
a_{11}	0	0,00	3 000,0	1,15	1	0	180,67	1	3 000,0
<i>a</i> ₁₂	1	0,00	100,0	0,30	1	1	40,00	0	100,0
a_{13}	1	0,00	10 000,0	1,60	2	0	240,00	1	10 000,0
a ₁₄	1	3,00	300,0	0,65	1	0	102,22	0	300,0
<i>a</i> ₁₅	0	0,00	350,0	0,55	1	1	43,25	0	350,0
a_{16}	1	0,00	1,0	1,05	1	0	164,96	0	1,0

Source: Authors' calculations

Values of qualitative criteria had to be modified before other calculations. Four criteria were modified – the need to have the current account, partial/premature withdrawal,

notification before maturity and frequency of interests' ascription. All (except the frequency of interest ascription) are binary criteria, so their quantification was quite simple. If the answer to them was YES, it was assigned a value of 1 and if the answer was No, it was assigned a value of 0. Frequency of interest ascription shall take three values – 1 (on the maturity date), 2 (yearly) and 3 (monthly).

In the next step, we have done a test of dominance, because an option, which is dominated, cannot be involve into the analyses. It is for the reason, that to these dominated options there is another option which reaches better values across all criteria. Therefore, it is appropriate at the beginning of evaluation remove these dominated options, which will also lead to the reduction of permissible options. Test of dominance was also carried out in MS Excel addition Sanna. Removing 9 dominated options after the dominance test, the analysed set of term deposits for 24 months consisted 7 options. In the next step, we have created a weighted criterion matrix. After that we have calculate the value of indicator c_i and according to its values we have arranged all options (term deposits for 24 months) descending.

Table 4Final arrangement of term deposits for 24 months according to chosen criteria

Order	a_m	Options	c_i
1	a_7	môjSUPERvklad (Sberbank Slovensko, a. s.)	0,68202
2	a_6	Privatbanka FIX konto (Privatbanka, a. s.)	0,66154
3	a_2	Term deposit (OTP Banka Slovensko, a. s.)	0,48163
4	a_{16}	Term deposit (ZUNO BANK AG)	0,47951
5	a_9	Term deposit (Tatra banka, a. s.)	0,39716
6	a_{10}	Term deposit (Všeobecná úverová banka, a. s.)	0,38257
7	a_{12}	Term deposit (Fio banka, a. s.)	0,35416

Source: Authors' calculations

From the Table 4 we can see, that at first place is môjSUPERvklad from Sberbank with a value of 0.68202, closely followed by FIX konto from Privatbanka and in the third place with quite lag is term deposit from OTP Bank. On the last three positions have placed term deposits from Tatra banka, Všeobecná úverová banka and Fio Banka. Products in first two places were mainly influenced by value of criteria of higher weight - fee for premature withdrawal. In Sberbank is this fee equal to the interests for 180 days of the withdrawn amount. In Privatbanka is its height more than double – interests for 366 days. In Sberbank are interests received at monthly intervals while in Privatbanka yearly. The highest interest rate of 1.70 % p.a. offers Privatbanka compared to 1.30 % p.a. in Sberbank. In addition, Sberbank do not set minimum balance. It is appropriate to mention, that môjSUPERvklad is a type of deposit, which consists of two 12 months' period, while after the first period it is possible to renew the deposit, partial withdraw or cancel. For both periods is applied a different interest rate: first period - 1.20 % p.a. and the second period - 1.40 % p.a. The presented interest rate of 1.30 % p.a. is therefore an average. Term deposit from OTP Bank was ranked in third place mainly because of the interest rate of 0.75 % p.a., which is the most important criterion. In other criteria it has achieved comparable and sometimes even better values than first two term deposits.

4. Conclusions and policy implications

In this paper we have focused on the term deposits in the Slovak Republic as traditional form of appreciation of free funds. We have examined the offer of term deposits of banks in Slovakia and have analysed them within 1 group – term deposits for 24 months. In

cooperation with experts from the field of banking, we have defined the criteria, which were the basis for their evaluation and comparison. These criteria were as follows - the need to have the current account at the bank, account management fee, minimum deposit, interest rate, frequency of interests' ascription, partial/premature withdrawal, fee for premature withdrawal, notification before renewal and minimum balance. Subsequently, using Saaty's method we have assigned to each criterion its weight according to its importance by selecting the term deposit. It turned out, that three most important criteria when choosing a term deposit are the interest rate, fees for account management and the possibility of partial/premature withdrawal of funds. These three criteria together represent more than 50.0 % on the weight scale, that means, that these criteria are the most considered factors when the term deposits are selected. Using the TOPSIS method, we have created rankings of term deposits within observed group according to importance of predefined criteria. It turned out, that for the top places within observed group were placed products of younger and smaller banks – especially products of three banks - Privatbanka, a. s., Sberbank Slovensko, a. s. and OTP Banka Slovensko, a. s. On the other hand, term deposits of traditional banking houses were usually at the end of the scale.

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Short-term Trends in Rail Freight Transport in the Slovak Republic

Pavel Melich

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: pavel.melich@euba.sk

Abstract

The aim of the short-term analysis of trends in rail freight transport in the Slovak Republic is to examine the current situation of companies operating on the rail freight market. Currently in Slovakia there are 13 companies in the rail freight sector and each of them uses a different business model that sets it apart from the competition. Rail freight has a great potential in the transport of raw materials, semi-finished and finished products from the producer to the customer; it has many advantages and opportunities, with the potential of assisting progress and effective work. Benefits and opportunities of rail freight transport may be negligible, however, if the public company ZSR was targeted on the construction, reconstruction and maintenance of railway infrastructure.

Keywords: railway, rail freight transport, short-term analysis

JEL classification codes: L90, L92, L98

1. Introduction

Rail freight is an important segment of the freight traffic in the Slovak Republic. It was accompanied in the Slovak Republic also uses road transport, shipping freight and air freight transport. In the article we are describing the main advantages and disadvantages that it favour or disadvantage from other available modes of freight transport, which are available to consumers. An important factor for the operation of rail freight transport and rail infrastructure, which is owned by the State company The Railways of the Slovak Republic (ZSR). ZSR it on the basis of agreements with individual companies operating in the segment of rail freight rents for predetermined conditions. From funds obtained from it, company is able renew the old rail infrastructure.

An important part of the article is to assess the current state of the companies operating in the rail freight transport in the Slovak Republic. Slovakia currently operates 13 companies in the oligopolistic market structure. To assess the current state we chose as the basic indicator of the amount of sales of companies in the period 2013-2015, as these data are freely available on the portal Register of Financial Statements. Then we know from Company revenues determine the market share of each company, which will show their position in each year compared to other companies operating in the rail freight market.

2. Rail transport in the Slovak Republic

Bukovová in her memoir in the breakdown modes it defines rail transport as rail traffic carried by rail in order to transport cargo or passengers (Bukovová, 2008).

A freight transport service is a derived demand created through an agreement between a buyer, situated in one place, and a seller, situated in another. The agreement is either to sell, or to buy goods, under certain conditions (e.g. price, quantity, time), for the purpose of either trade or final consumption. It is a derived demand because it is created only when there is a necessity of movement (or another form of value addition) of the product from one place to another (Islam, 2014a).

Rail transport performs many functions in the national economy, such as:

- is part of connecting individual companies within the industry respectively between the sectors of the national economy,
- ensures the circulation of products and persons that meet the specific needs of the population,
- consolidation of vehicles creates savings funds.

2.1 The advantages of rail freight in the Slovak Republic

Rail freight transport in the Slovak Republic has the following advantages (MDVRR SR, 2012):

- safe services accident statistics are listing rail on top of the European security and therefore it can be considered a key aspect of the assessment of quality of service,
- transport capacity possibility of creating a high transmission capacity on a transport element, according to company needs,
- less traffic restrictions other modes of transport have more transportation restrictions, such as at the border crossings are waiting times at rail it is much shorter than for road transport,
- eco-friendly compare of the total produced emissions produced by transport modes,
- low-cost high capacity transport services- reduces the cost of this type of transport.

The CREAM project arose recommendations on which can be increased productivity of rail freight by optimized exploitation of traction resources, a higher flexibility, reduced shunting costs, improved reliability of train services, reduced border stopping times and consequently transit times and reduced border station occupation times, leading to a higher station capacity (CREAM home, 2012).

Later Islam (2014b) in his work defines four main factors increasing productivity as follows: rail freight capacity generation; an increase in commercial speed, leading to better service; traffic bundling, for economies of scale and reduced operating costs.

2.2 Shortcomings of rail freight in the Slovak Republic

Current condition and trends in business environment change all the time and are liable to tendencies like globalisation, processing of product life cycle and technological revolution. All modern changes make every company to ensure high grade strategy which should maintain competitiveness of company while accommodating all changes on a market (Gubová – Richnák, 2016). In connection with Slovakia's membership in the European Union is becoming a national market as part of the European single market in rail freight and passenger transport. Despite membership in the common European market position of the freight and rail passenger transport in the Slovak Republic in comparison with the performance of other modes of transport at a low level. We claim we can support the document unified vision of the rail sector in the Slovak Ministry of Transport, Construction and Regional Development of the Slovak Republic (SR MDVRR), which defines the shortcomings of the rail sector in terms of users as follows (MDVRR SR, 2012):

• not sufficiently competitive range of services offered (compared to road transport),

- less flexibility in service provision and pricing of services provided (annual update pricing instruments in pricing),
- longer lead times compared to road transport,
- Reserves in the way of communication in the relationship between ZSSK CARGO and its customers mainly ordering the transport category of individual consignments,
- unfinished electronization transport process,
- relatively outdated park of cars and unsatisfactory structure (missing some lines of carriages),
- the greater extent of looting wagon loads.

The document is based on studies carried out on the territory of Slovakia in progress and shortcomings of the rail infrastructure (MDVRR SR, 2012):

- poor state of railway stations, rail stops,
- poor state of the railway infrastructure with plenty of transitional restrictions on line speed, a high proportion of unsecured crossings, persistent problems of electromagnetic compatibility and inflexible organization service,
- insufficient entanglement of individual modes of transport,
- the greater extent of damage and looting of railway infrastructure.

2.3 Management of railway infrastructure

In Slovak Republic is the railway infrastructure regulated by the state. Public company ZSR gives companies the right to use railway infrastructure is under the administration fee since 2002, when it separated from the transport company ZSSK a.s. The main thrust of the operation of a railway station, is carrying out the following activities:

- management and operation of the railway infrastructure,
- services related to the operation of the railway infrastructure,
- establishment and operation of railway telecommunication and radio networks.
- construction, modification and maintenance of railway and cableways.

Slovak Ministry of Finance as the responsible authority for a calculated amount of charge on the basis of efforts to improve the economic situation in Slovakia to offer big discounts for the use of railway infrastructure. The fee for the use of railway infrastructure depends on various factors such as type of locomotive, train-set weight, type of cargo, the length of the transport route. Revenue from fees do not cover all costs ZSR and precisely for this reason, investment in construction of new and reconstruction of existing infrastructure is insufficient. The European Commission and European Parliament have decided to solve the problems of the lack of funds and unsatisfying technical level of the infrastructure through financial support granted to investments of European significance. The company's own resources make up only a part of total planed investment. The rest is planned to be financed by the state budget and by European funds (Nedeliaková – Dolinayová – Gašparík, 2010).

As part of the railway infrastructure are carried out measures to try to improve it in different ways. The most important measures include:

- standstill non-operated railway lines,
- transfer of non-operated track regional governments or other entities,
- increase line speed on corridor lines with fast train operation,
- reduce the number of unsecured crossings, increase security on dangerous,
- revitalization of the railway stations,
- to improve the spatial relation between rail freight and other modes of transport.

Upgrading of the existing infrastructure is necessary to fully implement a new technologies. This is particularly the case for higher axle loads, enlarged loading gauge (enlarged cross section of wagons) and, on some rail networks, modifications of electric supply systems to fully be able to recover electric energy. (Andersson, 2011)

3. Results

The Slovak Republic is active in the rail freight sector 13 companies with domestic or foreign capital. Based on our research needs, we managed to get information about the sales of the company for the years 2013, 2014 and 2015 from the portal database accounts of the Slovak Republic, which are displayed in Table 1 Revenues in the rail freight sector.

Table 1Revenues in the rail freight sector

Name of the company	Revenue 2015 (k €)	Revenue 2014 (k €)	Revenue 2013 (k €)
Železničná spoločnosť Cargo Slovakia, a.s.	268 810 €	281 805 €	283 241 €
Budamar Logistics, a.s., Bratislava	148 734 €	149 928 €	134 781 €
Šped - Trans, s.r.o.	71 289 €	71 929 €	68 684 €
Express Group, a.s.	68 584 €	58 997 €	121 095 €
Railtrans International, a.s.	45 101 €	34 685 €	24 597 €
Prvá Slovenská železničná, a.s.	13 317 €	10 710 €	10 385 €
LTE Logistik a Transport Slovakia, s.r.o.	12 847 €	8 938 €	9 959 €
Špedservis, s.r.o.	7 809 €	5 900 €	5 165 €
Central Railways, a.s.	6 507 €	4 692 €	2 939 €
Schenker, s.r.o.	5 754 €	1 264 €	N/A
Slovenská železničná dopravná spoločnosť, a.s.	2 191 €	1 803 €	2 388 €
TransPlus (Slovensko), s.r.o.	624€	707€	883€
Slovenská plavba a prístavy, a.s.	140€	N/A	N/A

Source: RÚZ, 2016

The most powerful company on the market is a Cargo Slovakia, whose main shareholder is the state. The company in 2013 and 2014, despite the largest sales in was close to bankruptcy. The bad situation was caused by the cost structure. The company, despite a decline in revenues through measures of rehabilitation and improvement of the management got into the black numbers in 2015 for the first time since the crisis. Year decline in sales in 2015 amounted to approximately € 13 million to a level of € 268.8 million. In percentage terms, this represents a decrease of 4.5% slump. ZSSK Cargo is strongly bonded to the steel making industry and metallurgical industries, which account for about two thirds of their revenues. The decline in sales is due to a decrease in orders from major customers because their production in the steel industry decreased significantly due to imports of cheap steel from China.

The company ZSSK Cargo is paying the price of its ownership structure, as its owner is the state. Her loss is cumulative from the beginning of the economic crisis in 2006. The companies in the sector during the crisis, trying to optimize their costs. The company ZSSK Cargo has had a crisis to deal not only with poor economic situation at home and abroad, which has had a significant impact on the whole segment of rail freight transport, but also with the regulations of the main shareholder, which the Slovak Republic. At the behest of the Prime Minister company had to halt layoffs and at the same time suspended the negotiations on the privatization of the company. Cumulative losses of the company are currently at € 400

million. The high level of losses it still holds uncertainty and leadership is trying to save it. In recent years, the company saved from bankruptcy only sell cars to other companies. Rolling stock required to meet the needs of customers, the company hires based on the volume of orders, which greatly reduces the costs required to operate the fleet. Another important point in the context of cost structure is significant discount from the state-owned company ZSR for the use of railway infrastructure in the Slovak Republic, which is granted to all companies in the industry. Contract for the provision of discounts for the use of railway infrastructure shall be signed by the end of 2016, the company holds remains uncertain, as its new terms are being negotiated. ZSSK Cargo introduced Eradication Plan, which envisages mainly to an increase in transport. In the near future, the company plans to restore the ZS Cargo fleet from external sources. From fleet renewal ZSSK Cargo expects changes in economic performance and in particular on reducing the cost of maintenance and operation of rolling stock. For this step, the company intends to proceed because the other competitors in this period invested significantly in fleet renewal. Companies are investing in their fleet paid since the economic results after the investment has improved considerably since despite stagnating sales reduce their fleet costs. ZSSK Cargo investment in the fleet considered important not to lose its leading position in the industry. (RÚZ, 2016)

Budamar Logistics company in 2015 recorded a record year in its history in terms of transported. It transported about 12.5 million tons. The main increase recorded abroad because the domestic market has stagnated for several years and the scope for increasing market share here is looking difficult. A key commodity for the company's iron ore which is imported mainly for the company U.S. Steel Kosice. In subsequent years, the company expects sales growth of important new partnerships abroad. The most important partnerships developed in Hungary with the company Railtrans International, where he focused on the wants and refinery products in Serbia, which has created a Budamar South with 51% market share, which has become the exclusive provider of logistics services for Chinese steel mill Hesteel Serbia Iron & Steel. Also, won a new contract for the carriage of coke from Poland to Romania through the territory of the Slovak Republic. Furthermore, it prepares to penetrate the market of Ukraine, which sees a great opportunity in the event that Ukraine will integrate into the European Union and liberalize their rail freight. (RÚZ, 2016)

The largest expansion of the record company Railtrans International (RTI), which since 2013-2015 has seen sales increase by 83% in nominal terms this represents € 20.5 million. Despite the stagnation volume transported in the industry, companies are able to obtain greater market share. Its main customer service is the company Slovnaft. RTI focuses mainly on refinery products and biofuels, which represents about half of their sales. The strong growth in sales of the company, however, is the transport of coal, wood, chemicals, grain and expansion to foreign markets, where its new customers become more two large refineries of MOL and INA. RTI foreseen in the coming years an even greater increase in sales, what shall be assisted new orders from automotive and intermodal industries. (RÚZ, 2016)

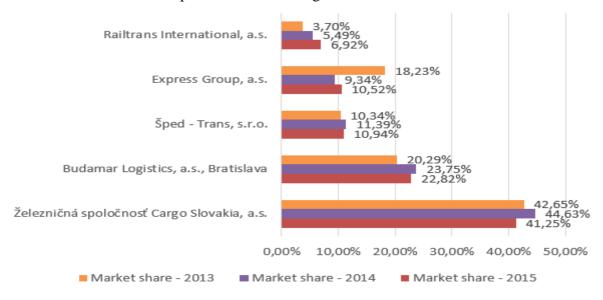
Company Šped - Trans was founded in 2000 and operates purely on the European market. Her performances have stable character, which can be seen on-year sales level. Šped - Trans fears of market development, which must constantly adapt to new conditions and competition in the industry. The company expects in the future a stable situation respectively weaker decline in performance and see an opportunity for growth in the long term. It aims to stabilize its position. As its competitive edge sees a minimal impact on the environment, which is constantly trying to improve. It focuses on chemical and wood industry, where among its main customers are Duslo group Bukóza and IKEA Components. (RÚZ, 2016)

Companies in the rail freight sector are interlinked ownership structure, as evidenced by the first Slovak Railway (CSR) practices, whose main shareholder is Šped - Trans. Other

companies develop joint projects in the sector, which have created a competitive advantage over other companies and diversify risk arising from business activities. CSR company focuses mainly on rail freight, but also provides services for the operation of railway sidings and leasing of rolling stock. Gradually it developed into position to stop without government incentives. It operates in the Czech Republic, Slovakia and Hungary, and holds a prominent position on the interconnection of the three countries in the rail freight sector. Recommendations from the CREAM project, which are mentioned in the context of theoretical processing company applied in practice, when the competitive advantage on this route is that it does not need to change locomotives at the border crossings, but only the exchange of train drivers who continue on the national territory. Thus the time saved represents a significant competitive advantage for the company in the industry. In 2015 it transported by rail freight transport 3.4 million tons of goods and materials. Its total sales were at $\mathbf{\epsilon}$ 18.3 million of which revenues from railfreight traffic amounted to $\mathbf{\epsilon}$ 13.3 million. (RÚZ, 2016)

Company's market share in individual years can be seen in Figure 1 Market share of first 5 companies in the rail freight sector and Figure 2 Market share of the rest of companies in the rail freight sector. Charts are divided for better clarity of individual data, as the largest market share of the company ZSSK Cargo in the years 2013-2015 at the level of 42.65% to 44.63%. The smallest share of Slovak Shipping and Ports, Inc., the rail freight market is 0.02%.

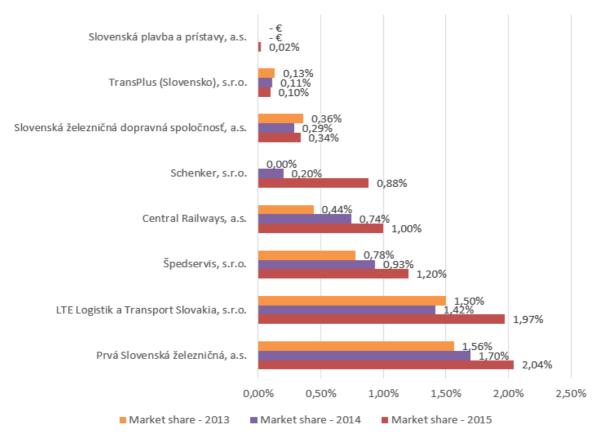
Figure 1Market share of first 5 companies in the rail freight sector



Source: The Autor's own elaboration

On the Figure 1 shows the approximate stability of the company's market share, which means that the market is stagnant and large companies to keep their stable market position. Their gentle oscillation is caused by increasing the shares of smaller companies that complement the oligopolistic market structure of rail freight. The only significant decrease was recorded in the company Express Group, Inc., which in 2015 this decline has stabilized and subsequently increased its market share by 1.18%. The company ZSSK Cargo holds its significant market share despite its economic problems by slowly phasing out.

Figure 2
Market share of the rest of companies in the rail freight sector



Source: The Autor's own elaboration

In the Figure 2 Market share of the rest of companies in the rail freight sector we see the market shares of the remaining companies in the rail freight market. Market shares increased gradually, but is not it also important to increase market share, which could significantly jeopardize the position of the main participants in the rail freight market. The reason for the increase in revenues and associated market share is its flexibility because it is mostly small companies that are better adapted to small orders from customers, a one-off special delivery orders or in co-operation results and meet the needs of larger clients.

Figure 3 Summary of revenues

	Revenue 2015 (k €)	Revenue 2014 (k €)	Revenue 2013 (k €)
Summary of revenues	651 707 €	631 358 €	664 117 €

Source: The Autor's own elaboration

Within the Figure 3 Summary of revenues, we see the development of total revenues rail freight market. Amount of the turnover in the rail freight sector fell from \leqslant 664.11 million in 2013 to \leqslant 631.36 million in 2014, representing a decrease of \leqslant 32.75 million in percentage terms, this is a decrease of 4.93%. The decline in sales of rail freight is caused by changes in the prices of transported goods and raw materials. Decrease in revenues is due to the reduction in transported because customers use for their needs in other modes available in the Slovak Republic. The main direct competitor of the rail freight road transport.

Increasing transported quantities in 2015 resulted in an annual increase in revenues of € 20.34 million, which in percentage terms represents an annual increase company revenues by 3.22%.

Conclusion

Based on the theoretical basis we can identify the main advantages and disadvantages of rail freight in the Slovak Republic for companies operating in this segment. I consider the most important advantage of its environmental performance, which compared with other modes of freight transport is considerable, but also a great limitation for rail freight transport in Slovakia is insufficient quality of rail infrastructure in conjunction with a limited impact on each country's territory. Poor flexibility of rail freight is a major limiting factor.

An analysis of the companies based on sales, we see that the company ZSSK Cargo, despite its long-standing problems are still holding the leading position and gradually gets out of the crisis period, which occurred due to the economic crisis in the world and reduce the number of contracts. Other companies are looking to improve their position in the market, but the main limitation is the stagnation segment and finding new orders which they could move on, so most companies are starting to focus beyond the borders of the Slovak Republic, either individually on projects or in conjunction with other domestic or foreign companies. Creating alliances helps them to better meet the needs of customers respectively, to gain more advantage in a competitive battle.

The market share of individual companies shows that large companies are moving roughly at the same level and small companies increase their market share slowly, unfolding obtained from customers, which is not easy, as the market stagnates and new customers are looking difficult.

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Outsourcing and its Utilisation in the Management of Enterprises

František Nemeth

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: nemeth.frantisek@zsr.sk

Abstract

At the present time managers still need to find the right managerial tools that can allow them in the best way to make business decisions leading to better processes, products and services as well as to improved performance and expected profit. Based on the worldwide survey conducted by Bain & Company one of such managerial tools is outsourcing. Outsourcing represents a special form of external provision of performed activities that were formerly performed internally, whereby the time interval and the subject of the performance are to be stipulated. It makes it different from other partnerships. According to the results achieved among 13,000 respondents from more than 70 countries in the world, outsourcing reached top ten of the most used managerial tools in the survey conducted from 2000 to 2014. A similar survey carried out in the conditions of the Slovak Republic in 2009 and 2010 among 227 respondents showed that outsourcing did not rank among top ten of the most used managerial tools. On the contrary, yet another survey (focused on the same topic) in 2016 demonstrated that outsourcing is the second most used managerial tool among enterprises in the Slovak Republic.

Keywords: management, managerial tools, outsourcing

JEL classification codes: M19, M21, L29

1. Introduction

The need to find the right tools in order to meet the challenges that executives face has increased during the past few decades. Whether the managers are trying to boost revenues, innovate; improve quality, increase efficiencies or plan for the future they have to search for tools that can help them to achieve this. This is a reason, why management tools have become a common part of executive's everyday life.

Successful use of quantum managerial tools the managers keep at disposition requires an understanding of the strengths and weaknesses of each one, as well as an ability to creatively integrate the right tools, in the right way, at the right time. To be successful, the managers have to be more knowledgeable than ever as the process of the selection can be complicated as the business issues they need to solve. They namely have to sort through the wide scale of the options and select the right managerial tools for their companies. The right tools will help the managers to make the business decisions that lead to enhanced processes, products and services and deliver the profits.

One of such managerial tools is *outsourcing*. It is the managerial tool, when the company uses third parties to perform non-core business activities. Third parties specialize in those activities, and company that contracting third parties is able to focus its effort on its core business. Additionally, the third parties are likely to be lower cost and more effective, given

their focus and scale, that enables the company access the state of the art in all of its business activities without having to master each one internally.

The aim of the article is to analyse the utilization of the outsourcing as managerial tool in the management of the enterprises. The article focuses on the evaluation of the outsourcing utilization intensity in the enterprise's management in the world and also in the management of the enterprises in Slovakia. At the same time, it focuses on comparison of the development in utilization of this managerial tool at a time. The base for such evaluation is the results of two mutually independent surveys that are focused on utilization of the managerial tools in the management of the enterprises in Slovakia, and that were realized at different time periods. For evaluation of the outsourcing utilization in the management of the enterprises in the world are used the results of the survey focused on using of managerial tools in enterprise's management, that is realized worldwide by Bain & Company. These three surveys at the same time allow to compare the utilization of the outsourcing in the management of enterprises in the world and in Slovakia.

2. Outsourcing and its utilization

According to Rigby (2015) companies use *outsourcing* to:

- Reduce operating costs.
- Instill operational discipline.
- Increase manufacturing productivity and flexibility.
- Leverage the expertise and innovation of specialized firms.
- Encourage use of best demonstrated practices for internal activities.

2.1 Outsourcing

Outsourcing is the special form of external providing of the perform activities, that were former performed internally, whereby the length and the subject of the performance are stipulate. It makes it different from other partnerships. This term means contractual determination of the activities or services that enterprise let to the administration and operation of its supplier, based on the approved standards and during agreed period. It can contain the transfer of the employees of the customer and/or long-term property and/or facilities for the providing of services to the supplier. The mission of the outsourcing can be seen in retiring of some activities out of the enterprise and in entrusting of their providing to the external supplier. Hereby, the supplier becomes an external source of activities, that were entrusting and that are otherwise the important for the operation of the enterprise but they are not the main object of its activity (core business). It gives to the enterprise the field to focus fully and effectively on its key goals. Outsourcing plays for the modern enterprise one of the most progressive and at the same time key tool for increase of its performance (Pištejová et al., 2010).

In principle, *outsourcing* is possible for every activity that the enterprise doesn't consider as its main object of the business. This way, the processes that cumber the enterprise financially, administratively, personally, timely etc. are separated out of the main activity of the enterprise. The typical example of the *outsourcing* in the Slovak Republic is transport. The most of the enterprises takes purchasing of the transport services as the certainty and any of them don't guess that it is the *outsourcing*. Other activities that can be the object of the *outsourcing* are for example store services, personal sources, IT systems etc. (Moravčík, 2010).

The reasons, how to apply *outsourcing* can be different. The main reason, how the enterprises choose this approach is on the one hand reducing of the costs, and on the other

hand increase of the ability to react elastically and effectively to the customers demand, and this way ensure the grow of the company in the competitor's fight.

The other reasons for enterprises to apply *outsourcing* are (Moravčík, 2012):

- To focus on main activity of the enterprise.
- Increase or sustainment of the competitiveness.
- Permanent recruitment and involving of specialists.
- Reducing and predictability of the costs.
- The simplifying of the work organization.
- Risk reducing.
- Creating of the common activities with the provider of the *outsourcing*.

The types of the *outsourcing* used in practice are very alternative and there are used from simple supporting activities up to complex variants, when there is almost the conjunction of two enterprises. Individual types of *outsourcing* used in practice are displayed in next table (see Table 1).

Table 1The types of the outsourcing

Identification	Characteristic
Selective outsourcing	Also named as "outtasking." Only single tasks are outsourced, not all processes.
Full outsourcing	All functions are retired (for example logistic).
Trade – procedural outsourcing	If there is no option to retire individual functions isolated, often all process chain is sold.
Backsourcing/insourcing	Former retired service or service that wasn't performed at enterprise yet, is implemented to the enterprise.
Single-sourcing	Retired task is taken by only one provider.
Multi-sourcing	Retired task is taken by more providers.
Nearshoring-outsourcing	Displacement of the chosen activity to the location near the enterprise.
Offshoring-outsourcing	Displacement of the chosen activity to the other country (low-cost area).
Internal outsourcing	Providing of the service by cost centre of the enterprise that is indeed economically or legally independent.
External outsourcing	Displacement of the chosen activity to the provider that is in no way binding to the submitter.

Source: Thiel, Ch. – Cawelius, M.O. (2007). Outsourcing - Historie und Begriffserklärung. In Matys, L. (2007). *Outsourcing – an instrument increasing the ability to compete*: bachelor's thesis. Brno: Katedra podnikového hospodářství, Masarykova univerzita, pp. 16.

Despite of the fact, that *outsourcing* is one of the most progressive and at the same time the key tool of the performance increasing for modern enterprise, it can bring for the enterprise not only advantages but also the risks.

The advantages of the *outsourcing* (Lokšová, 2011):

- The service is provided by specialized, skilled subcontractor.
- Suitable form saves the time; it is more effective than spending of the means to the unexploited employee.
- The stipulated charges are final, and include also hidden costs.
- The management and also employees can focus on their main activity, and don't have to be addicted to secondary activities.
 - The risks of the *outsourcing* (Lokšová, 2011):
- The lower possibilities to control the subcontractor, in comparison with internal employee.
- In case of insufficient communication, the result not has to be in compliance with company needs.
- Insufficient references may cause exacting financial requirements of partners, and bad performance.
- The decision without complex analysis may cause elimination of the *outsourcing* advantages against the internal costs.

Nowadays, the *outsourcing* is getting along the important changes that are caused by coming of the new providers into the market in the whole world. It has been a long time when the companies from North America and India dominated the whole sector, but today there is arising a competition for them, namely from Latin America, Eastern Europe and Asia. The competition acts first of all in the area of contact centres, business processes and information technologies. The providers of the *outsourcing* are forecasting the rapid worldwide grow of the demand for services supplied.

Likewise, in Slovakia there are the companies that use *outsourcing* or they are thinking of it. Often it is the *outsourcing* within the Slovak Republic, but there are exist the companies and institutions that retire their activities also abroad. Slovak companies the most often retire to the specialized providers their logistic services, services of the information technologies, activities of the external relations or business financing.

One of the reasons, why the *outsourcing* has obstacles in the Slovak Republic is the philosophy of the many companies that says "only we are able to do things in the best way." Another reason is non-confidence to the strange and non-tried things, and not even many positive examples of *outsourcing* namely from abroad, is not enough for the enterprises. The specific reason for non-confidence in Slovakia is relatively young market economy, when many companies are still learning, and what is more better, many of the companies have decided to use the *outsourcing* for their own enrichment (Lokšová, 2011).

Many of the companies are really used the *outsourcing* in the practice and in the various areas. Among such companies belongs for example Dell, IBM, Kodak, General Motors, Accenture, Xerox, Hewlet-Packard, Siemens eventually Sodexho or Eurest (Hudec, 2011).

2.2 Outsourcing in the World

Since the 1993 Bain & Company realize the worldwide survey among the managers focused on managerial tools they are applied in the practice, and the effectiveness of those managerial tools. The main goal of this survey is to provide for managers information they need to identify and integrate managerial tools and that allow them get better results and to understand how the global managers see the strategic challenges and priorities.

Today, the company disposes with the database of 13 000 respondents from more than 70 countries in North America, Europe, Asia, Africa, in the Middle East and in the Latin America. It allows to company annually watch the effectiveness of managerial tools. The part of the survey is also direct interviews that allow recognizing the most suitable circumstances, when every tool allows achieving required results

As the single tool can be involved in the survey it has to be relevant from the top management point of view, and it has to be actual and measureable. Investigating what tools the enterprises apply, circumstances of the applying and the satisfaction of the managers with the results, the survey helps the managers to the better selection, implementation and integration of the tools for enhancing of the enterprise performance. The survey is supplemented by direct interviews that help recognize the most suitable circumstances when the every tool can bring the required results.

For the last time in 2014 Bain & Company realized 1 067 complete international surveys within the wide scale of the managers across the all segments. Respondents from the 10 countries were divided into four regions – North America (The United States and Canada), Europe, Middle East and Africa – EMEA (France, Deutschland, Spain and Great Britain), Asia and Pacific – APAC (China and India) and Latin America (Mexico and Brazil).

The next table displays the comparison of the most popular managerial tools determined by the executives in 2014 with the most used managerial tools in the last years.

Table 2
The most used managerial tools in the world during the time

The most used managerial tools in the world during the time								
Year/ Position	2000	2006	2010	2012	2014			
1	Strategic planning	Strategic planning	Benchmarking	Strategic planning	CRM			
2	MaVS	CRM	Strategic planning	CRM	Benchmarking			
3	Benchmarking	Customer Segmentation	MaVS	EES	EES			
4	Outsourcing	Benchmarking	CRM	CRM Benchmarking				
5	Customer Satisfaction	MaVS	Outsourcing	Balanced Scorecard	Outsourcing			
6	Growth Strategies	Core Competencies	Balanced Scorecard	Core Competencies	Balanced Scorecard			
7	Strategic Alliances	Outsourcing	СМР	Outsourcing	MaVS			
8	Pay-for- Performance	BPR	Core Competencies	Change Management	SCM			
9	Customer Segmentation	SaCP	Strategic Aliances	SCM	Change Management			
10	Core Competencies	Knowledge Management	Customer Segmentation	MaVS	Customer Segmentation			

Source: Bain & Company. (2015). *Management Tools & Trends 2015*. [Online]. Available at the URL: http://www.bain.com/management_tools/BainTopTenTools/default.asp. [Accessed 07.02.2017].

As the table displays, it is possible to see that *outsourcing* is often used managerial tool in the world. Every year it is placed among the top ten tools, despite the fact, that every year it is

different position. The best position that *outsourcing* achieved was in 2000, when it was the fourth most used managerial tool in the world.

2.3 Outsourcing in Slovakia in 2011

The similar survey as the Bain & Company realize was realized also in the Slovak Republic at the University of Economics in Bratislava by the Department of Management. It was focused on modern trends in the management and their use in the enterprises in Slovakia. The survey was realized during the 2009 and 2010 year, and overall 227 enterprises participated in it. The data were gathered by questionnaire that was supplemented by structural interviews with the managers of single enterprises.

With regard to the structure of the survey sample, the survey contained 92 small enterprises (up to 49 employee), next 89 enterprises were middle-sized (from 50 to 250 employee) and 46 enterprises were large (more than 250 employee).

The sample contained enterprises from almost all segments with regard to the SK NACE classification. The most numerous were wholesale and retail business, industrial production, information and telecommunication technologies, financial and insurance activities, administrative and supporting activities, transport and storage etc.

With regard to the age of the respondents the oldest company was founded in 1890 year, and the youngest company was founded in 2008 year. Mean volume of the foundation was the 1991 year.

The results of the survey focused on the using of modern trends in the management of the enterprises in the Slovak Republic, based on the classification according to segments, are displayed in the next table.

Table 3Utilization of modern trends in the management of the enterprises in Slovakia

Managerial tool				Segme	nt*			
	SEGS	W&R	IP	I&C	T&S	F&CA	A&SS	BI
BSC	X		X	X	X			
Benchmarking	X	X	X	X	X	X	X	
Project management	X	X	X	X	X	X	X	X
Outsourcing	X	X	X	X	X	X	X	
Facility management	X				X			
Knowledge management	X	X	X	X	X	X	X	
TQM	X	X	X	X	X	X	X	X
CRM	X	X	X	X	X	X	X	X
Talent management	X			X	X	X	X	
MBO	X	X	X	X	X	X	X	
Performance management	X	X	X	X	X	X		X
360 Degree Feedback	X	X	x	X	X	X		

Coaching	X	X	X	X	X	X	X	X	
Mentoring	X	X	X	X	X	X	X	X	
Managerial tool	Segment*								
	SEGS	W&R	IP	I&C	T&S	F&CA	A&SS	BI	
Team work	X	X	X	X	X	X	X	X	
MBC	X	X	X	X	X	X	X	X	
Systemic thinking	X	X	X	X	X	X	X	X	

Source: Hudec, M. (2011). *Moderné trendy v manažmente a ich využívanie v podnikoch na Slovensku*. [dissertation thesis]. Bratislava: University of Economics in Bratislava. pp. 124-125.

*SEGS - Supply Electric, Gas and Steam	F&CA - Financial and Consulting
W&R – Wholesale and Retail Business	Activities
IP – Industrial Production	A&SS - Administrative and Supporting
I&C – Information and Communication	Services
T&S – Transport and Storage	BI – Building Industry

The data in the table shows, that all enterprises classified according to segments use the *outsourcing*, with the exception that undertaking in Building Industry.

Summary of the most used managerial tools in the Slovak Republic according to segments provides next table. The tools are ordered in descending based on the percentage representation of the enterprises that used adequate managerial tool within the single segment.

Table 4The most used managerial tools in enterprises in Slovakia, according to segment classification

Managerial tool	Segment*										
	SEGS	W&R	IP	I&C	T&S	F&CA	A&SS	BI			
Team work	100%	60%	80%	80%	70%	70%		80%			
Project management	100%		80%	70%	100%	70%	90%				
Systemic thinking		70%	50%	60%	70%		100%	60%			
Benchmarking	100%		60%		90%	60%	90%				
CRM		60%		70%	70%	60%		60%			
Coaching				60%		60%	80%				
MBC							80%				
Knowledge management					70%						
Performance management						60%					
Mentoring						60%					

Source: self-elaboration according to Hudec, M. (2011). *Moderné trendy v manažmente a ich využívanie v podnikoch na Slovensku*. [dissertation thesis]. Bratislava: University of Economics in Bratislava. pp. 134-139.

Based on the data of the table four it is evident, that despite the former fact when the *outsourcing* was used by the enterprises undertaking in all segments with the exception Building Industry, it didn't reach the top ten of the most used managerial tools among the enterprises in Slovakia during the 2009 and 2010 year. This fact stands in opposite to the

results of the worldwide survey of the Bain & Company, where the *outsourcing* reached the top ten every year of the survey period from 2000 to 2014 year.

2.4 Outsourcing in Slovakia in 2016

The survey similar that from the year 2011 is in progress at the Faculty of Business Economics of the University of Economics in Bratislava within the VEGA project No. 1/0316/14 also in the present. The main goal of it is the analysis of the use of modern trends in the management of the enterprises in Slovakia with regard to the methods and techniques applied in execution of managerial functions, the frequency and assumes of their applying as well as their impact on enterprise performance.

The survey started in April 2016 and at the first round 100 respondents have been requested. The survey sample was defined by random sampling. For the selection of the survey sample the ORBIS database was used. It is the worldwide database of business subjects from which the enterprises registered in business register of the Slovak Republic were determined. Subsequently the database was divided in accordance with the spatial classification of the Slovak Republic and then was determined the database of ten enterprises of single districts by random sampling. Mainly the enterprises with the internet contact were determined, for the simple and express communication.

To this very day we got back 42 completely fulfilled questionnaires of the 100 summary addressed enterprises, that means 42 percentage fruitfulness. With regard to the complexity of the questionnaire it was needed to engage into the survey in the first place middle or top management of the enterprises, with the general view on functioning of the enterprise.

From the overall number of received answers there were 5 enterprises owned by state what means 11,63 percentage of the answers, one enterprise (2,33%) of the mixed ownership, and 86,04 percentage of private enterprises that means 37 companies.

With regard to the share of the capital, there were 27,8 percentages of the enterprises with 100% foreign share, 11,1% were the mixed enterprises with majority of the foreign share, 8,3% were the enterprises with majority of the domestic share, and 52,8 percentages the enterprises with 100% share of the Slovak capital.

With regard to the size of the enterprise the survey sample included 16 large enterprises that means 37,2 percentages, 8 middle-sized enterprises (18,6%), 11 small enterprises (25,6%) and 8 micro enterprises that means 18,6 percentages.

Based on the legal form of the entrepreneurship there were 17 joint-stock companies that means 39,5%, then 25 limited companies (58,1%) and 1 enterprise with another legal form of the entrepreneurship (2, 3%).

The survey watches the using of the 13 managerial tools (as they are displayed at the table below) in the management of the Slovak enterprises. The enterprises have had an opportunity to answer, if they know given managerial tool or do not know. Further, the question has been structured in the sense, that the enterprises know given tool, but they do not use it in their management. The third option has been to specify the areas of the management, in which the enterprises use given managerial tools. The results gathered by the survey are displayed in the Table 5.

Table 5Utilization of the managerial tools in the enterprises in Slovakia

Monagowal to al	Segment*						
Managerial tool	T&S	M	IP	A&SS	H&SA	W&R	
Management by Objectives	X		X	X		X	
Just-in-Time		X	X	X	X	X	
Outsourcing	X	X	X	X	X	X	
Managarial tool			Seg	gment*			
Managerial tool	T&S	M	IP	A&SS	H&SA	W&R	
Total Quality Management	X	X	X	X		X	
Facility Management	X		X	X		X	
Project Management	X	X	X	X		X	
Six Sigma		X	X	X		X	
Management by Competencies	X		X	X		X	
Knowledge Management	X	X	X	X		X	
Coaching	X	X	X	X	X	X	
360 Degree Feedback			X	X		X	
Management by Wandering Around	X	X	X	X		X	
Job Shadowing			X	X		X	

Source: self-elaboration by the Author of the paper

Table 5Utilization of the managerial tools in the enterprises in Slovakia - continuation

Managarial to al	Segment*							
Managerial tool	I&C	BI	SEGS	REA	AF&F	FA	F&CA	
Management by Objectives			X	X	X		X	
Just-in-Time			X	X			X	
Outsourcing	X	X	X	X		X	X	
TQM			X	X	X			
Facility Management					X		X	
Project Management	X	X	X	X	X	X	X	
Six Sigma			X				X	
Management by Competencies			X	X	X		X	
Knowledge Management							X	
Coaching			X	X		X	X	
360 Degree Feedback			X				X	
Management by Wandering Around								
Job Shadowing							X	

Source: self-elaboration by the Author of the paper

*T&S – Transport and Storage

M - Mining

IP – Industrial production

H&SA – Health and Social Aid

SEGS – Supply Electric, Gas and Steam

A&SS – Administrative and Supporting

Services

BI – Building Industry

REA – Real Estate Activities

AF&F – Agricultural, Forestry and Fishing

W&R- Wholesale and Retail Business

FA – Further Activities

I&C – Information and Communication

F&CA – Financial and Consulting

Activities

The data at the table above show, that the *outsourcing* is used by the enterprises undertaking in almost all segments. The only one exemption when the enterprises do not use this managerial tool in their management is the segment of the Agricultural, Forestry and Fishing.

The using of the managerial tools by the enterprises in Slovakia summary, without the classification is digestedly showed at the Table 6.

Table 6Summary using of the managerial tools by the enterprises in Slovakia

Summary using of the manageria	Given tool is using at least in one of the management areas				
Managerial tool	Number of enterprises	%			
Management by Objectives	15	35,7			
Just-in-Time	19	45,2			
Outsourcing	32	76,2			
TQM	20	47,6			
Facility Management	13	31,0			
Project Management	34	81,0			
Six Sigma	8	19,0			
Management by Competencies	19	45,2			
Knowledge Management	19	45,2			
Coaching	29	69,0			
360 Degree Feedback	15	35,7			
Management by Wandering Around	8	19,0			
Job Shadowing	4	9,5			

Source: self-elaboration by the Author of the paper

As we can see according to data in the table, the most used managerial tool of the survey sample among the enterprises in Slovakia is *Project Management*, that is used by 81,0 percentages of the respondents which absolute means 34 enterprises. The second most used managerial tool of the survey sample among the respondents is *outsourcing*, that is used by 32 respondents (76,2%). The third most used managerial tool of the survey sample is *Coaching* with 69,0 percentages of using.

3. Conclusions and policy implications

At the present time the managers are still subject to more complicated technological changes and economical turbulences. These circumstances create for them growing challenges and at the same time the need to find the right managerial tools that can allow them to achieve these challenges. These facts create the press to the managers more than ever to choose from many different options the right managerial tool for their enterprise. It is important to choose the tools that can help them in the best way to create business decisions leading to better processes, products and services as well as better performance and requested profit.

Based on the worldwide survey realized by Bain & Company the one of such managerial tools is *outsourcing*. According to the results achieved among 13,000 respondents from more than 70 countries in the whole world, *outsourcing* reached the TOP 10 of the most used managerial tools in every of the five rounds of the survey realized from the 2000 up to 2014 year. The best place it reached in the 2000 year, when it was the fourth most used managerial tool among the enterprises in the world.

The similar survey realized in the conditions of the Slovak Republic in 2009 and 2010 year among the 227 respondents came to the knowledge, that if the respondents are classified according to segment they are undertaking, *outsourcing* is used by enterprises in seven of eight segments at all, classified according to SK NACE. The only one segment where the *outsourcing* was not used by the enterprises is "Building Industry." Further survey focused on the same topic and realized in Slovakia in 2016 year showed, that *outsourcing* is used in the management of enterprises undertaking in 12 segments, including the "Building Industry," of the survey sample containing 13 segments. The only one segment classified according to SK NACE methodology, where the *outsourcing* was not used by the enterprises in the 2016 year is "Agricultural, Forestry and Fishing."

Based on the results of these surveys it is possible to observe, that outsourcing belongs to managerial tools, that are used in the management of the enterprises in the world and in Slovakia in significant extend. Any differences it is possible to observe in utilization of this managerial tool at time. While in the world the outsourcing is intensively used by the enterprises during the substantial time period (since the 2000 year), in Slovakia it is possible to observe significant change in utilization of that managerial tool only in last time period, from 2010 to 2016.

With regard to the intensity of the outsourcing utilization among the enterprises, based on the results of the surveys mentioned above it is obvious that outsourcing belongs to TOP 10 managerial tools in the world within the every realized survey. On the contrary, in Slovakia the situation is slightly more different. While, based on the results of the 2010 survey outsourcing didn't reach the TOP 10 managerial tools, the results of the 2016 survey shows that outsourcing is the second most used managerial tool in the management of the enterprises.

Comparison of the results of three mutually independent surveys shows, that outsourcing represents one of the significant managerial tools that are applied in the management of the enterprises in the world and in Slovakia, as well.

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Economic and Mathematical Models of Inventory Analysis with Shortages and Penal Sanctions Proportional to Waiting Time

Oleksandr Nestorenko

Berdyansk Institute of State and Municipal Management of the Classic Private University

Portova, 3D-2

Berdyansk, 71100

Ukraine

E-mail: oleksandr.nestorenko@ukr.net

Jana Péliová

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: jana.peliova@euba.sk

Tetyana Nestorenko

Berdyansk State Pedagogical University Faculty of Economics and Humanities Shmidta, 4 Berdyansk, 71100 Ukraine

E-mail: tetyana.nestorenko@gmail.com

Abstract

Optimal parameters of functioning of a seller's logistic system do not always satisfy requirements of the buyer. A need for a model minimising inventory shortages that are to be compensated often arises. Optimal time of absence of goods delivered ought not to be too long from the perspective of the seller. Penalties charged for waiting for the goods do not compensate the buyer for his loss during this time. Building a model of inventory management with requirements of the buyer allows optimising the logistics processes of the seller.

Keywords: optimisation, economic-mathematical models, logistic processes

JEL classification codes: C61, G31

1. Introduction

Economic and mathematical models of inventory analysis with shortages are a generalization of the model of Wilson (EOQ model). They are divided into two types: with uncompensated and compensated shortages. These models have a common ideology of building and the same mathematical formalization (Eddous – Stensfild, 1997). The dependence of total costs TC for time T on the time of availability of goods t_1 and time between deliveries t_S is:

$$TC(t_1, t_S) = \frac{c_S T}{t_S} + \frac{1}{2} c_1 \mu T \frac{t_1^2}{t_S} + \frac{1}{2} c_2 \mu T \frac{(t_S - t_1)}{t_S}, \tag{1}$$

where c_s – delivery charges of one consignment, c_1 – cost of storage of one goods' unit, c_2 – penalties from the emergence of a unit of goods' shortage, μ – daily demand.

The differences in these models are in understanding the penalties for shortages.

In the case of uncompensated shortages under penalties the entire amount of the money which was not received from the sale of units of goods is meant, i.e. the goods are purchased at a price p, in case of their presence are sold at a price (1 + R)p, in case of the absence of goods – the non-receipt amount is $c_2 = Rp$.

In a situation with the compensated shortage under penalties the fee for waiting goods (discount) is meant, i.e. goods are purchased at a price p, in case of their presence are sold at price (1+R)p, in case of their absence are sold at the time of the goods' delivery at the price $(1+R_1-r_1t_2)p$, i.e. the discount is $c_2=(R-R_1+r_1t_2)p$ (t_2 – absence of goods in stock, r_1 – percent discount for each day of goods waiting).

The analysis of literary sources on the topic of "Inventory Analysis" has determined the problem: in the optimization of real logistic processes the models of inventory control with shortages are relatively seldom used, as the simulation results differ significantly from the results obtained in practice, recommendations for management decisions grounded by these models, often contradict the logic of economic processes. Therefore, these models are mostly regarded as theoretical and inconvenient to practical activities.

In the specialized literature there are some explanations for this problem. So in works (Tektov, 2003; Sterligova, 2005) the main causes of this problem are considered:

the models of inventory management simplistically describe the real economic processes and do not take into account many of the factors influencing them;

when using the models in practice, their parameters are replaced by estimates, which can differ significantly from their values.

The combination of these and other reasons, according to experts, is the cause for the differences between the theoretical and practical results in inventory management.

Some researchers have remarks to the process of constructing economic and mathematical models of inventory analysis:

in the models the sums of money belonging to different moments of time are not given to a single point (Brodetskiy, 2007; Slesarenko – Nestorenko, 2014);

in the model with uncompensated shortages, the shortages must be calculated as the product of the daily demand during the absence of the product μt_2 , but not cumulatively as in $(1) \frac{1}{2} \mu t_2^2$ (Nestorenko, 2014);

in the model with compensated shortages in the case of a decision about the discount that does not depend on the waiting time, the size of the shortages should also be calculated as the product of the daily demand during the absence of the product, the cumulative approach is used in the case of a decision on the discount amount as payment for the expectation of the product for one day (Nestorenko, 2014).

Models of inventory control with shortages (Eddous – Stensfild, 1997) allow optimizing the logistics processes of the seller. However, they do not take into account the requirements of buyers. Quite often, the optimal parameters of the logistic flows of the seller are unacceptable to the buyer.

The construction of economic and mathematical models of inventory management with consideration of the mentioned observations will improve the adequacy and increase the effectiveness of their practical application.

1.1 Model of inventory control with shortages and with proportional to waiting time the penal sanctions without taking into account the requirements of buyers

Taking into account the comments to the building process, the model of inventory management with uncompensated shortages has the form (Nestorenko, 2014):

$$PR(t_1, t_S) = \left(\frac{(1+R)p\mu}{\ln(1+r)}((1+r)^{t_1} - 1) - (c_S + p\mu t_1)(1+r)^{t_1}\right) \frac{(1+r)^T - 1}{(1+r)^{t_S} - 1},\tag{2}$$

where $PR(t_1, t_S)$ – the profit of the seller for the period T, r – the relative interest rate per day.

Function (2) reaches its maximum provided that $t_1 = t_S = t_{SW}$, where t_{SW} is the optimal value defined by the formula of Wilson:

$$t_{SW} = \sqrt{\frac{2c_s}{rp\mu}}. (3)$$

So for the seller the work with uncompensated shortages is economically inefficient. In this case the buyer does not have a question about waiting for the product.

Taking into account the comments to the building process, the model of inventory control with compensated shortage and with proportional to waiting time the penal sanctions has the form:

$$PR(t_1, t_S) = \left(\frac{(1+R)p\mu}{r} \left((1+r)^{t_1} - 1 \right) - \left(c_S + \left(1 + R_1 + \frac{1}{2}r_1 \right) p\mu t_1 - \left(R_1 + \frac{1}{2}r_1 \right) p\mu t_S - \frac{1}{2}r_1 p\mu (t_S - t_1)^2 \right) (1+r)^{t_1} \right) \frac{((1+r)^T - 1)}{(1+r)^{t_S} - 1}$$

$$(4)$$

When $R - R_1 + \frac{1}{2}r_1 \ge (1+r)^{t_{SW}} - 1$ the function (4) reaches a maximum value at $t_1 = t_S = t_{SW}$, $t_2 = 0$, i.e. the shortages are not allowed.

Otherwise, there exists an optimal solution allowing working with the compensated shortages.

$$t_{20} = t_{SW} \frac{\sqrt{1 + \frac{1 - A^2}{B}} - A}{1 + B}, \ t_{10} = t_{SW} \frac{B\sqrt{1 + \frac{1 - A^2}{B}} + A}{1 + B}, \ t_{SW} = t_{SW} \sqrt{1 + \frac{1 - A^2}{B}},$$
 (5)

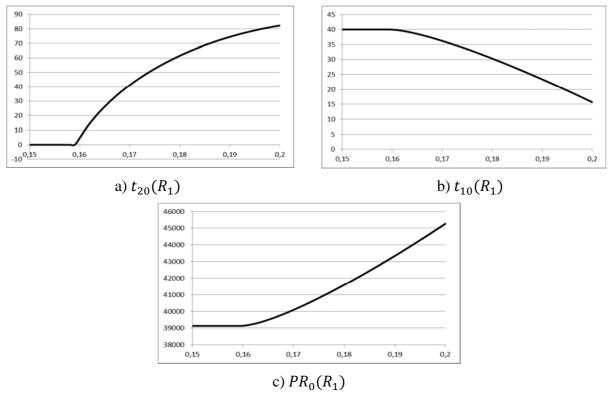
where
$$A = \frac{1}{z_W}(R - R_1 - \frac{1}{2}z_W^2)$$
, $B = R_1 + \frac{r_1}{r} - \frac{1}{2}r_1$ $z_W = \ln(1+r)t_{SW}$.

In this case, the seller receives the maximum profit, equal to:

$$PR_0 = PR(t_{10}) = \frac{((1+r)^T - 1)p\mu}{r} (R - ((1+r)^{t_{10}} - 1)).$$
(6)

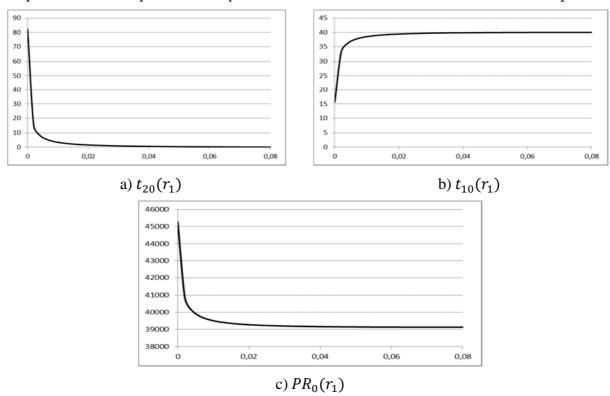
Let us consider the dependence of the optimal model parameters on the size of the discounts (Figure 1, Figure 2, Figure 3).

Figure 1 Dependence of the optimal model parameters on the size of the discount for a fixed amount of the daily discount r_1



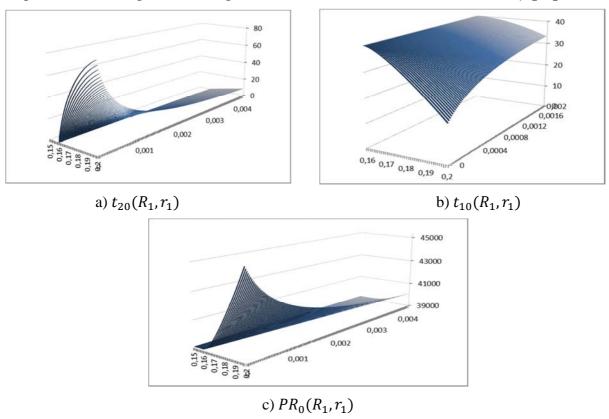
Source: graphical presentation of the models in the Chapter 1.1 made by the Authors of the paper

Figure 2 Dependence of the optimal model parameters on the size of the discount for a fixed R_1



Source: graphical presentation of the models in the Chapter 1.1 made by the Authors of the paper

Figure 3 Dependence of the optimal model parameters on the size of the discount for all (R_1, r_1)



Source: graphical presentation of the models in the Chapter 1.1 made by the Authors of the paper

2. Model of inventory management with the shortages, taking into account the requirements of buyers

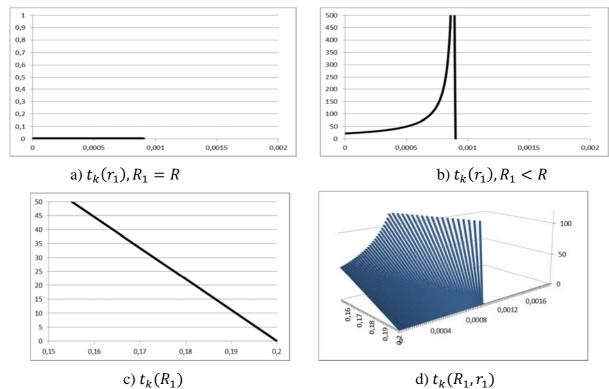
The period of goods' absence may be large enough, which will lead to the failure of the buyer to expect the product at a proposed discount. In (Péliová – Nestorenko, 2015) the terms of decision-making on purchase of the goods by the customer are defined. If the customer has decided to buy, he will agree to expect the goods at time t_k under the condition of exceeding the size of the discount over losses (lost profit) from the absence of product during this time. This condition is equivalent to the following:

$$t_k \le \frac{(R - R_1)p}{K - (1 + R)r_k p - r_1 p} \tag{7}$$

where K – losses (lost profit) from the absence of goods for the day, r_k – the relative interest rate a day for the buyer.

Figure 4 shows dependences of waiting time for the buyer on the discount parameters.

Figure 4
Dependence of waiting time for the buyer on the discount parameters



Source: graphical presentation of the models in the Chapter 2 made by the Authors of the paper

In the Figure 5, Figure 6 and Figure 7 dependences of the optimal time for the absence of product t_2 from the solution (5), and the maximum waiting time of a customer t_k from inequality (7), on the size of discounts at different (R_1, r_1) are compared.

If the optimal time for the absence of product t_{20} is smaller than the maximum waiting time of the client t_k , then the optimal solution is t_{10} , t_{20} , which is found in formulas (5). The maximum profit is calculated according to the formula (6).

If the optimal time for the absence of product t_2 is greater than the maximum time of the client's waiting t_k , then the optimal time of the product's absence will be equal to the maximum waiting time of the client $t_{20} = t_k$, and the optimal time of availability of goods in stock t_{10} is found in the task of maximizing the profit function (8) (Figure 7).

$$PR(t_1) = \left(\frac{(1+R)p\mu}{r}\left((1+r)^{t_1} - 1\right) - \left(c_S + \left(1 + R_1 + \frac{1}{2}r_1\right)p\mu t_1 - \left(R_1 + \frac{1}{2}r_1\right)p\mu(t_1 + t_k) - \frac{1}{2}r_1p\mu t_k^2\right)(1+r)^{t_1}\right)\frac{((1+r)^T - 1)}{(1+r)^{t_1+t_k} - 1}.$$
(8)

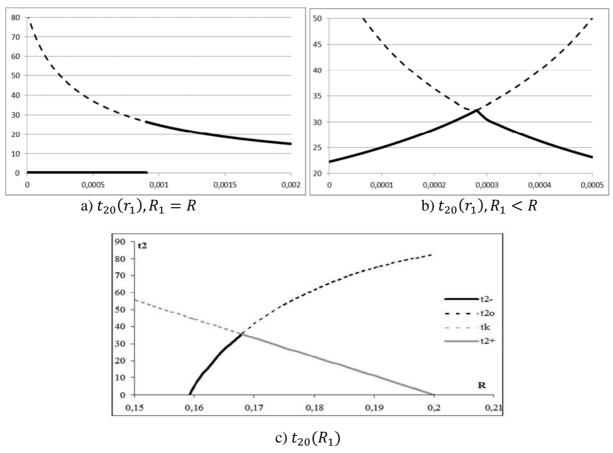
The optimum time of goods' availability in stock is:

$$t_{10} = \sqrt{\frac{2(R - R_1 - \frac{1}{2}r_1)}{r}} t_k + \left(1 + R - \frac{r_1}{r}\right) t_k^2 + t_W^2 - t_k \tag{9}$$

The maximum profit will be:

$$PR_0 = PR(t_{10}) = \frac{((1+r)^T - 1)p\mu}{\ln(1+r)} (R - ((1+r)^{t_{10}} - 1)).$$
 (10)

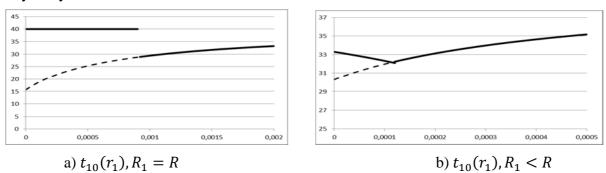
Figure 5 Determination of the optimal model parameter t_{20} on the size of the discount in the "seller-buyer" system

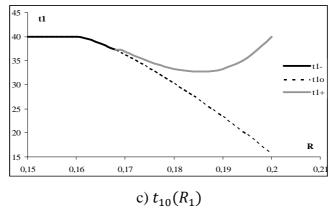


Source: graphical presentation of the models in the Chapter 2 made by the Authors of the paper

Figure 6

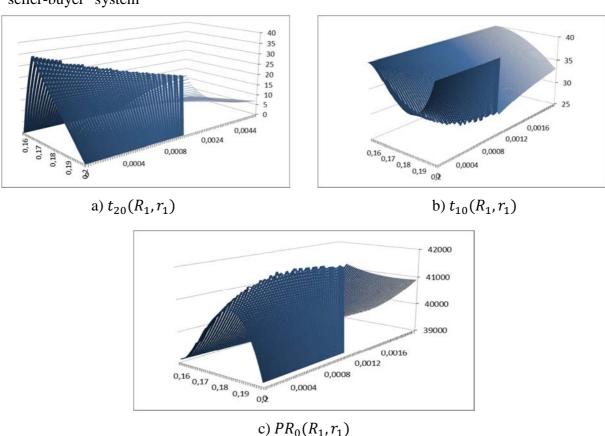
Determination of the optimal model parameter t_{10} on the size of the discount in the "seller-buyer" system





Source: graphical presentation of the models in the Chapter 2 made by the Authors of the paper

Figure 7 Dependence of the optimal model parameters on the size of the discount for all (R_1, r_1) in the "seller-buyer" system



Source: graphical presentation of the models in the Chapter 2 made by the Authors of the paper

Thus, when making policy decisions about a discount for the waiting of the product, the optimal parameters of the logistic process are determined.

3. Conclusions and policy implications

Built economic and mathematical models of inventory management with shortages with independent of waiting time penalties let determine the best parameters of the logistic system

with various combinations of restrictions for both a seller and a buyer. This leads to the increase of their adequacy and effectiveness of the practical application.

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Sustainability in the Steel Industry

Zuzana Okasová

University of Economics in Bratislava Faculty of Commerce Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: zuzana.okasova@gmail.com

Abstract

Environmental and social variables are increasingly taken seriously in a business strategy design. Appearance and development of concepts such as sustainable development, ecoefficiency and triple bottom, and their general acceptance bring about a substantial change in the weight of certain environmental variables in the business context. The main objective of this paper is to analyse the level of sustainability of industry, particularly the steel industry. The scientific methods applied were analysis, synthesis and analogy. Main contributions of this paper include some of the key elements, which well characterise sustainable development, its objectives and connection with practice. The paper, moreover, presents integration of social and environmental goals into the steel industry framework.

Keywords: sustainability, steel, Sustainable Development Goals

JEL classification code: Q01

1. Introduction

In its broadest sense, the strategy for sustainable development aims to promote harmony among environmental, social and economic dimension. The steel industry is creating technologies and solutions that meet society's changing needs, drive economic growth, support environmental responsibility and contribute to millions of livelihoods in its communities. The steel industry is one of the few industries that is integrating sustainability into their processes in a global scale. The steel industry has recognized the need for measuring penetration of the sustainability. That is why a set of eight indicators of sustainable development where created. They are in line with the problems highlighted in the policy of sustainable development.

2. Sustainable development

According to Brundtland Report (1987), we can define the sustainability, or sustainable development, as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

It consists of two key concepts (Report of the World Commission on Environment and Development):

- the concept of "needs", in particular the essential needs of the world's poor, to which overriding priority should be given;
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future as is in the *Business strategies for sustainable development* (International Institute for Sustainable Development, 1992). A sustainable enterprise is one that contributes to sustainable development by delivering simultaneously economic, social, and environmental benefits, which are also known as triple bottom line. The triple bottom line dimensions are also commonly called the three Ps, what means people, planet and profits. We will refer to these as the 3Ps. Profit measures profit and loss account. People account defines how socially responsible an organisation has been throughout its operations. And company's planet account is a measure of how environmentally responsible it has been.

Figure 1 Triple bottom line



Source: JAIN, A. (2015). *What is Sustainable Development? Definition and Examples*. [Online]. Available at the URL: http://www.7continents5oceans.com/what-is-sustainable-development-definition-and-examples. [Accessed 07.02.2017].

2.1 Goals of sustainable development

The Sustainable Development Goals, officially known as *Transforming our world: the 2030 Agenda for Sustainable Development* is a set of seventeen aspirational Global Goals. Each goal has specific targets to be achieved over the next 15 years. For the goals to be reached, everyone needs to do their part: governments, the private sector, civil society and people. Spearheaded by the United Nations, through a deliberative process involving its 194 Member States, as well as global civil society, the goals are contained in paragraph 54 United Nations Resolution A/RES/70/1 of 25 September 2015 (United Nations, 2015a).

Figure 2 17 Goals





































Source: United Nations. (2015a). Goals of sustainable development. [Online]. Available at the URL: http://www.un.org/sustainabledevelopment/sustainable-development-goals/. [Accessed 10. 2.2017].

Goal 1: End poverty in all its forms everywhere - Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture - Goal 3: Ensure healthy lives and promote well-being for all at all ages - Goal 4: Ensure inclusive and quality education for all and promote lifelong learning - Goal 5: Achieve gender equality and empower all women and girls - Goal 6: Ensure access to water and sanitation for all - Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all - Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all - Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation - Goal 10: Reduce inequality within and among countries - Goal 11: Make cities inclusive, safe, resilient and sustainable - Goal 12: Ensure sustainable consumption and production patterns - Goal 13: Take urgent action to combat climate change and its impacts - Goal 14: Conserve and sustainably use the oceans, seas and marine resources - Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss - Goal 16: Promote just, peaceful and inclusive societies - Goal 17: Revitalize the global partnership for sustainable development (United Nations, 2015a).

3. Sustainable steel

The steel industry is creating technologies and solutions that meet society's changing needs, driving economic growth, support environmental responsibility and contribute to millions of livelihoods in its communities - and will continue to do so in the future. The members of the World Steel Association are committed to a vision of steel as a valued foundation for a sustainable world.

The steel industry's sustainability principles are strongly aligned with the 17 United Nations Sustainable Development Goals set out in 2015.

Table 1The steel industry's sustainability principles

7 steel industry's sustainability principles	contribute directly and indirectly to the UN Sustainable Development Goals
Safety and health = well-being of employees and provide a safe and healthy working environment	3 Good health and well-being - 8 Decent work - 12 Responsible consumption and production
Value for stakeholders = to operate business efficiently and in a financially sustainable way, to supply steel products and solutions that satisfy customers' needs and provide value to stakeholders	3 Good health and well-being – 4 Quality education – 8 Decent work – 9 Industry, innovation and infrastructure – 10 Reduced inequalities – 11 Sustainable cities and communities – 17 Partnerships for goals
Environmental protection = to optimize the eco- efficiency of products throughout their life cycle and to promote the recovery, reuse and recycling of steel	6 Clean water and sanitation – 7 Affordable and clean energy – 12 Responsible consumption and production – 13 Climate action – 14 Life below water – 15 Life on land
Disclosure and transparency = to build and share knowledge of sustainability through open and active communications and to help others in the supply chain to implement sustainable practices	8 Decent work – 12 Responsible consumption and production – 17 Partnerships for goals
Local communities = to promote values and initiatives that show respect for the people and communities associated with business	1 No poverty – 2 Zero hunger – 3 Good health and well-being – 4 Quality education – 5 Gender equality – 6 Clean water and sanitation – 10 Reduced inequalities
Ethical standards = to conduct business with high ethical standards in dealings with employees, customers, suppliers and the community.	12 Responsible consumption and production – 16 Peace justice and strong institutions
Stakeholder engagement = to engage stakeholders and independent third parties in constructive dialogue to help fulfil sustainable development commitments.	8 Decent work – 12 Responsible consumption and production

Source: World Steel Association. (2016). Sustainable steel – Policy and indicators 2016. ISBN 978-2-930069-88-3.

The steel industry recognized the need for a systematic method to measure and report on its sustainable development performance. So, World Steel Association established a set of sustainability indicators that were introduced in 2003. The steel companies report on 8 sustainability indicators every year. The indicators are aligned to the principles underlined in the steel industry sustainable development policy and to the UN Sustainable Development Goals. Reporting is voluntary.

3.1 Environmental sustainability

Climate change is the biggest issue for the steel industry in the 21st century. Environmental sustainability means taking responsible decisions and finding innovative ways that help to mitigate negative impacts and enhance positive impacts on the environment.

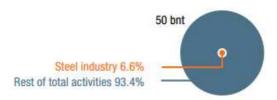
Efficient use of resources, re-use and recycling are imperatives for sustainable development. For the steel industry, the impact of steel during the entire life cycle of products, the use of by-products, recycling, energy and water management are important

focus areas. Environmental sustainability is also related to the development of new products and technologies, which in the long-term will provide clear and lasting positive benefits for the environment including society and businesses.

Greenhouse Gas (GHG) Emissions

Reducing GHG emissions in steelmaking must be tackled on a global level. Making the substantial CO₂ reductions to meet requirements will need technology transfer, collaboration and breakthrough technologies. Steel products also play an important role in a low carbon economy due to their long life cycle, 100% recyclability, and innovative qualities.

Figure 3
World GHG emissions 2014



On average, 1.9 tonnes of CO₂ are emitted for every tonne of steel produced.

Source: IEA. (2015). CO2 Emissions From Fuel Combustion Highlights 2015. [Online]. Available at the URL: https://www.iea.org/publications/freepublications/publication/CO2EmissionsFromFuelCombustionHighlights2 015.pdf>. [Accessed 1. 2.2017]; IEA. (2014). CO2 Emissions From Fuel Combustion Highlights 2014. [Online]. Available at the URL: https://www.connaissancedesenergies.org/sites/default/files/pdf-actualites/co2_emissions_from_fuel_combustion_2014.pdf>. [Accessed 1. 2.2017].

Energy intensity

Steel production is energy-intensive. The efficient use of energy has always been one of the steel industry's key priorities. Cost is a key incentive for this, considering that energy purchases account for 20-40% in basic steel production. The steel industry has made significant reductions in energy consumption in the past decades resulting in benefits to the environment while ensuring economic competitiveness. One study estimates that steel companies have cut their energy consumption per ton of steel produced by 60% since 1960. While existing production technologies are already very efficient, every steel company is at a different point of maturity and development.

Material efficiency

The recovery and use of by-products within and outside the steel industry combined with the responsible management of natural resources contribute to material efficiency and help to prevent waste. The goal is zero waste.

The sale of by-products is also economically sustainable. It generates revenue for steel producers and forms the base of a lucrative worldwide industry. Some companies report a by-products utilization and recycling rate as high as 99%.

Environmental Management Systems (EMS)

An environmental management system enables an organization to identify, monitor and control the environmental aspects of its business. It is part of a company's overall management system. EMS helps a company to understand how its activities may affect the environment and to know what action to take to safely prevent and minimize impacts.

EMS provides a framework for managing compliance and identifying opportunities for improvement. ISO 14001 and EMAS (EU Eco-Management and Audit Scheme) are

international environmental management standards to which manufacturing sites can be certified. Some companies favour suppliers with a certified EMS.

It should make employees accountable for their environmental performance. So, we can see 11.5% increasing of employees and contractors working in EMS-registered production facilities since 2005.

3.2 Social sustainability

The steel industry is committed to the goal of an injury-free and healthy workplace. All injuries and work-related illnesses can and must be prevented. Also, as part of its social responsibility work, the steel industry provides resources for the education of employees and the public about steels and the production of steels. Steel producers' invest in local communities also support infrastructure and various health-improving initiatives, and take care about the social implications of steel products in society.

Lost time injury frequency rate

Steel industry employs millions of people. Nothing is more important than the safety and health of the people who work in the steel industry. Employee health and safety is fundamental to sustainability. The steel industry is committed to complete the goal of an injury-free, illness-free and healthy workplace, and believes that all injuries and work-related illness can and must be prevented. We can see the lost time injury frequency rate has improved significantly 72% since 2005.

Employee training

Human capital is a key asset for all organisations and a main driver for the creation of value. Training programmes aim to expand the knowledge and skills of employees and help them to make the best use of their talents. The steel industry is committed to offer employees the opportunities for further education and development of their skills. Not only is this a way of enhancing quality of work and productivity but it also boosts employee satisfaction. Some steel companies have set up close associations with academic institutions, to provide specialized training to employees. Other runs their own centres.

3.3 Economic sustainability

Sustained economic value creation and distribution is possible when companies innovate and remain competitive in the market. The economic value created by a company changes over time due to technological innovations and improvements in efficiency. In the context of sustainability, companies create economic value, which is captured by stakeholders in various forms. The economic value generated by companies can be distributed to stakeholders and reinvested in the firm.

The steel industry is an important generator of wealth and value in society and distributes the majority of this to a wide range of stakeholders. The remainder is re-invested in the company to promote long-term growth and innovation.

Investment in new processes and products

Investments in modern and advance technologies enable significant improvements in production efficiency, resource use and cost reductions. Companies have to regularly upgrade their physical assets or acquire new ones to remain competitive. The development of the strip casting technology has several advantages over conventional casting. This technology breakthrough was possible because of the strong focus on research and development programs and investments that allowed thinner casting.

The steel industry invests lot of time and resources in developing leaner and cleaner operations and products, especially in terms of energy use and pollution prevention. Several member companies have their own research centres, while others work together with universities and research institutes.

The investment in new processes and products indicator measures the value of investments made on capital expenditure, and research and development expressed as a percentage of revenue. We can see 71% increasing in investment since 2014.

Economic Value Distributed (EVD)

The Economic Value Distributed indicator aims to quantify the value distributed to society by the steel industry. Steel is critical for economic growth. It is important to quantify the value companies create and to establish how much of this wealth is distributed to society. Economic value distributed to society in 2015 was 1068 bn USD.

Table 2 Sustainability indicators

INIGRA	T 10 /	** **********************************	2012	2012	2014
UN SDG	Indicator	Unit	2012	2013	2014
Environme	ntal sustainability				
13	Greenhouse gas emissions	tones CO2 /tone crude steel cast	1,8	1,9	1,9
13	Energy intensity	GJ/t crude steel cast	20,1	20,2	20,3
12	Material efficiency	% of materials converted to products and by-products	96.4	97.5	97.3
12	Environmental management systems (EMS)	% of employees and contractors working in registered production facilities	90.2	94.0	93.6
Social susta	inability				
8	Lost time injury frequency rate	injuries / million hours worked	1,6	1,4	1,2
8	Employee training	training days / employee	7.8	6.4	6.8
Economic s	sustainability				
9	Investment in new processes and products	% of revenue	8.6	7.4	12.6
8	Economic value distributed	% of revenue	96.1	96.6	98.1

Source: World Steel Association. (2016). Sustainable steel – Policy and indicators 2016. ISBN 978-2-930069-88-3.

3. Conclusion

The process of globalization brings still more uncertainty to the process of economic, political, social and environmental changes. Industry can be characterized as one of the biggest polluters of the environment and therefore it is necessary to pass to a form of growth that is eco efficient. Priority of the industry is to find effective methods, procedures and

measures how industry can adapt to the changed conditions. It is essential that sustainability objectives of companies adopted contribute to the UN Sustainable Development Goals.

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China's Regional Multilateralism

Jurai Ondriaš

University of Economics in Bratislava Faculty of International Relations Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: juraj.ondrias@euba.sk

Abstract

The topic of this paper is the multilateral approach in the foreign policy of the People's Republic of China (PRC) towards various regions of the world, with an emphasis on the region of Southeast Asia. The goal is to ascertain whether multilateralism fulfils the diplomatic objectives of the PRC, for which it was adopted. The first part of the paper describes the ascent of multilateralism (ML) in the diplomacy of the PRC and mentions several milestones in its development. The second part of the text briefly details a few examples of multilateral cooperation that the PRC initiated or takes part in, in various regions of the world. The paper is written from the perspective of the realist school of international relations, which views states as unitary actors. Information was obtained mainly through the study of online scientific journals.

Keywords: multilateralism, China, regionalism

JEL classification codes: F50, F53

1. Introduction

The aim of this paper is to present the multilateralism or multilateral (ML) initiatives of the diplomacy of the People's Republic of China (PRC or "China") in various regions around the world, with a focus on Southeast Asia (SEA). Its purpose is to ascertain if the multilateral approach fulfils the goals of Chinese foreign policy that this approach was meant to address. The rise of China since the late 1970s led to worries among neighbouring countries that China might use its newfound economic and political power to revise the regional (or even the global) order to its advantage. This is known as the "China Threat Theory" in the discipline of international relations (Suzuki, 2009). The PRC wanted to allay these fears, as it was conscious of the risk that a coalition of countries hostile to it could pose to its interests. Multilateralism was China's response to these fears, as the PRC wanted to present an image of a cooperative power that does not unilaterally force its will upon others and does not want to upset the current world order (Breslin, 2013). These were the objectives that multilateralism was designed to address. Up to the mid-1990s however, the PRC still preferred a bilateral approach to negotiations with partners, where it could bring to bear its growing economic and political might. The PRC was worried that ML cooperation might lead precisely to an anti-Chinese coalition in ML institutions. ML was mentioned in China's Good Neighbor Policy of the late 1980s (Liu and Tsai, 2014), but only in a vague manner without any specific plans to develop it, whereas bilateralism was named as the favoured approach to resolve regional disputes. The first part of the paper deals with the ascent of the ML approach in the foreign policy of the PRC and touches upon several milestones in its development. The second part of the text briefly explores some examples of ML cooperation that the PRC initiated or participates in, in various regions of the world. The paper is written from the point of view of the realist school of international relations, which considers states to be unitary actors. Therefore, internal policy debates of the political, military or scholarly elites within the PRC will not be considered in this paper. Information was obtained mainly through the study of online scientific journals.

2. The Rise of China's Multilateralism

China first started experimenting seriously with ML cooperation in neighbouring regions in the 1990s. One of these regions was Central Asia (Blank, 2011), where the PRC was attempting a favourable settlement of border disputes with Russia and the newly-independent post-soviet Central Asian republics. These negotiations had been opened with the USSR before its breakup as a bilateral issue between both communist powers, and they originally continued as a series of bilateral negotiations between the PRC on one side and each individual post-soviet state on the other side. Eventually concerned parties opted for a ML approach to the issue and in 1996 they organized themselves into the Shanghai Five, which consisted of the PRC, Russia, Kazakhstan, Kirgizstan and Tajikistan. At the same time, the scope of the forum was expanded from merely settling border disputes to cooperation in security, military, and criminal matters. Cooperation in economic and cultural matters was broached as well. In 2001, Uzbekistan was accepted as the sixth member and the grouping renamed itself into the Shanghai Cooperation Organization (SCO).

The other key region, where the PRC tested the benefits of ML cooperation, was Southeast Asia; specifically cooperation with the Association of South-East Asian Nations, or ASEAN. Relations between the PRC and ASEAN were tense during the Cold War due to ideological reasons, with ASEAN being formed as a counterweight to the spread of communism. But a treaty of nonaggression and peaceful resolution of conflicts was signed in 1976 amid a thaw in relations between the PRC and the non-communist world. Relations began to intensify in the 1990s. In 1991 the minister of foreign affairs of the PRC, Qian Qichen, was invited to a meeting of the foreign affairs ministers of the ASEAN nations. At this meeting, Qian expressed willingness to deepen cooperation between the PRC and ASEAN, which led to the PRC becoming an ASEAN consultative partner the following year (Tai and Soong, 2014a). In 1994, the PRC attained normalized trade relations with ASEAN and was invited to participate in the newly-founded ASEAN Regional Forum (ARF). This was meant to prevent the escalation of territorial disputes and socialize the PRC to ASEAN, its norms, rules and values. The positive experience for the PRC of membership in the ARF, which is based on building consensus and incremental progress, increased China's interest in broader cooperation and decreased its apprehension. The most important milestone was reached in 1996, when the PRC became an ASEAN dialogue partner. In the same year, the foundations were laid for the ASEAN Plus Three (APT) platform. This is a forum composed of ASEAN member states, China, Japan and South Korea with annual summits since 1997.

Another important milestone was the entry of China into the World Trade Organization (WTO) on December 11 2001. This led to the rapid development of Chinese ML in the 21st century (Ikenberry, 2008). This was aided by the SARS pandemic in the years 2002-2003. Tackling the pandemic required the coordination of several affected countries in the region of SEA and the success of this endeavour validated China's faith in the benefits of a ML approach in foreign policy. Another impulse which strengthened Chinese ML engagement was the global recession and financial crisis which started in 2008, which led to the PRC taking a more active part in existing ML institutions and in suggesting ML solutions to global problems. This activity stemmed from the China's belief that the power of the West, and mainly that of the USA, to manage and preserve the global economic and financial architecture was waning. Therefore China should play a more significant role in creating and preserving the global system (Li, 2011a).

3. Examples of Chinese Regional Multilateralism

Since the end of the 1990s, the PRC built a network of ML agreements and platforms, with China itself as the hub. The most significant is probably its cooperation with ASEAN. In the 1990s relations between both parties (China and the ASEAN member states) warmed significantly. The ASEAN members took into account China's importance as a relevant and useful economic partner and stabilizer, and appreciated China's socialization in regional forums. For its part, China overcame its reluctance towards ML (though it still preferred bilateral cooperation at this point in time) and started viewing it as a useful tool for pushing its foreign policy agenda and for persuading other countries of its benevolent intentions. The main pillar of mutual economic relations in this period was the creation of a free trade zone called ACFTA (ASEAN-China Free Trade Area - often abbreviated as CAFTA in Chinese sources). The first official suggestion to create this free trade area came from the prime minister of the PRC Zhu Rongji, at the fourth summit of the APT in 2000. The following year, on November 4th 2001 in Phnom Penh in Cambodia, the agreement to create a free trade zone within ten years was finalized between the PRC and the ASEAN countries. ACFTA came into effect on January 1st 2010 concurrently with free trade agreements between ASEAN and India and South Korea. ACFTA became the largest free trade zone in the world in terms of population, and the third largest in terms of nominal GDP, after the EU and NAFTA. Its impact was seen mostly on the trade between China and the larger ASEAN economies (e.g. Malaysia, Singapore and Thailand), which had a larger potential to increase imports from China.

Another sphere of Chinese ML engagement in SEA is focused on the development of border areas. The countries which border China are among the poorer and more isolated ones of the region (Myanmar, Laos, to a certain extent also Vietnam). These countries were not fully able to make use of the possibilities created by China's rapid economic growth. The regions on the Chinese side of the border belong to the poorer areas of China as well. Therefore, the PRC joined the Greater Mekong Subregional Cooperation Program with the intent to develop these regions. Under this program, the PRC is taking part in the construction of a railroad to connect several countries of SEA and in July 2002 a summit was convened at which the Agreement on Commercial Navigation of the Lancang-Mekong River was signed. These initiatives are meant to shorten the travel time and cut the transportation costs of traded goods, as well as increase the volume of trade and simplify mutual investment (Tai and Soong, 2014a).

One of the oldest and most well-known regional ML institutions that the PRC has created is the Forum on China-Africa Cooperation, or FOCAC (FOCAC, 2016). The beginnings of FOCAC go back to October 1999, when the then-president of the PRC Jiang Zemin suggested ML cooperation to the secretary general of the Organization for African Unity (OAU). The first meeting of the ministers of FOCAC member states, as well as representatives from international and African regional organizations, took place in Beijing in October 2000. This was the first ML undertaking of its kind in the history of the PRC. The result of this meeting was the Beijing Declaration and the Program for China-Africa Cooperation in Economic and Social Development, which defined the Chinese economic and developmental strategy towards Africa while taking into account the interests of African countries. In December of that year the PRC founded an action committee whose role was to monitor the fulfilment of commitments accepted at this first ministerial meeting in October. Among the fulfilled commitments are: the abolition of tariffs on exports from the least developed African countries to the PRC and the founding of the African Human Resources Development Fund in 2002 to help train African workers (Sohn, 2011b). Also, part of the debt of 31 African

countries towards the PRC amounting to a value of 1.27 billion USD was cancelled by the PRC.

In August 2005, the PRC suggested that the ministerial meetings be elevated to the status of summits of heads of state and government. The first such summit took place in November 2006 in Beijing, with the participation of foreign affairs ministers and economic ministers. The result of this summit was the declaration of a "new type of strategic partnership" or expansion of cooperation in the UN, WTO and other international organizations. Apart from that, a FOCAC action plan for cooperation in the areas of the economy, science, technology, international relations and social development was adopted. It also cancelled debts of African states at a value of 1.4 billion USD and gave preferential access to the Chinese market to 400 products of African countries (Eisenman, 2012). Then-president Hu Jintao unveiled his plan to create a China-Africa Development Fund (*zhongfei fazhan jijin*), which came to fruition in June of the following year in Beijing (Sohn, 2011b). The deepening cooperation between the PRC and African countries, whether at the ML or bilateral level, led to the spread of the term "Chinafrica" in the previous few years, to describe the closer relationship and increasing ties between the PRC and the African continent.

FOCAC served as a model for the creation of other ML groupings. One of them is the China - Arab Nations Cooperation Forum, or CACF. CACF was created in January 2004 as a platform for the cooperation of the PRC and 22 Arab countries in the realms of politics, the economy, culture, technological exchange, and international relations. The following year, in 2005, The PRC started a human resources training program in the spheres of the economy, energy, telecommunications, and environmental protection. This program trained 2600 people in its first year of existence. Then, in 2008, two more agreements on mutual cooperation were signed, on environmental protection and investment. In the same year, the PRC suggested developing two new avenues of mutual relations, namely interparliamentary and interpersonal cooperation. China also initiated the creation of in China-Caribbean Economy and Trade Cooperation Forum 2004. And in cases when the PRC itself does not initiate the creation of new ML organizations or platforms, it participates in the creation of ML mechanisms between itself and existing international or regional organizations. For example, China signed the Agreement for the Establishment of a Political Consultation and Cooperation Mechanism with the Andean Community in the year 2000. Similar agreements were signed by the PRC with the MERCOSUR bloc and with the Rio Group (forerunner of CELAC, the Community of Latin American and Caribbean States) (Sohn, 2011b).

4. Conclusion

As can be seen from the text of the paper, the PRC has been constructing a web of ML platforms and organizations across the globe, with itself in the centre. The goal of this strategy is to avoid presenting the PRC as a (neo)colonial power that dictates terms to other countries from a position of strength. Rather, it aims to present the PRC as a fellow member of the Global South that deals with other developing countries on an equal footing. The PRC also wants to present itself as a team player that is capable of cooperating with other countries within a regional or global coalition of equals, as opposed to acting unilaterally like the USA or building a sphere of influence among "satellite states" like Russia is accused of doing with the Eurasian Economic Union (EEU or EEAU) or the Collective Security Treaty Organization (CSTO). Multilateralism was therefore meant to mollify countries that could have reason to fear a more powerful China that could potentially show ambition to change the regional or even global balance of power.

The ML approach of the PRC has been largely successful in creating business opportunities in various regions of the world. But more importantly, it has succeeded it its

original goal of preventing the formation of an anti-Chinese coalition. In spite of the continuing growth of China's might in the political-security and economic-financial spheres, there is no successful balancing of China taking place at present. This is important especially in relation to Southeast Asia, where the economic might of the PRC could help fulfil its political and territorial ambitions in the South China Sea. The success of this ML strategy of the PRC will be judged in light of the resolution of the territorial disputes in the region of SEA between the PRC and several of its ASEAN partners. But in the meantime, ML organizations and platforms like ASEAN and FOCAC help in developing trade and investment between the PRC and different regions of the world. Therefore, ML succeeded in fulfilling the objectives for which it was adopted. On a related note, this helps support the thesis that the PRC is not a revisionist power that would want to overthrow a system that helped it become the economic powerhouse that it is today, but rather that it is a status quo power looking to preserve the system with some modifications that would give a fairer share of power to itself and other developing countries.

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Human Capital and Economic Growth of Slovak Cities

Oliver Rafaj

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: oliver.rafaj@gmail.com

Abstract

The aim of this article was to examine the possibility of developing a model of economic growth of Slovak cities with main interest in the role of the human capital factor: a factor of the rate of agglomeration was added to the standard production factors from the model by Gregory N. Mankiw, David Romer and David N. Weil. To identify the suitable size of cities for observation, a harmonised definition of a city, which was developed by the European Commission and the OECD, was used; to examine the roles of each production factor, a panel regression with fixed effects was applied. The observed time period was due to availability of data set on a yearly basis and the examined period was 2001-2015.

Keywords: cities, economic growth, human capital

JEL classification codes: C21, R11

1. Introduction

Nowadays, much attention is focused on the cities, city districts or metropolitan areas because they play a key role in the economy, mainly due to the large concentration of economic actors that are localized in close proximity. They work intensively with each other and carry out various economic activities. According to theories dealing with agglomeration economies (Jacobs, 1970; Marshall 2013), cities are for companies attractive because they provide them with a variety of benefits, such as a large supply of labour, a wide range of specialized suppliers and customers and allow the creation of spillover effects between them. In relation to human capital, cities can both generate and concentrate highly educated people, because they contain educational institutions such as colleges, universities and various other educational organizations. On the other hand, they also enable to acquire ideas, skills and knowledge from different actors who are localized in cities (Moretti, 2004). The phrase human capital is difficult to define because its focus is extensive and its definition if very broad. For example, Theodore W. Schultz (Schultz, 1961) considered human capital as acquired skills and knowledge that make up the gap between skilled and unskilled labour. Jacob Mincer (Mincer, 1981) perceived the human capital not only as the personification of human knowledge, but also as a source of innovation and technological change that drives all the production factors. According to Gary Becker (Becker, 1994), it can be regarded on human capital as a personnel equipment that everyone dispose. For disunity in defining the human capital, there are several methods or approaches of its measurement. Each method has its advantages and disadvantages of using. According to OECD studies (Kwon, 2009; Boarini - d'Ercole - Liu, 2012), the individual measurement methods can be classified into two basic types. One type of measurement is based on the measurement through indicators (i.e. indicators-based measures) and the second type is based on the monetary measurement (monetary-based measures). Frequently used types of methods of measuring human capital in research work are those that are based on indicators.

To quantify the impact of human capital on the local economic growth tried a number of researchers. They tried to do it through constructing econometric models. Among the most significant works dealing with this issue is the one of James E. Rauch (Rauch, 1993), which addresses the impact of human capital on productivity in cities. His model showed that cities with a high concentration of human capital, achieve higher productivity, as demonstrated in higher wages. Similarly, models of other leading economists and geographers have shown the positive impact of the concentration of human capital in cities and their growth. Several studies have shown a positive relationship between increased concentrations of university educated population and an increase in employment and wage levels in cities (Glaeser – Scheinkman – Shleifer, 1995; Eaton – Eckstein, 1997; Shapiro, 2003). No less important role in local growth plays spillovers. From the works of Edward L. Glaeser (Glaeser – Kallas – Scheinkman – Shleifer, 1992; Glaeser – Resseger, 2010) and Curtis Simon (Simon, 1997) it is shown that the spillovers are larger and more intense in those agglomerations where is more human capital concentrated.

Most of the presented works and models are primarily based on data from the United States of America. Therefore, the aim of this article is to examine the possibility of constructing a model of economic growth of Slovak cities. Simultaneously it attempts to find out what is the role of human capital in local economic growth in the Slovak Republic.

2. Methodology

For the needs of constructing a model of economic growth of cities, it is necessary to define the notion of the city. In 2011, the European Commission and the Organization for Economic Cooperation and Development (Dijkstra – Poelman, 2012) created a harmonized definition of the city for member states of the European Union and OECD. The importance of creating a common harmonized definition lies primarily in identifying cities, consisting of the urbanized centres and their functional peripherals, which link the administrative and the operational nature of the city. A significant reason is also in the possibility of comparing data on cities across countries. The basic definition of the city consists following points:

- A city consist of one or more local administrative units (LAU), where most of the population lives in the urban core with at least 50 000 residents. Urbanized core consists of blocks with a minimum density of 1 500 inhabitants per 1 km².
- Peripherals (or surrounding areas) are represented by municipalities, where at least 15 percent of population, regularly commute to the city for work.
- Functional urbanized areas (A functional urban area) consist of the city and its periphery from which residents commute to the city.

For the purpose of this work, the phrase city will correspond to the concept of city based on a harmonized definition created by the European Commission and the OECD, because it captures administrative, functional and economic character of cities. According to the harmonized definition, in Slovakia there are 8 cities. Overview of them offers the Figure 1.

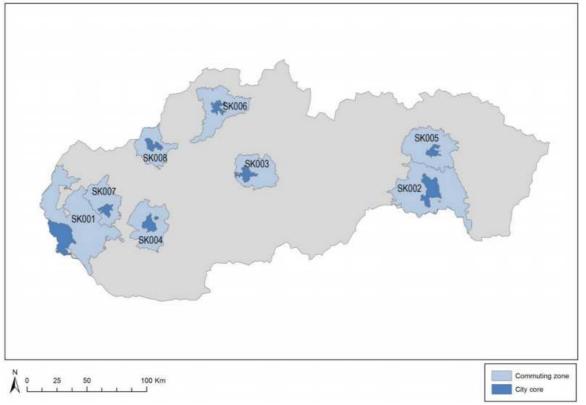


Figure 1
Cities in Slovakia defined by European Commission and OECD

Source: OECD. (2016). *Functional urban areas by country*. [Online]. Available at the URL: http://www.oecd.org/gov/regional-policy/functionalurbanareasbycountry.htm. [Accessed 25.01.2017].

According to the harmonized definition, there are 8 cities in Slovakia. On the basis of harmonized definition and availability of relevant statistics, those cities can match spatial units of districts. According to the territorial division of Slovakia into districts, Bratislava and Košice consist from several districts. Bratislava consists of 5 and Košice of 4 districts. For purposes of this article, districts of Bratislava and Košice were merged into separate units. The object of the research therefore will be a total of 8 districts of Slovak Republic (out of 79), which correspond to the definition of the city developed by European Commission and OECD.

To investigate the stated objectives, it was constructed a simple econometric model that was based on a model by Gregory Mankiw, David Romer and David Weil (Mankiw, Romer, Weil, 1992):

$$Y(t) = K(t)^{\alpha} H(t)^{\beta} (A(t) L(t))^{1-\alpha-\beta}$$
(1)

Into this model, it was added a factor for the rate of agglomeration and to obtain coefficients for each parameter, the formula was adjusted by logarithm:

$$\ln Y(t) = \beta_0 + \beta_1 \ln K(t) + \beta_2 \ln H(t) + \beta_3 \ln L(t) + \beta_4 \ln AR(t) + \varepsilon$$
 (2)

Economic growth as the dependent variable Y was represented in the model by the evolution of the average nominal wage. This variable was used because the Statistical Office of the Slovak Republic does not register data on gross domestic product at the level of

districts. Therefore, it was used a proxy which is standardly used in foreign models, mentioned above. Independent variable L as the factor of labour was represented by the number of employees. Independent variable K as the factor of capital was represented by a number of companies. This indicator was used as a proxy because the Statistical Office of the Slovak Republic does not record investment on the level of districts. The suitability of this indicator comes out from the assumption that more firms localized in a district represent a condition with a higher capital stock in the local market. Factor H as human capital was represented by the number of tertiary (university) educated people. In this model, the factor of technological progress (A) was not included because of the assumption of the same levels of it in investigated cities. And the factor of the rate of agglomeration AR was represented by population density.

Used data come from the Statistical Office of the Slovak Republic, the database DATAcube. (Štatistický úrad SR, 2017). Due to the limited availability of indicators, the observed time period was on yearly basis from 2001 to 2015. Used was a panel regression with fixed effects (came out as a result of Hausman's test). An overview of used variables with their detailed description, method of calculation, data sources and other information is offered in the Table 1.

Table 1Overview of used variables

Variable	Name	Acronym	Formula	Source	Note
Dependent	Wage	lwage	average nominal wage per year	Statistical Office of the Slovak republic	
Independent, factor of Labour	Employ ment	lempl	number of employees per year	Statistical Office of the Slovak republic	Data for the number of employee s is for firms with 20 and more employee s
Independe nt, factor of Capital	Firms	lfirms	number of firms per year	Statistical Office of the Slovak republic	
Independe nt, factor of Human capital	Tertiary educated inhabitan ts	lte	number of teritiary educated inhabitants per yaer	Census 2001 and 2011	Data for the number of tertiary educated inhabitant s between 2001- 2011 and after 2011 was calculated by

					statistical method of interpolati on.
Independe nt, factor of Agglomera tion	Populatio n density	lpd	population density per year	Statistical Office of the Slovak republic	

Source: own elaboration based on Štatistický úrad SR. (2017). Statistical Office of the Slovak Republic. Database DATAcube. [online]. Available at the URL: http://www.statistics.sk. [Accessed 25.01.2017].

Figure 2 provides an overview of the basic statistical characteristics of used indicators. The average value of the dependent variable between 2001 and 2015 was 2.866704, which means, that during the observed period wages in cities increased 2,87 times on average. The maximum value was 3.13724 (Bratislava) and minimum was 2.579406 (Prešov). The average value for the variable representing capital was 3.677842 and the standard deviation was 0.3840917. The stock of capital has increased most in Bratislava (maximum value) and at least in Trnava (minimum value). The minimum value for the indicator of labour was 4.467431 (Trenčín) and the maximum was 5.562373 (Bratislava). The average value was 4.739131. The standard deviation for the independent variable of human capital was 0.2838567 and the average value was 4.413655. The factor of the rate of agglomeration averaged 2.432214, while the minimum was 2.136721 (Banská Bystrica) and the maximum was 3.070097 (Bratislava).

Figure 2
Descriptive statistics of used indicators

Variable	Obs	Mean	Std. Dev.	Min	Max
lwage	120	2.866704	.1285342	2.579406	3.13724
lfirms	120	3.677842	.3840917	3.047275	4.77451
lempl	120	4.739131	.3041366	4.467431	5.562373
lte	120	4.413655	.2838567	4.011063	5.132103
lpd	120	2.432214	.3469953	2.136721	3.070097

Source: own elaboration based on Štatistický úrad SR. (2017). Statistical Office of the Slovak Republic. Database DATAcube. [online]. Available at the URL: http://www.statistics.sk. [Accessed 25.01.2017].

3. Results

The results of the panel regression with fixed effects show that the model of economic growth of Slovak cities is statistically significant because the p-value (F) is less than 0.05 (value of the model is 0). From the data of statistical significance of individual indicators it can be seen that indicators of employment and population density were not statistically significant (p-value of them were greater than 0.05). On the other hand, parameters representing factors of human capital and capital have proved to be statistically significant, because their p-values were less than 0.05 (p-value for the indicator of capital was 0.016 and p-value of the indicator of human capital was 0). From coefficients values it is clear, that only the indicator for population density has a negative impact on the level of wages. This result means, that in cities where the population density is rising, wages are declining. It could be interpreted that in densely populated cities, there is a bigger competition in the labour market,

therefore wages are lower. This result seems to be interesting, because a lot of evidence show that wages are higher in cities (places with higher population density) than in rural areas. But, the indicator of population density was statistically insignificant, therefore the result of this indicator is not important and to confirm this hypothesis it would be needed to use more detailed data for different economic sectors. The obtained statistics of the model also show that the overall explanatory power of the model (R-sq) is 0.5540. This means that this model explains relations between variables only for 55 % and it is missing some other explaining variables. The detailed results of processed panel regression with fixed effects, provides Figure 3.

Figure 3 Results of panel regression with fixed effects

Fixed-effects (within) regression Group variable: code	Number of ohs = Number of groups =	120 8
R-sq: within = 0.9438 between = 0.5187 overall = 0.5540	Obs per group: min = avg = max =	15 15.0 15
corr(u_i, xb)0.8113	F(4,100) - Prob > F -	453.74 0.0000

lwage	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
lfirms	.1747253	.0715964	2.44	0.016	.0328089	.3166418
le mp l	.0021145	.0782589	0.03	0.978	1530083	.1572372
1te	.9773797	.1606799	6.08	0.000	. 6588843	1.295875
1pd	5201424	.5758767	-0.90	0.368	-1.66163	.6213451
_cons	8346481	1.3027	-0.64	0.523	-3.416826	1.74753
sigma u	.1488205					
sigma_c	.02753195					
rho	.96690723	(fraction of variance due to u_i)				
F test that all $u_i=0$: $F(7, 108) = 75.98$ $Prob > F = 0.0000$						

Source: own elaboration based on Štatistický úrad SR. (2017). Statistical Office of the Slovak Republic. Database DATAcube. [online]. Available at the URL: http://www.statistics.sk. [Accessed 25.01.2017].

4. Conclusions

Recent theoretical approaches which explain the local economic growth consider human capital as an important factor. Therefore, the factor of human capital should have a positive impact on economic growth of Slovak cities. From the Figure 3 it can be seen a positive correlation between the level of wages and tertiary educated population. This finding is consistent with studies (Glaeser – Scheinkman – Shleifer, 1995; Eaton – Eckstein, 1997; Shapiro, 2003), which pointed out the positive relation between increasing concentration of highly educated population and rising wages in cities. From the results of panel regression analysis of Slovak cities, it can be said, that the factor of human capital represented by tertiary educated population is statistically significant (p-value less than 0.05). At the same time, it increased its positive effect on the growth of wages (coefficient of used indicator had a positive value, 0.875512). This result can be interpreted that a 1% increase in human capital caused a 0,875512% increase in wages. An interesting finding came out of the negative sign of the indicator of population density. A negative sign indicates that higher population density

reduces the amount of wages. Based on the theories of agglomeration economies (Jacobs, 1970; Marshall, 2013) and studies (Glaeser – Kallas – Scheinkman – Shleifer, 1992; Simon, 1997; Glaeser – Resseger, 2010), which pointed out that spillovers were larger and more intense in those agglomerations in which the human capital was more concentrated, this result was different. But the indicator of population density was insignificant, so there is no breakthrough discovery going on.

The aim of this article was to examine the impact of human capital in economic growth of Slovak cities. In order to achieve the stated objective, it was used a harmonized definition of cities created by European Commission and OECD. Selected were 8 Slovak cities for which was developed a simple econometric model of growth. Through a panel regression it was proved a positive and statistically significant impact of the factor of human capital on the economic growth of cities. The findings in this contribution regarding the positive relation of concentration of human capital and economic growth on the local level are in accordance with claims arising from the models of foreign researchers. However, it is necessary to point out, that in this article was used only a simple model that does not include a number of alternative indicators that are commonly used by foreign authors and in addition it lack the effect of regional specialization. Moreover, this model was based on 120 observations with 5 variables, what can reduce its importance. Finally, to this model lacks qualitative aspects, which would provide some deeper relations between results. However, these restrictions create opportunities for the author to continue in his research activities in this area.

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Care of Employees as a Part of Company's Personnel Policy

Patrik Richnák

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: patrik.richnak@gmail.com

Abstract

Success and competitiveness of a company depend on employee satisfaction and employers themselves are in charge. One of the priorities of each company should be the care of employees, and this should be included among effective tools for obtaining and retaining high-quality and dedicated employees. They form the most dynamic and flexible business factor that is able to adapt and determine the direction of development of the company; therefore, enough time and attention to their personal development and the development of their creativity must be given. Each company must create work and off-the-job conditions for employees that support their performance and increase their skills, abilities, knowledge and create a positive working atmosphere in the workplace. The aim of this article is to analyse care of employees in a selected company in Slovakia based on theoretical knowledge. On the basis of a questionnaire, the survey is to determine what level of care is provided to employees in the company. The contribution of this article is to recommend effective proposals that can improve care for employees in the selected company.

Keywords: employees, care of employees, employee benefits

JEL classification codes: M12, M50

1. Introduction

Care for employees is a current topic in each company because employees are irreplaceable position in the company and help him achieve his goals. Importance of employees lies in their knowledge, acquirements, skills and work experience. For this reason, is necessary, in addition to rewarding in the form salary for their work, paying attention to employees and in their off-the-job conditions. Employees should not consider only as labour, but as a source of success of any business. Each company should recognize of their value and importance because it is the first condition for its success in market conditions. Their involvement in business objectives should not be passive, as this method does not bring a profit, success and vision for the long-term direction.

The way the company implements the care of their employees will be reflected on employee satisfaction, which is affected by their motivation, job performance, loyalty to the company and respect of the undertaking. Companies developing arrangements for the care of the staff is divided into compulsory, contractual and voluntary care. Compulsory care is required by law and its observance is mandatory for each employer. Contractual care is between the employee and the employer and negotiates her prior to beginning work. Voluntary care is a result of each company how valuable their employees and company is willing to motivate them to work activities carried out with higher labour productivity.

2. Personnel policy of company

Dynamic business environment creates pressure on every organisation, while its success depends on mutual connection of material, financial, informational and finally human resources. Material, financial and informational resources are considered to be lifeless resources, however, in order to function correctly and interlink, human resources must be an "accelerator" which activates them. Every organisation should value its employees - people. They are an alive resource, which brings new inventions, methods and procedures (Richnák – Gubová, 2016).

A part of the company policy is personnel policy. We can say that personnel policy is the philosophy of the company, because it expresses values in relation to employees and derived from them principles expected of the manager in implementing personnel actions. We can be understood (Vetráková et al., 2011):

- as a system of fixed principles that managers use to decide in areas relating to work and human resources;
- specific measures that affecting managers influence area of human resources and work, while preserving the effective fulfilment of the tasks and objectives of the company.

At personnel policy, we must differentiate whether it is applied in small, medium or large companies. The individual companies are significant differences. You cannot be applied personnel policy, which is applied in a large enterprise to small companies. Companies between themselves in human resources differ in structure, hierarchy, and the question of human resources management (Cooper – Burke, 2011).

Armstrong (2007) notes, that the personnel policy must be consistent with the corporate culture of the company. Personnel policy can be called as a human resources policy, or the policy of employing people. Personnel policy helps to determine that in the conduct of matters relating to people will be throughout the organization applied an approach that is consistent with company values.

Personnel policy includes the principles of access to the leadership and management of employee that are applicable to companies. Personnel policy reveals the values that company has and which it applies in dealing with people. Personnel policy is structured to help develop coherence, civility and fairness. The aim of personnel policy is also to strengthen the ties between employees together, but also between businesses and workers to create favourable climate in the company. Personnel policy also seeks to break down the various conflicts and promote justice especially when dealing with employees. Personnel policy is sectionalized into personnel actions, which are present in recruitment, selection, training, compensation, evaluation and etc. If the enterprise wants to see on their employee's satisfaction and success, it may be achievable only if it creates and formulates such a staff policy for employees creates a dynamic working environment (Frk et al., 2010).

3. Care for employees

Satisfied, motivated and loyal employees are the source of competitive advantage on the market. Top management often unaware of the opinions of its employees and underestimates the relationship between satisfaction and overall success in the market (Čambalíková, 2014).

Bolek, Kokles and Korček (2016) underline that the organisations are demanding people who handle changing situations, unexpected changes and know how to cope with them

quickly. Business economics is characterised by a large proportion of managers and other employees using information and communication technologies to perform their job tasks.

Each company is conscious the value of their employees. For this reason, is a highly-disputed area of personnel policy just care for employees. The company must create its own concept of care for their employees. Care for employees is one of the most effective tools of production and stabilization of employees in the company. They also care for employees create harmonious relations in the company and affect work performance of employees. In the article introduce views of the author on the definition care for employees.

Noe et al. (2015) point to the fact that the application of benefits for employees represents many decisions that involve a variety of knowledge and at the same time must comply with legal requirements. Determining benefits, the company cares about its employees, giving them except salary offers other advantages. Benefits significantly increase motivation employees and contribute to the reputation of the company.

Kocianová (2010) describes that the development care for employees always changing with regard to the economic and social conditions of historical period and culture. External effects bring on companies about care for employees gradually also higher demands on personnel of employees. Therefore, have begun in companies formed a separate personnel department.

Vetráková et al. (2011) defines care of employees as a systematic procedure based on the acquisition and analysis of information on employees of companies, their needs and development, developing a set of strategic documents and putting them in real life.

According Dvořáková (2007) is care of employees in a company known as a social program. The social program is a document that defines the employer's obligation to care for the social development of employees. It can be formulated by a collective agreement, or only a voluntary agreement. It shall contain, inter alia, the budget financial means for expenses for employee benefits for the calendar year. The social program is part of the personnel policy and of company. The aim is to act to stabilize the employees, their job satisfaction and personal development.

According Koubek (2009) care for employees is important because employers are increasingly aware that their success and competitiveness is critically dependent on employees and their skills, their motivation and work behaviour, their satisfaction and their relationship with the employer and the therefore necessary to pay attention to employees.

3.1 Compulsory care for employees

Compulsory care for employees is determined by the laws, regulations and collective agreements. Compulsory care for employees involves taking care of working hours and working mode, care for the working environment, food for employees and health and safety at work. Implementation of compulsory care for employees is regulated by the State. Observance of compulsory care for employees in Slovakia is developed in the Labour Code (Vetráková et al., 2011).

3.2 Contractual care for employees

Contractual care is defined by collective agreements at company level. Collective agreements are concluded by the employer and the relevant trade union body representing the employees. The aim the contractual care for employees is to agree rules governing the conditions of the relationship between employer and employee. Collective agreement extends the rights of employees beyond the law and through collective agreements employees are

entitled to a more favourable social welfare than the one determined by the Labour Code. The collective agreement provides for example reasonable daily and weekly working hours, weekly relaxation, observance of compulsory annual leave (Koubek, 2009).

3.3 Voluntary care for employees

Voluntary care for employees represents employee benefits. Employee benefits are non-monetary forms of remuneration, are facultative in nature and are provided voluntarily. Employee benefits are social and cultural nature, work nature and positional nature. Social and labour nature, presents a variety of cultural and social events for employees, help with housing for employees, activities for children. Work nature involves education and catering of employees that is beyond the law. Positional nature of employee benefits represents benefits for employees who have the greatest share on the success of the company. They are for example business car, phone, and work placements. The aim of voluntary care for employees is to strengthen stabilize and loyalty of employees to the employer, to increase the attractiveness of the company, to attract new employees to the benefits (Koubek, 2009).

4. Methodology and data

Through a literature search of foreign and domestic publications, scientific journals and articles was conducted analysis of secondary sources. Based on this analysis, we proceeded to the primary survey. He consists of a questionnaire, which focused on production and non-production employees, because we examined care of employees throughout the company. The object of research was the company, which is defined according to a survey from 2016, Trend TOP 200 - the largest non-financial companies in Slovakia into the top ten companies. The aim of article is based on secondary and primary research to analyse the care of employees in selected company in Slovakia.

Next, we in the article used a method of analysis was used in the evaluation of survey questions and in the formulation of the results. When processing data from the primary survey we used mathematical and statistical methods, because we tested hypotheses.

The article focuses on selected test the hypothesis that we have formulated as follows:

 H_0 : The increase in the number of activities and actions within the social program in the company beyond the current settings and motivating employees to work is not statistically significant dependence on the level of significance $\alpha = 0.05$.

 H_1 : The increase in the number of activities and actions within the social program in the company beyond the current settings and motivating employees to work is statistically significant dependence on the level of significance $\alpha = 0.05$.

Calculating the Chi-quadrat test verified the hypothesis function of said variables:

Calculation for chi-quadrat (Pacáková et al., 2015):
$$\chi^2 = \sum \frac{(O-E)^2}{E}$$
 (1)

Chi -quadrat = 23,803

Calculation for degree of freedom
$$Df=(s-1) \cdot (r-1)$$
 (2)

$$Df=(2-1)\cdot(2-1)$$
 (3)

$$Df = 1 (4)$$

p = 0.00000107

The hypothesis was confirmed since the value of p <0.05 and the null hypothesis of independence we disapprove.

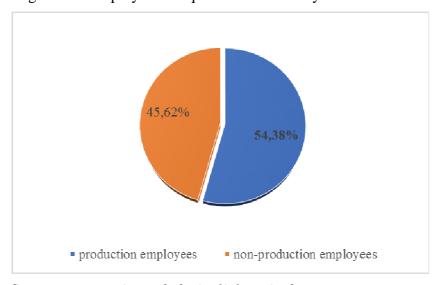
5. Analysis care of employees in selected company

Based on theoretical knowledge from the first part of the article in the next part of the article we write on care of employees in selected enterprises in Slovakia. A part of enterprise's personnel department, which is a driver of business development. It is this department in the company ensures that realized human resources strategy and implements the personnel policy. Based on of processed procedures and plans in the field of human resources, it can make progress in the field of human resources and through them successfully meet its production targets and making a profit.

For personnel policy in the selected company is responsible personnel department. This department provides management and development of people in the company. Personnel department also participates in the personal activities and reinsurance best possible working conditions. Best working conditions enable employees to make best use of their skills and abilities not only in implementing the benefit of companies, but also for their own benefit. In this department works mostly employees who already have previous experience with human resources and with the knowledge of the Labour Code and payroll issues.

Based on the questionnaire survey was to find out staff opinion on social policy and care for employees. The questionnaire posed several questions, but we write only the selected question and their results in the next part of the article. Based on Figure 1 we can see organize of employees who participated in the questionnaire survey. The company is production companies thus survey was included in 54,38 % production employees and 45,62 % non-production employees.

Figure 1
Organize of employees the questionnaire survey



Source: own processing on the basis of information by company

Based on Figure 2 we can see the preferences of employees who participated in the survey and answered the question "How would you have used resources from the Social Fund?" From Figure 2, we see that 42% of employees are mostly interested in relaxation with free entry to the water park, spa, sauna and residence. 39% of employees prefer to purchase consumer goods in the form of free vouchers for example. books, sporting goods. 37% of employees said they would take more cultural opportunities such theatre performances, opera

performances. 31% of employees would accept discounts for summer and winter holidays, because the current offer by company is unsatisfactory. 25% of employees would like to gift vouchers not only at Christmas, but also for birthdays of employee and name days of employee.

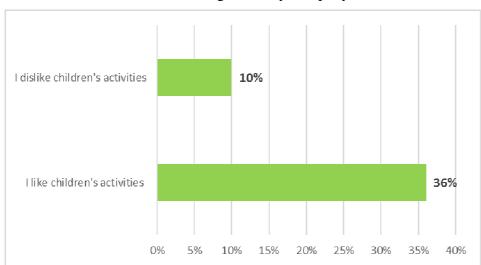
Figure 2
Preferences of employees the questionnaire survey



Source: *own processing on the basis of information by company*

Answers to other question we can be seen in Figure 3. The staff we asked "Do you enjoy children's activities?" 36% of employees do not like children's activities organized by company. The reasons stated that the activities are badly planned and not always and production employees who are at work during the weekend can participate with their children's activities. Only 10% of employees do like of activities for children. These employees would have also organizing other activities for children during the year.

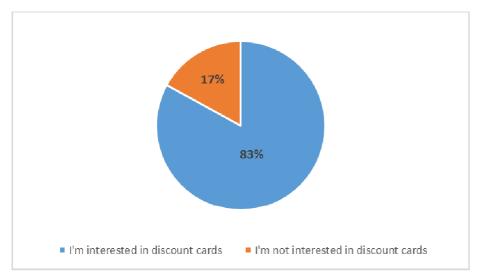
Figure 3Interest in Children's activities organized by company



Source: own processing on the basis of information by company

The questionnaire was also asked "Would you like to own discount card?" The results of the answers can be seen in Figure 4. 83% of employees are interested in the discount cards. Only 17% of employees are not interested in discount cards. These employees would like regular bonus to salary. Discount card is according to them futility and wage supplements can be used to purchase any product or service.

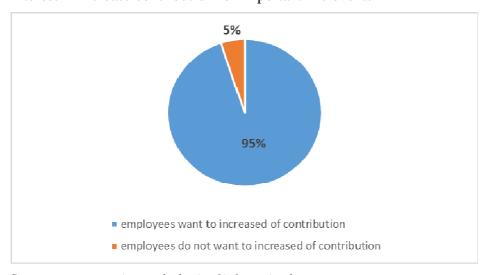
Figure 4
Interest in discount cards



Source: own processing on the basis of information by company

The last question that we describe in this article is "Would you like to increased contribution for important life events?" On this question, clearly 95% of employees expressed the view that they would like to increase the contribution for important life events. In the opinion of employees are in human life important events extraordinary and often unrepeatable. For this reason, is useful in the child's birth, wedding, death of a family member to increase this contribution. Employees have said that they would extend the employee life events such as when a child goes to primary school, when the employee jubilee, when the employee has worked off in company's number of years.

Figure 5
Interest in increase contribution for important life events



Source: own processing on the basis of information by company

5. Conclusions and policy implications

The main objective of any company is to make profit and besides economic factors into company processes significantly affect also factors sociological and psychological nature that factors connected with the people. Employees are considered a source of success of any

company, so it is essential care for employees as one of the determinants of long-term prosperity and competitiveness of the company. The aim of article is to describe the care for employees on the basis of theory but also industry practice. Employees of company prefer to use resources from the Social Fund. However, we would like to recommend company in order to focus on changing the organization of events for children, as the company is production orientation and production employees not on the weekend when they work to participate in activities for children. It also it is seen that employees would like to change significantly contribution on important life events and extend the life events, which would be the contribution of the officials assigned. On the basis of testing of hypotheses, we found that a statistically significant relationship between the increase in the number of activities and actions within the social program in the company beyond the current settings and motivating employees to work. On the basis of actual knowledge and experience we have come to the conclusion that quality care for of employees leads to prosperity, competitiveness of companies in the current changing business environment.

Acknowledgement

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Application of Cluster Analysis in terms of Creation of Clusters in EU Countries according to Economic Growth and Labour Productivity

Anna Rozkošová¹, Silvia Megyesiová²

University of Economics in Bratislava Faculty of Business Economics with seat in Košice Tajovského 13 Košice, 041 30 Slovak Republic

E-mail: anna.rozkosova@student.euke.sk¹, silvia.megyesiova@euke.sk²

Abstract

The current status quo of the labour market regarding labour price and labour cost for its realisation is closely linked to labour productivity. In general terms, we can say that mostly manufacturing companies place their manufacturing and production plants in countries where labour costs are lower, i.e. where human labour is cheaper. Piecework wage is, thus, connected with higher employees' productivity because it motivates them to achieve a higher wage. Then, the company faces increased personnel costs, but with higher production and profits from product sales. We can say that labour productivity of employees has an impact on economic growth of the company. However, if we look at this issue more widely, we do not only refer to economic growth of businesses individually, but rather to overall economic growth of the country, which includes results in the business sector, too. Hence, in the seemingly low increase in an individual's productivity we already see a noticeable effect on the development of the whole economy of that particular country in cumulative terms. The expected outcome of this article is the creation of groups of 28 member countries of the European Union, which are similar to each other according to selected indicators – reflecting economic growth and labour productivity in three different time periods.

Keywords: economic growth, labour productivity, cluster analysis

JEL classification codes: B23, C38, J24

1. Introduction

Making decision we understand as the process of selecting appropriate amount of alternatives based on some selection criteria and preferences. This process belongs to our daily activities, as well as the daily activities of each one on its different levels and at different stages of business. Although there are mainly used the macroeconomic indicators in the analysis and it is oriented to the European Union, closely related to the microeconomic business. Labour productivity indicators belong to key indicators of economic performance of company, and not only when we are talking about the economic performance of companies, but also about economic performance of countries in general. Macroeconomic variables are used to measure the economic performance of the country. From this reason, identification of sources of productivity growth is not only in the interests of the companies and management of companies (Diewert - Fox, 2017). Ultimately it has an impact on the overall economic development of the country from the macroeconomic point of view. For example, in terms of production, businesses look for a suitable place to locate their production activities and create new jobs, information like in this article can help in his decision process.

1.1 Theoretical basis of cluster analysis

Cluster analysis is one of multivariate statistical methods and it is suitable for using in a larger number of variables. It allows us to sort out a set of objects, which contain information about multivariate observations, into several possibly the most uniform classes or groups (Kubanová, 2008). This makes it possible to detect the structure of investigated object and during next step of analysis characterizes these resulting classes or groups. That is to find the appropriate interpretation for resulting decomposition. The main objective of this analysis is to create compacted and well separated clusters. Using cluster analysis helps to reduce the role of dimension; the number of considered variables can be represented by one variable that characterizes the cluster.

For the first time, the term cluster analysis was used by R. C. Tyron in 1939 in psychology area in his publication (Tyron, 1939). He named the method decomposes a set of objects on several mutually exclusive subset as cluster analysis. Later this method became the part of statistics. Development and substantial increase of scientific literature about clustering methods began mainly with the development of computers. There were also other such as naming for this method, for example associating analysis or analysis of nests.

For clearer understanding of the very nature of cluster analysis authors Hebák and Hustopecký (1987) stated that: "...cluster analysis formalizes and especially objectifies particularly well known and indispensable thought process in practice well known in science and in everyday life. Instead amount of quantitative data on a certain plant we can give only the name of the type, instead of series of data about person's skills and attitudes we can put in words the characteristics of their type."

The essence of cluster analysis is an object distribution of statistics files into groups or clusters, which objects belonging to one cluster are similar and objects belong to different clusters apart. The aim is the actual degradation of the statistical subsets or agglomerates, in which objects are as similar as possible inside one cluster and the objects belong to different clusters are similar to the least. Diversity of this method compared with the others is in the objects that are the statistical units of observation, not variables and statistical features characterized for the other methods (Stankovičová - Vojtková, 2007).

1.2 Problem formulation

The analysis was focused on the 28 EU countries: Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE), United Kingdom (UK). We used program The R-project for statistical computing.

For analyses the following macroeconomic indicators were selected:

- government consolidated gross debt (as a percentage of gross domestic product),
- unemployment by age less than 25 years (percentage of active population),
- employment (percentage of total active population),
- GDP at market prices (percentage change),
- GDP at market prices per capita (percentage changes),
- HICP (average annual growth rate),
- nominal unit labour costs based on people (percentage change),
- real labour productivity per person (percentage change),
- gross value added (percentage of GDP).

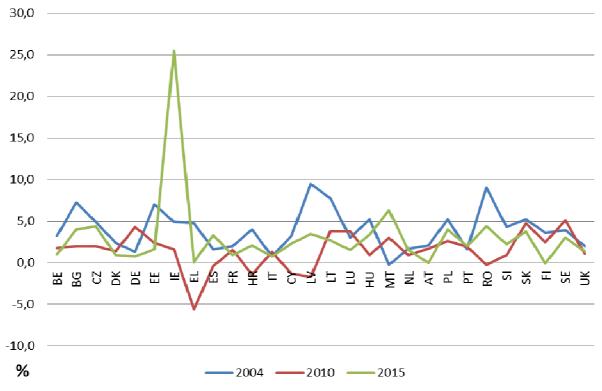
There are many authors of publication about cluster analysis applied in EU countries space. For example authors Zivadinovic, Dumicic and Casni (2009b) analysed structural economic indicators for selected European countries. Also authors Megyesiová, Hajduová, Andrejkovič and Bosáková (2011) applied cluster analysis for EU countries in terms of medical-demographic indicators. All indicators for our analysis were taken from the Eurostat database. Cluster analysis was conducted for three years separately – year 2015, because data of this year was the most recent available data for all countries. For comparison we chose for this cluster analysis also year 2010, when the economic still reflected the economic evolution after then global financial crisis. The third and last cluster analysis was carried out for 2004, when was the last major enlargement of the European Union. Although not all countries were already the EU members at that time, but there were included into analysis regards to available data as well. Selected time period were so that we are able to comprehensively evaluate and compare how countries changed their location in different clusters over the years according to their similarity of indicators aimed at economic growth and productivity.

2. Problem solution

We realized the three cluster analysis particularly for year 2004, 2010 and 2015 in order to compare how European Union members changed their position in clusters and for making statement which groups of countries was more identical according our parameters.

Figure 1 presents the annual percentage change of GDP per capita at market prices. This indicator is very frequently used as an indicator of economic growth. Generally the increase of the indicator was higher in 2004 for most of the EU countries. Only a moderate increase or in some cases a decrease of the characteristics was achieved in 2010. We expect that the global financial crisis caused the negative development of GDP per capita in the EU Member States after 2008.

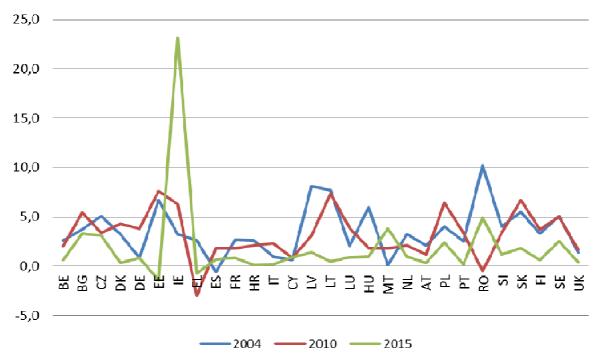
Figure 1 GDP per capita at market prices (percentage change)



Source: Authors calculations based on data extracted from Eurostat.

Not only the GDP per capita changed in analysed period of time, but strong development is visible also in the real labour productivity per person values. According to Figure 2 the lowest values of labour productivity in EU 28 are recognizable in 2015. Imaged values of both Figure 1 and Figure 2 advise to an unexpectedly high annual change of both selected characteristics for Ireland in 2015. Due to this fact we can expect that Ireland can by placed in a separate cluster.

Figure 2Real labour productivity per person (percentage change)



Source: Authors calculations based on data extracted from Eurostat.

2.1 The first cluster analysis - 2015

First cluster analysis was made for data of year 2015. Before performing the cluster analysis, firstly it was necessary to identify the interdependence among different variables. GDP per capita is strongly correlated with labour productivity per person, that acquired values more than 0,9 at a significant level 0,05. On account of correlation among variables, we performed PCA – principal components analysis, which is appropriate to simplify the statistical analysis. PCA is proper for replacing a large amount of variables with smaller number of constituent elements without losing most of the statistic information (Stankovičová – Vojtková, 2007). The purpose of principal components is to explain the variables with preservation of their variability. During the PCA analysis we elected four components according to their characteristic, that they explained more than 75% all variables (Principal Component Analysis for SAS). These new variables formed after PCA are already linearly independent, that means we can continue in cluster analysis. We chose four main components after PCA according to cumulative proportion of variability of components on all variability of original variables.

Table 1 Characteristics of nine components

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9
Standard deviation	1.990	1.505	0.997	0.910	0.723	0.527	0.343	0.133	0.083
	62	60	8872	4354	9329	9935	867	7068	3723
Proportion of Variance	0.440	0.251	0.110	0.092	0.058	0.030	0.013	0.001	0.000
	29	87	6400	1000	2300	9800	140	9900	7700
Cumulative	0.440	0.692	0.802	0.894	0.953	0.984	0.997	0.999	1.000
Proportion	29	16	8000	9000	1300	1000	240	2300	0000

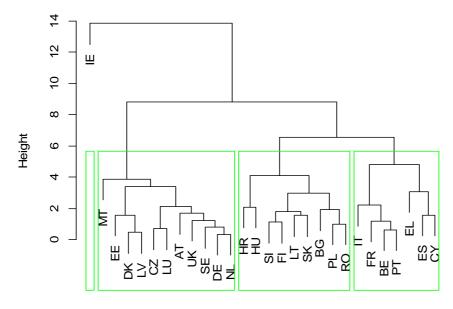
Source: Authors calculations based on data extracted from Eurostat.

In the Table 1 we can see Cumulative Proportion of components that means the first component explains the most variability and each other component explains still less variability of remaining then previous one. We chose four components, because they explain approximately 89% of variability together and remaining values of Cumulative Proportion between first three components is still higher enough in comparison with other five components.

Subsequently, we conducted a hierarchical cluster analysis by Ward's method, which was selected as the best model solutions for the chosen subject (Zivadinovic – Dumicic – Casni, 2009b).

This method is specific, because it is based on minimization of sum of variances through all new created clusters (Ward, 1963). Ward's method is also most commonly used method. The following Figure 3 shows a hierarchical tree – dendrogram for 2015.

Figure 3 Dendrogram 2015



dist(PCA[-1], method = "euclidean") hclust (*, "ward.D2")

Source: Authors calculations based on data extracted from Eurostat.

In the four-cluster solution the first cluster comprises only one country – Ireland. This country differed significantly from the others just according the increasing of real labour productivity per person representing 23%. The GDP growth per capita was above 20%, too. Most countries did not reach similar results; thereby Ireland did not get into cluster with other countries and substantially differs from them.

The second cluster consisted of eleven countries: Malta, Estonia, Denmark, Czech Republic, Luxembourg, Austria, United Kingdom, Sweden, Germany, and Netherlands. The GDP per capita of the countries in the second cluster increased in average by 2.2 %, but labour productivity grew by only 1.19 %. The youth unemployment rate was only 13.2 %. There were mostly stronger and developed EU countries in this cluster. For example our neighbour country Austria was located there and also Czech Republic as one of V4 group members.

The third cluster contained Croatia, Hungary, Slovenia, Finland, Lithuania, Slovakia, Bulgaria, Poland and Romania. Slovakia, Poland and Hungary as other V4 countries were similar according selected indicator for 2015. The average values of the third cluster were worst in economic view. The average growth of GDP per capita stood at 2.2 % and the youth unemployment rated was as high as 23%, what is higher in comparing with first two clusters. But real labour productivity per person increased by 1.7 %, so we can say in terms of productivity, those countries achieved better results than the second cluster. This increment did not have an effect of GDP per capita growth in 2015, but a positive increase can be reached in the near future. We can say that Slovakia is most similar to countries that joined the EU together in 2004 or later in 2007 and 2013.

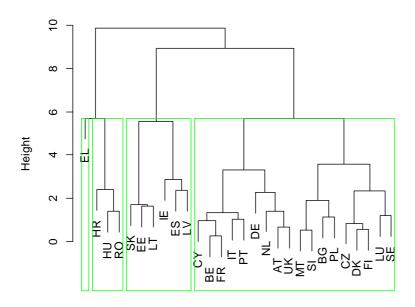
The last fourth cluster consisted of seven mostly southern European countries: Italy, Portugal, Spain, Greece, Cyprus joined together with France and Belgium. Three of the countries in this cluster are members of PIGS group of countries, that are characterized by high indebtedness, France and Belgium also reached high government debt almost more that 100% of their GDP. The extremely high indebtedness was the reason why the fourth cluster contained those different countries. The mentioned countries have a very negative situation on the labour market especially for younger population, which is characterised by a very high average level of youth unemployment rate (35 %). The labour productivity per person in average increased by only by 0.38 % and GDP per capita grew by 1.48 % in fourth cluster.

2.2 The second cluster analysis - 2010

For recognising the historical location changes of EU countries according chosen indicators, we run cluster analysis for post-crisis year 2010 at same steps. After researched the statistical significance using the correlation matrix, it showed positive significance between parameter GDP per capita and labour productivity per person, but also between inflation and labour costs per person.

The first cluster was created by only one separate EU country, namely Greece. The extremely bad economic situation according the selected variables caused the separation of Greece from all other EU countries. The second cluster contained Croatia, Hungary and Poland. The third cluster consisted of Slovakia, Estonia, Lithuania, Ireland, Spain and Latvia. Compared to year 2015 we can see that Ireland was more similar to countries which joined the EU in 2004. The highest average growth of labour productivity per person (up to 5 %) was achieved in the third cluster, where Slovakia was located, too, in the third cluster.

Figure 4
Dendrogram 2010



dist(PCA[-1], method = "euclidean") hclust (*, "ward.D2")

Source: Authors calculations based on data extracted from Eurostat.

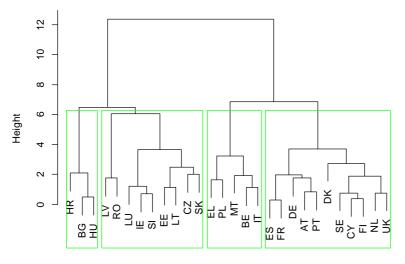
From V4 countries only Poland and Czech Republic were joined together in fourth cluster together with Cyprus, Belgium, France, Italy, Portugal, Germany, Netherlands, Austria, United Kingdom, Malta, Slovenia, Bulgaria, Poland, Denmark, Finland, Luxembourg and Sweden. The fourth cluster's countries showed 2 % average GDP per capita growth and 3 % labour productivity per person growth. This cluster was more heterogenic due to economically stronger western European countries and economically weaker south European countries.

2.3 The third cluster analysis - 2004

Year 2004 is historically very important. In this year Slovakia and other nine countries joined the exclusive club of EU Member States. The economic situation of the countries was very optimistic. EU enlargement was a positive signal for foreign investments in the "new" Member countries which should increase the productivity per person employed and also the GDP per capita in the future. Figure 5 presents the position of the EU countries in 2004.

Finally, we analysed year 2004 for better conception what was the situation in European Union before crisis immediately after the last big EU enlargement. Eurostat contained data of this year also for countries, which was not EU members, which helped us to make this last analysis according to selected parameters. The statistical significance of correlation was between GDP per capita and labour productivity per person ($r_{xy} = 0.88$. The cluster analysis process was same for year 2004 as for previous two years 2010 and 2014, so we created PCA analysis. Four principal components were chosen for the cluster analysis. Some countries were located in the same cluster as in the previous years.

Figure 5Dendrogram 2004



dist(PCA[-1], method = "euclidean") hclust (*, "ward.D2")

Source: Authors calculations based on data extracted from Eurostat.

First cluster contains only three countries, namely Croatia, Bulgaria and Hungary. In this year Czech Republic and Slovakia were placed in a common cluster first time. Countries of second cluster achieved the highest average GDP growth per capita (6 %) and the highest labour productivity growth (5.8 %) in comparison with the other three clusters. The third cluster consisted of countries: Greece, Poland, Malta, Belgium and Italy, and the last fourth cluster consisted of Spain, France, Germany, Austria, Portugal, Denmark, Sweden, Cyprus, Finland, Netherlands and United Kingdom.

3. Conclusion

Submitted analyses of three years helped us to divide 28 European Union members into groups according their similarity based on chosen indicators. There were groups with positive and negative results according chosen indicators especially according to GDP growth per capita and labour productivity growth during all three years. In 2015 Ireland achieved an extremely high economic growth which resulted also in very high labour productivity increase. On the contrary, the worst results were achieved in the south European countries, which can correspond with their bad economic situation, high debt and high unemployment rate. Group of countries were more similar in 2010 and 2004. The positive results in GDP growth and labour productivity growth were typical mostly for the "new" Member States, which have joined the EU in 2004.

In context of three selected years, there weren't groups of countries, but only pairs of countries, that were placed together in a same cluster during all three years:

- Croatia and Hungary,
- Lithuania and Slovakia,
- France and Portugal,
- United Kingdom and Austria.

All other countries had changed their positions in clusters and so no other pair of countries was placed together in a specific cluster during our selected period of time. Therefore, we can

conclude using the results of cluster analysis in 2004, 2010 and 2015 that there are very similar developed of pairs of EU members, namely Croatia and Hungary, Lithuania and Slovakia, France and Portugal and United Kingdom and Austria. In business view, personnel costs per employee are also very similar in the paired countries. For example the similarity in development of nominal unit labour costs per person employed of pairs of countries makes it possible to do some more precise decisions about a suitable country for a location of enterprises.

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Apartment's Price: a Look at Physical Attributes

Adam Síbert

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: adamsibert@mail.t-com.sk

Abstract

Quantitative approach to real estate appraisal has not been widely used in Slovakia. The advantage of such an approach lies in the statistical background, allowing one to determine the impact of many factors influencing real estate prices on a wider scale. In this article I examine the effect of physical attributes of apartments in Bratislava on promoted price. I used the hedonic price method in the form of a simple regression to shed light on this new approach in Slovakia. The results show a nonlinear relationship between the price and number of rooms in a flat, or that existence of a balcony is not statistically significant. This first testing model shows some preliminary results that shall be researched further by adding and testing more variables in the future, such as distance from the city centre or other spatial effects.

Keywords: real estate, hedonic price method, physical attributes

JEL classification code: R32

1. Introduction

A price of an apartment is based on many factors. These factors may vary depending on what consumers want to buy. Consumers 'preferences are different in countries and also in cities within one country. Some people prefer bigger rooms, other may prefer more but smaller rooms. In past few decades a hedonic regression approach has been developed and improved. Factors such as distance to city centre or criminality are often tested with various results. These kind of analyses are very dependent on good database and researcher needs to know many characteristics of every particular real estate in the database, such as number of rooms, area of the house or flat, construction material, level at which flat is located, whether it has a balcony, a cellar and also many spatial effects. These are represented by some sort of location characteristic, usually latitude and longitude and then calculated distance to various points of interest, such as central business district, bus stop or local services. This article is devoted solely to physical attributes as a first step to later construct bigger model that will include spatial variables. This kind of analysis has not been used in Bratislava yet and may help future appraising techniques.

1.1 Methodology

We used hedonic price method to determine the influence of physical property attributes on the market price of the apartments in Bratislava. The basis of hedonic price model is that it equates price of the real estate to several attributes that theoretically influence the value of the real estate. One of the most important conditions of this model is the necessity of product (real estate) having a group of attributes that are demanded by consumers on the market. From a practical point of view, it is very important for the model to contain independent variables desired by households and to have enough real estates for sale (aggregate supply big enough)

for the household to have an option to choose "ideal" group of attributes (Chen – Rufolo – Dueker, 1997). In most cases the literature promotes these basic categories of attributes (Miller, 1982; Ridker, 1967; Malpezzi, 2003; Freeman, 1979; McDonald – McMillen, 2011):

- physical attributes of a specific real estate (size, quality of a building, number of rooms, bathrooms, existence of a cellar, balcony, fireplace and others),
- attributes of environment in which the real estate is located (median household income, population density, quality of schools, rate of criminality, various minorities and ethnic groups, etc.),
- spatial attributes (distance from the centre of the city, proximity of public transportation stops or various different centres of public interest such as post office, clinic, services like supermarkets, pharmacies, etc.),
- and externalities (property tax, public facilities, zoning in the city, natural environment, existence of a river, coastline and many others).

In the literature we may sometimes come across three or four groups of attributes because some authors consider externalities to be a part of other groups. Basic function of the model could be written as:

$$R = f(P, N, L, C, t)$$
 (1)

where price R (rent) is a function of attributes P (property, property features), N stands for neighbourhood characteristics, L represents location, C covers various contract conditions and t represents factor of time. By using regression method, we can determine the influence of individual attributes on a final price of a property.

1.2 Data

We gathered data from internet offers of apartments for sale in Bratislava. There were 2507 offers available, 1173 had to be removed due to lack of important information or duplicates, 1334 offers were viable for our research at the end. Functional form or the model is:

$$\begin{split} log \ (prlce_i) &= \alpha_0 + \alpha_1(slze_i) + \alpha_2(rooms_i) + \alpha_3(level_i) + \alpha_4(b_house_i) + \alpha_5(equlp_i) \\ &+ \alpha_6(condition_i) + \alpha_7(insulation_i) + \alpha_8(mezonet_i) + \alpha_9(pool_i) \\ &+ \alpha_{10}(balcony_i) + \alpha_{11}(elevator_i) + \alpha_{12}(cellar_i) + \alpha_{13}(new_i) \\ &+ \alpha_{14}(luxury_i) + \varepsilon_i \end{split}$$

A description of variables used in the model is shown in table 1. The selection of these variables is based on theoretical background summarized later in table 2 and also is limited by information usually stated in internet offers.

Table 1 Variables used in the model

variable	description	average	median	min	max
Price €	Total price of apartment,	168 160	134 899	21 000	734 850
	dependent variable				
Size	Size of apartment in m2	78,75	70	15	329
Number of	Number of rooms $(1 = 15 \%, 2)$	2,65	3	1	6
rooms	= 26 %, 3 = 41 %, 4 = 15 %, 5				
	= 2,5 %, 6 = 0,5 %)				
Condition	Condition of apartment	2,53	3	1	3
New	New building, yes $(1) = 30,88$	0,30	0	0	1
	%, no (0) = 69,12 %				

D 1	1 1 1 (1) (607	0.66	1		1
Balcony	has balcony, yes (1) = 66,87 %, no (0) = 33,13 %	0,66	1	0	1
Cellar	Has cellar, yes $(1) = 60,79 \%$, no $(0) = 39,21 \%$	0,60	1	0	1
Level	Level of apartment	4,26	3	0	32
House_lvl	Number of floors in the building	7,58	6	1	35
Insulation	is insulated, yes (1) = 68,22 %, no (0) = 31,78 %	0,68	1	0	1
Elevator	Has elevator, yes (1) = 60,79 %, no (0) = 39,21 %	0,77	1	0	1
Maisonette	is maisonette, yes (1) = 5,92 %, no (0) = 94,08 %	0,05	0	0	1
Equip	is furnished, yes (1) = 19,12 %, no (0) = 80,88 %	0,19	0	0	1
Luxury	gentrified project, yes (1) = 18,07 %, no (0) = 81,93 %	0,18	0	0	1
Pool	Has pool, yes (1) = 0,15 %, no (0) = 99,85 %	0,001	0	0	1

Source: author's data

A typical apartment in our sample costs almost 135 000 €, has 70 m2 and 3 rooms. Is fully reconstructed but in an old building. It has a balcony, a cellar and is located on the 3rd floor in a building with 6 floors total. Building has an elevator, is insulated and is not a gentrified project. Apartment is not a maisonette, neither is it being sold furnished nor does it have a pool.

2. Theoretical background

Hedonic price model is currently being used mostly to construct appropriate evaluation of real estate price distribution and implicit values of housing attributes as well. Equations of the model represent main part of researching housing market by using analysis of consumer's demand for housing attributes. Studies using this methodology are widely used in business, sciences associated with investment-based decision-making on real estate market, mortgages, setting a public housing policy and also setting a property tax value.

In the beginning the hedonic price model was used with different types of commodities, one of the first authors in this area was Court (1939) who used this method to set price indexes for automobiles. Other authors focused on price of land (Haas 1922, Wallace 1926), today the model can be used for personal computers as well (White et al., 2004). In the last few decades the model is also used on real estate market, especially in a segment of housing which we focus on in this article.

Among the newest theoretical contributions to this theory are Lancaster's consumer's theory and Rosen's model. Lancaster (1966) created a model based on utility in which he connected vast amount of products and services (together with vast amount of their attributes) to the production function of a household. These households, under a budget constraint, have a certain level of utility derived from specific combination of products and services they can afford to buy. Lancaster basically deconstructed household's consumption into a sum of partial demands for attributes that are desired or needed by the households and therefore bought on the market.

Lancaster's work was later developed by Rosen (1974). Rosen watched an evolution of prices of groups of attributes (products) and concluded that these attributes influence not only

a consumer but also a producer. The influence of a certain attribute is measured by supply and demand functions. Rosen expanded this theory by adding a change of budget constraint and found out that consumer's behaviour can change. The biggest difference between Lancaster's and Rosen's work is that Lancaster assumes linear dependence and Rosen, on the contrary, assumes nonlinear relationship.

Herath and Maier (2010) identified several dominant areas within hedonic price model that a subject of a current research. They found out that out of 471 reviewed studies the research focused on:

- Theoretical and methodological research 134 studies,
- Empirical studies 321 (102 general and 219 specific),
- Historical studies 13 studies,
- And 3 review articles.

Out of 321 empirical studies 178 focused on neighbourhood characteristics (attribute N) and out of those 178 studies the majority specifically researched the evaluation of environmental factors. According to mentioned authors there are under researched areas such as physical attributes (P) as well as social attributes of the neighbourhood (racial segregation, criminality and others).

Physical attributes belong to first ever-researched attributes of real estates. The selection of researched attributes is based on real estate practice; agents on the market can determine what people looking to buy a house or a flat desire. Physical attributes later became primary part of hedonic regression models. They are often present in form of binary (dummy) variables. These attributes significantly influence the final price of house or flat. This is the reason why their role is irreplaceable in every modern hedonic model. Lack of information regarding physical attributes of buildings in the city may result in less relevant results of analyses.

Herath (2011) used in his model attributes such as level the apartment was located at, condition of the apartment, whether it was furnished or not, whether it had balcony, a terrace, an elevator, a cellar or parquet flooring. Bourassa and Peng (1999) used artificial variable to control time element of their data. They researched influence of feng shui via looking at happy and unhappy numbers of houses. Model also included area of the house, age of the house, quality of building construction (based on appraiser's scale) and roof and wall material. Brasington and Haurin (2009) researched the influence of area of the land, number of bedrooms and their living area, area of garage, number of bathrooms, age of the house and via binary variables the existence of pool, fireplace, air conditioning and terrace, or veranda respectively.

Chung (2015) used less "control" variables. Even though hedonic studies of real estate market demand more house or flat attributes to avoid results distortion the author used only area of flat and level on which the flat is located. His reasoning was behind stylization of blocks of flats construction in Korea where similar-sized flats have almost the same attributes such as number of bedrooms or bathrooms. This homogeneity of attributes allows better comparisons of apartments or flats. Chen, Rufolo and Dueker (1997) used as explanatory variables the following: age of the building, area of land, area of the house, number of bedrooms, bathrooms and fireplaces. Study of Ossokin and Verweij (2015) used natural logarithm of house area, number of bedrooms (ln), total area (ln) and binary variables for apartment type, single house, double house, corner house, row-house, year of construction in several intervals (dummy for houses built in 1970-1980, 1980-1990 etc.), existence of garage, hot water availability and ability to develop or improve the real estate as a tenant of the house. Morancho (2003) in his model used physical attributes such as age of the house in years,

number of bathrooms, existence of an elevator, number of garage parking spaces for cars, level of a flat, type of the house (single home or flat, apartment, studio), area of a balcony in square meters, number of bedrooms, living area and storage room. Buonanno, Montolio and Raya-Vílchez (2013) had a database with information about several physical attributes of real estates, for example price per square meter, area in square meters, number of bedrooms, existence of elevator, type of a kitchen – single or connected to living room, level of apartment and age of the building).

Chen's model (2017) included structural variables related to the building represented by area in square meters, number of bedrooms, level on which flat is located, dummy variable for flats located on 10 or lower level, age of the building and dummy showing gentrified housing complex. Yagamata et. al. (2016) used only two physical attributes related to the flat, natural logarithm of area and level. Two variables tested whether construction of the building was iron-concrete and/or reinforced. They also included number of developers in the project and share of so called "big" developers in the project. Panduro and Vete (2013) used living area, number of bedrooms, area of garden, cellar, number of levels in the building, number of flats in the building, whether flat is located on higher ground level or not and other binary variables for renovations done in specific timeframe as well as year of construction, whether the building material was brick and type of a roof.

Tyrväinen (1997) used in his model number of bedrooms (divided into binary variables for 2, 3, 4 and 5 room flats), year of construction, sauna, flat roof and land area. Building material and existence of a kitchen were removed from the model because they were not significant. The increase in number of rooms lowered price of apartment per square meter non-linearly (second room -332,58, third room -513,86 etc.). Sauna increased price of the apartment (+120fim/m2). In a study of Tang and Yiu (2010) only age of the building at the time of a sale, area of flat and level of flat were included in the model. Billings (2011) had available data for land area in acres, number of bathrooms, bedrooms, living area (also squared living area), age of the building (also squared) and existence of a fireplace. Le and Ooi (2013) included into their model date of a sale, living area, level, age of the building, type of a project and land rent.

Table 2 shows the summary of physical attributes of a real estate and their influence on the final price. These attributes usually influence prices of houses and flats the most. Costs related to purchase of a land, construction works, material and such vary from country to country although are the biggest parts of the house/flat price.

Table 2 Selected physical attributes of a real estate

Variable	Measuring unit
Rooms	Count (or natural logarithm)
	• Dummies for 1, 2, 3, 4 and 5 room flats
Living Area	Foot or meter square (or natural logarithm)
Land	Area in square meters
	Area of a garden in square meters
Level	Categories of levels
	Level/all levels ratio
	Dummy for higher ground level
Condition	Scale from worst state to the best (original condition, partial)
	reconstruction, full reconstruction, other)
	Dummies for reconstructed, original state, etc.
	Condition rating

Toilets	• Count
Bathrooms	• Count
Kitchen	Type (single or merged with living room)
Balcony	Area in square meters
	 Dummy does(not) have balcony
Cellar	 Dummy does (not) have cellar, storage room, etc.
Elevator	 Dummy does (not) have elevator
Garage	Area of garage in square meters
	 Number of parking spaces in garage
	 Dummy does (not) have garage
Equipment	 Dummy is (not) equipped
	 Dummy does (not) have parquet flooring
	 Dummy does (not) have pool, fireplace, air-conditioning
	 Dummy does (not) have hot water access
	 Dummy does (not) have sauna
Age	 Age in years
	 Years-intervals (for example decades), dummies
Type of building	• Binary variables for apartment, single house, double house, corner house,
	row houses, studio, gentrified complex
	Flat count in the building
Construction	 Dummy is (not) iron concrete, reinforced construction, brick
material	Type of roof (flat or other)

Source: based on researched articles

3. Results and discussion

I used simple regression model to find out the influence of physical attributes of the real estate. Results are shown in table 2. Data was collected from June 2016 until October 2016 for this single time period from a total sample of over 2500 internet offers. I selected and tested variables based on theoretical background from part 2 of this article.

Table 3Results of regression model

Variable	Coefficient	Probability
Constant	4.733	0.000
Size	0.003	0.000
2rooms	0.085	0.000
3rooms	0.129	0.000
4rooms	0.138	0.000
5rooms	0.118	0.000
6rooms	0.094	0.042
New	0.069	0.000
Balcony	-0.007	0.257
Cellar	0.016	0.006
Insulation	-0.027	0.000
Elevator	0.047	0.000
Pool	0.113	0.116
Maisonette	-0.032	0.016
Equip	0.010	0.144
Luxury	0.053	0.000
Semi_cond	0.026	0.008
Full_cond	0.037	0.000

B_house	-0.078	0.000		
1third	0.017	0.156		
2third	0.032	0.010		
3third	0.032	0.008		
R-squared	0,796			
Adjusted R-squared	0,793			
Number of observations	1334			
Number of variables	22			
F-statistic	245,277			

Source: own calculations

Sample size of my database is 1334 observations and I used 22 dependent variables to find out the effect of various physical attributes, explanatory variable was logarithm of price. I find nonlinear relationship in increase of number of rooms (adding second room to a flat increases price by 8,51 %, 3rd room by 12,95 %, 4th room by 13,86 % and 5th room by 11,86 %). New block of flats increases price by 6,96 % and it is not significant whether it has balcony or not. I also look at "luxurious" real estates defined as gentrified projects, often with designated parking space for flat-owners and with some minor services such as facility management, playground for children and other. This effect increases price by 5,3 %. Insulation showed, surprisingly, negative coefficient. This might be caused by the fact that almost every homeowner association lacks funds to pay full price for insulation. Association is therefore forced to take a loan and increase monthly payments of flat owners to pay for it. It hints that consumers may not be that eco-oriented as consumers in some western developed countries are. Also partial reconstruction (semi cond) and full reconstruction (full cond) do not influence price too much, only 2,6 % or 3,7 % respectively compared to original condition of the apartment. There might be (to us) hidden negative and positive effects, fully reconstructed flat is convenient because one may simply move in and not care about anything else. On the other hand, original condition gives one option to reconstruct it exactly how he/she wishes. I also looked at position of the flat in the building, whether it is located at ground floor, 1st third, 2nd third and final third of the house. Results show consumers prefer apartments located on higher floors. Future research shall focus on adding spatial characteristics to the model and on testing spatial autocorrelation, we are dealing with points in space that are usually correlated with each other. These preliminary results show a potential to develop statistical appraising approach on real estate market in Slovakia.

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History, Present and the Future of the Span-of-management Concept

Zuzana Skorková

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: zuzana.skorkova@euba.sk

Abstract

Span of management or span of control is critical for effectiveness of an organization and strictly determines the organisational structure. This basic managerial concept has been changed through years. This paper attempts to trace the concept of the span of management that was affected by the changes in management and there is still a need for new research to be done in this area. Our paper describes two historical theories by Graicunas and Stieglitz that initiated new trends and findings in this field, as well as a review of current approaches to span of management and their effect on organisational structure.

Keywords: span of control, span of management, span of influence

JEL classification codes: M54, M20

1. Introduction

Problem of span of management is as old as organization itself. The first issue with span of management can be seen in Bible dealing with Moses organizing the exodus of the Israelites. Moses' father-in-law said to him: "The thing that you are doing is not good. You will surely wear out, both yourself and these people who are with you, for the task is too heavy for you; you cannot do it alone. Now listen to me: I will give you counsel, and God be with you. You be the people's representative before God, and you bring the disputes to God, then teach them the statutes and the laws, and make known to them the way in which they are to walk and the work they are to do. Furthermore, you shall select out of all the people able men who fear God, men of truth, those who hate dishonest gain; and you shall place these over them as leaders of thousands, of hundreds, of fifties and of tens. Let them judge the people at all times; and let it be that every major dispute they will bring to you, but every minor dispute they themselves will judge. So it will be easier for you, and they will bear the burden with you. If you do this thing and God so commands you, then you will be able to endure, and all these people also will go to their place in peace." So Moses listened to his father-in-law and did all that he had said. Moses chose able men out of all Israel and made them heads over the people, leaders of thousands, of hundreds, of fifties and of tens. They judged the people at all times; the difficult dispute they would bring to Moses, but every minor dispute they themselves would judge.

Over the years there have been many different views about the optimum span of control trying to find an answer to the basic question – how many is too many? Theories about the optimal span of control go back to Graicunas (1933) who quantified the potential exponential increase in relationships that a manager must supervise as the number of subordinates increase. This approach to span is also known as "limited span" and the main aim was to delimit the maximum number of workers that one manager can oversee. (Graicunas, 1933; Gulick, 1937; Urwick, 1937).

The concept of "optimum span" was launched in 1950s, this studies discovered that spans which were too wide or too narrow could alter the effectiveness of supervision. The research of Ouchi and Dowling (1974) pointed out that it is necessary to calculate how much time managers devote to employees.

2. Span-of-control definitions

Simple definition of span of control describes this element as the number of direct subordinates a manager supervises. However, in organization theory we can find three different types of span of control:

- Potential span-of-control is the number of subordinates a manager can effectively manage.
- Formal span-of-control refers to the number of people directly and formally subordinate to a manager.
- Real span-of-control is the number of subordinates really reporting to the managers.

There are significant discrepancies between these above-mentioned definitions. If a potential span of control is bigger than formal or the real span of control, the manager has the feeling that he is without enough work to do. When formal and real spans of control are bigger than potential one, the manager is not able to fully and efficiently supervise his subordinates. Some of the employees may get out of his influence and an informal deputy manager may even emerge. Hence, real and formal span of control should agree with potential span of control. (Hopej – Martan, 2006)

The concept of span of control was developed in the early part of the 20th century. Many studies were conducted to analyse how managers and subordinates communicate, so managers could have enough time to exert adequate "control." Some people felt it should be narrow, others felt that it should be wide.

According to Urwick (1956) the first person to direct public attention to the principle of span of control was General Sir Ian Hamilton. His statement is the basis for subsequent interpretations of the concept oriented to business:

"The average human brain finds its effective scope in handling from three to six other brains. If a man divides the whole of his work into two branches and delegates his responsibility, freely and properly, to two experienced heads of branches he will not have enough to do. The occasions when they would refer to him would be too few to keep him fully occupied. If he delegates to three heads he will be kept fairly busy whilst six heads of branches will give most bosses a ten hours' day. Those data are the results of centuries of the experiences of soldiers, which are greater, where organization is in question, than those of politicians, business men or any other class of men." (Hamilton at Urwick, 1956)

2.1 Graicunas theory

Analytical approach to span of control is represented by Graicunas theory. V. A. Graicunas was a management consultant of Paris who made a significant contribution to the span-of-management theory. He suggested quantitative solution for resolving the span-of-management question. The issue Graicunas address in his paper was the lack of a theoretical basis for the empirical belief in limiting the span of control. (Nickols, 2011) He considered the relationships managed by manager to be the most important factor determining the span of control in a company. (Graicunas, 1933 and 1937) But he points out that in selecting a span of management, managers should consider not only the direct one-to-one relationships with the people they supervise but also two other kinds of relationships – direct group relationship and cross-relationship. Very simply said, if manager A has two subordinates B and C, the

following 3 different kinds of relationship would be involved:

- 1. *Direct one-to-one relationships*. These relationships are represented by direct one-to-one interaction with each subordinate. It is one-to-one relationship of manager A to subordinate B, and relationship of manager A to subordinate C.
- 2. *Direct group relationships*. These ones are the relationships between groups of subordinates. Relationship between A and C while person B is present and relationship of manager A and subordinate B while subordinate C is present.
- 3. *Cross-relationships* these ones are created when subordinates consult one another. Thus relationship of subordinate B to C, and relationship C to B.

Based on described example we can see that manager with two subordinates faces only six potential interactions. But if the number of subordinates is three, the number of potential interactions to be managed is eighteen, ten subordinates means 5 210 relationships and 12 of them would create more than 24 708 relationships to be managed. Graicunas created following formula (1) to calculate the total number of relationship to be managed by manager:

Number of relationships =
$$n\left(\frac{2^n}{2} + n - 1\right)$$
 (1)

Here, n = number of subordinates.

Table 1Calculation of relationships by Graicunas

N. of subordinates	Direct relationships	Direct group relationships	Cross relationships	Total relationships
1	1	0	0	1
2	2	2	2	6
3	3	9	6	18
4	4	28	12	44
5	5	75	20	100
6	6	186	30	222
7	7	441	42	490
8	8	1016	56	1080
9	9	2295	72	2376
10	10	5110	90	5210
11	11	11253	110	11374

Source: ZIKMUND, M. (2010). *Manažer by měl mít pod sebou maximálně pět lidí*. [Online]. Available at the URL: http://www.businessvize.cz/vedeni-lidi/manazer-by-mel-mit-pod-sebou-maximalne-pet-lidi. [Accessed 02.02.2017].

Graicunas (1937) reported following:

- As the number of subordinates increases arithmetically the number of relationships which the superior has to control also increases almost geometrically.
- Superior can only control a limited number of subordinates.
- Anything beyond this limit is very hard to control.
- It is ideal to have no more than six subordinates under one supervisor.
- Great care in adding an additional subordinate to a manager.

Graicunas formula is not used in practice especially due to the fact that it ignores the frequency and different importance of relationships. We do not expect each of the potential relationship occurs on a daily basis or that the importance of each of these potential

relationship is unique for successful managing a group of subordinates. Actually the span of control is influenced by many different factors which are not taken into consideration within Graicunas formula.

2.2 Stieglitz theory

Another attempt to determine the span of control was Stieglitz theory. Stieglitz (1962), in his study of the Lockheed Company, identified factors that may be essential in determining an optimal span of control. His theory is based on the assumption that span of control or the number of subordinates that a manager can effectively supervise is not an exact number applicable generally but depends on underlying variables. According to Stieglitz, span of management depends on seven factors. Variables by Stieglitz are following:

- 1. Similarity of functions this factor belongs to the degree to which functions performed by the various components or personnel reporting to a manager were alike or different.
- 2. *Geographical contiguity* refers to the physical locations of units or personnel reporting to a superior. It makes a big difference if the subordinates are located in one open-space or they are in dispersed geographic areas.
- 3. *Complexity of functions* this factor depends on the nature of the task done and the department managed.
- 4. *Direction and control/Staff qualification* this factor refers to the nature of personnel reporting to a superior, the amount of training required, the extent to which authority could be delegated, and the personal attention needed.
- 5. Coordination this factor is about time requirements of keeping an organizational unit keyed in with other divisional or companywide activities.
- 6. Planning this factor reflects the importance, complexity, and time requirements of the planning functions of managers and their organization units.

Once all these variables related to the span of management are identified, the company spread each of them over a spectrum of five degrees of difficulty. For each span factor, also, weightings were given to reflect relative importance. The degrees and weights of the span factors are shown in the Table 2.

Table 2Degrees of Supervisory Burden within Span Factors

Span factor					
Similarity of	Identical	Essentially	Similar	Inherently	Fundamentally
functions	1	alike	3	different	distinct
		2		4	5
Geographic	All together	All in one	Separate	Separate	Dispersed
contiguity	1	building	building, one	locations, one	geographic
		2	plant location	geographic	areas
			3	area	5
				4	
Complexity of	Simple	Routine	Some	Complex,	Highly
functions	repetitive	4	complexity	varied	complex, varied
	2		6	8	10
Direction and	Minimum	Limited	Moderate	Frequent	Constant close
control	supervisions	supervisions	periodic	continuing	supervision
	and training	6	supervision	supervision	15
	3		9	12	
Coordination	Minimum	Relationships	Moderate	Considerable	Extensive

	relations	limited to	relationships	close	mutual non-
	with others	defined	easily	relationships	recurring
	2	courses	controlled	8	relationships
		4	6		10
Planning	Minimum	Limited scope	Moderate	Considerable	Extensive effort
	scope and	and	scope and	effort	required, areas
	complexity	complexity	complexity	required	and policies not
	2	4	6	guided only	charted
				by broad	10
				policies	
				8	

Source: KOONTZ, H. – O'DONNELL, C. – WEIHRICH, H. (1984). *Management*. McGraw-Hill, Inc., 1990. pp. 247. ISBN 0-07-035487-1.

7. Organizational assistance – special factor. Once 6 of 7 variables described in table 2 have been evaluated and the total of values from factors weightings had been added, it is necessary to make a correction by application of a reducing factor to each score to take into account the amount of organizational assistance that manager has. For example, if there is no any assistance for the manager, the total score calculated from six variables will be multiplied by 1, if there is some administration assistance the total will be multiplied by 0,7, if there is first line supervisor responsible for e.g. 4 people the total will be corrected by 0,4. Once the scores for a managerial position had been calculated and corrected by the factor of organizational assistance, they were compared with a standard. The suggested supervisory indexes are included in the Table 3.

Results of Stieglietz analyses lead to a widening of the span of management in the middle-management area and to the elimination of one complete level of supervision, thus reduction in supervisory costs.

Table 3Suggested Supervisory Index

Buggested Buper visory mack					
Total span factor	Suggested standard span				
weightings					
40-42	4-5				
37-39	4-6				
34-36	4-7				
31-33	5-8				
28-30	6-9				
25-27	7-10				
22-24	8-11				

Source: KOONTZ, H. – O'DONNELL, C. – WEIHRICH, H. (1984). *Management*. McGraw-Hill, Inc., 1990. ISBN 0-07-035487-1.

According to Koontz and Weihrich (2015) the number of subordinates a manager can effectively manage depends on the impact of underlying factors. Aside from the factors such personal capacities as comprehending quickly, getting along with people, and commanding loyalty and respect, the most important determinant is a manager's ability to reduce the time he or she spends with subordinates. This ability naturally varies with managers and their jobs, but several factors materially influence the number and frequency of such contact and therefore the span of management, as shown in the Table 4.

Table 4 Factors influencing the span of Management

Narrow spans (a great deal of time spent with subordinates)	Wide spans (very little time spent with subordinates)		
Little or no training of subordinates	Thorough training of subordinates		
Inadequate or unclear authority delegation	Clear delegation and well-defined tasks		
Unclear plans for non-repetitive operations	Well-defined plans for repetitive operations		
Non-verifiable objectives and standards	Verifiable objectives used as standards		
Fast changes in external and internal environments	Slow changes in external and internal environments		
Use of poor or inappropriate communication techniques, including vague instructions	Use of appropriate techniques, such as proper organization structure and written and oral communication		
Ineffective interaction of superior and subordinate	Effective interaction between superior and subordinate		
Ineffective meetings	Effective meetings		
Greater number of specialties at lower and middle levels	Greater number of specialties at upper levels (top managers concerned with external environment)		
Incompetent and untrained manager	Competent and trained manager		
Complex task	Simple task		
Subordinates' unwillingness to assume responsibility and reasonable risks	Subordinates' willingness to assume responsibility and reasonable risks		
Immature subordinates	Mature subordinates		

Source: KOONTZ, H. – WEIHRICH, H. (2015). *Essentials of Management: An International, Innovation, and Leadership Perspective*, McGraw Hill Education, New Delhi. ISBN 978-93-392-2286-4.

There are no doubts that the span of management is limited by real and important restrictions. In real life we will find a lot of managers who have more subordinates that they can manage effectively, even though they delegate authority, train their subordinates appropriately, formulate their plans, respect the policies and use efficient communication techniques. Currently there is no any widely applicable numerical limit for the span of control. It is necessary to look for the causes of limited span in individual situations. What is definitely required is the balance of all factors. According to Koontz and Weihrich (2015) one must balance all the costs of adopting one course or the other, not only the financial costs but also costs in morale, personal development, and attainment of enterprise objectives.

3. New trends in span of control

However, currently there are some experts that suggest that the concept of the span of control is making the manager focus more on control than on collaboration, which is in their opinion more effective tool of attaining goals. According to Tarišková (2013) new technology and virtual organization leads to decreasing the amount of time spent on people management. According to Hindle (2009) the coming of the virtual organization made managers take a new look at the concept of span of control. In a virtual organization people usually work as independent self-managed units, either individually or in small teams. They have a full access to all information need. In this kind of environment, the optimal span of control can be very large. In fact, it will not be span of control any longer; it is more a *span of loose links and alliances*. (Hindle, 2009)

Myatt (2012) considers the term "span of control" to be outdated and destructive. He defines the span of control as follows: "I prefer the more inclusive term constituency

management. I want leaders to think span of influence and awareness, to shift thinking from rigid structures to loose collaborative networks, and to think open source not proprietary "(Myatt, 2012). There is also suggestion in his theory that managers should create a common vision and common goal for their subordinates and motivates them to align with it, rather than control their work. Vision and goal alignment increases the engagement of the employees and therefore also their motivation and productivity. Tarišková (2012) argues as well that common vision, goals, trust, respect and personal integrity are the key success factors.

Based on the latest study of Deloitte – Global Human Capital trends (2016) the middle management is continuing to thin out. Research shows that US companies today have an average span of control – the number of people reporting to a supervisor – of 9.7, rising as high as 11.4 at large companies. The number of employees supervised by each first line manager is increasing, to more than 10 among US companies and as high as 13 in industries such as health care. This broad span of control demands leaders who are skilled coaches, not strictly supervisors – leaders with the ability to attract, inspire, and retain great people, not just make the numbers. Collaboration, too, is becoming a critical leadership skill: With organizations continuing to evolve rapidly beyond vertically integrated enterprises to networks and ecosystems, groups of leaders are being forced to work together in new ways, including collaboration across generations, geographies, functions, and internal and external teams.

Based on several researches over the past two decades, the CEO's (Chief Executive Officer) average span of control, measured by the number of direct reports, has doubled, rising from about five in the mid-1980s to almost 10 in the mid-2000s. (Neilson and Wulf, 2012) In the research of these authors we can find another important information - across industries, the COO (Chief Operations Officer) position has faded. In 1986 some 55% of Fortune 500 companies had a chief operating officer. By 1999 the number was down to 45%, and it has continued to decline over the past decade. In 2014 only 36% of companies had the position of COO. Moreover, New CEOs increasingly choose to go without a deputy and take on the COO role of "span breaker" themselves.

The result is suggesting that the concept is going toward wider span of control, when compared to the original optimal span of control of not more than 6 people.

Another trend that supports wider span of control or its replacement by more loose collaborative networks is complexity. As more and more information are surrounding people and the amount of human knowledge doubles in average every 13 months, tasks are becoming more complex and businesses cross industries more often. This requires more people with specialized knowledge and professional skills that will be supervising their fields of expertise, as it is becoming more challenging for one manager to become expert in every aspect of their organization. Broader span of control or even no span of control (collaborative networks instead) ensures many important things that narrow span of control cannot. It provides space for tasks delegation and for decentralization, it gives employees feeling of involvement as they have a power do make more decisions and they are more autonomous in their work, it provides room for common goal and vision creation and therefore for employees' motivation, so they are not an employees of the manager anymore, but they become employees of the organization. These are the advantages that a constituency management can bring to the organizations and managers.

4. Conclusions

Span of management is the limitation of the number of subordinates who can be effectively supervised by a manager in the discharge of his or her management duties. The incapacity of human beings restricts the number of persons who can be managed effectively. In short, today the manager's job is more about leadership than control. Once spans of control are increased, it is then possible to compress the number of hierarchical layers or levels. The correct principle of span of management is that definitely there is a limit in each managerial position to the number of persons an individual can effectively manage. Understanding of span of management concepts, measures and determinants will assist a manager in selecting parameters to quantify the allocation of managerial resources. But the exact number in each case will vary in accordance with the effect of underlying variables and their impact on the time requirements of effective managing, thus the balance of all the costs is crucial – not only the financial costs but also costs in morale, personal development, and attainment of enterprise objectives for sustainable development of any organization.

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Determinants of Risk Premiums on the Bond Market in Spain

Patrik Slobodník

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: patrik.slobodnik@gmail.com

Abstract

Investors have considered government bonds of the Eurozone as the safest securities of all. They used these bonds for stabilisation of their portfolios as well as a tool for reducing the risk of their portfolios. The recent financial and debt crises have led to the inability of some Eurozone countries to meet their liabilities. These two crises also affected the credibility of the European Union (EU) countries. With increasing country risk, investors also require higher yields. The aim of this working paper is to provide a review of selected determinants of country default swap spreads and their effect on country risk.

Keywords: government bonds, country default spread

JEL classification codes: E00, G12, G19

1. Introduction: Literature Review

The issue of country risk has become a topic of animated discussion in recent years, due to its relationship with the risk and debt crisis in Eurozone. Prior to the financial crisis, investors had treated government bonds of the Eurozone as a so-called "safe haven". Investors hadn't seen big differences among the various countries of Eurozone too, as government bonds had had minimum risk and had been credible. The fiscal crunch of 2008 prompted investors to undertake an emergent review of country preferences for parking their investments. Priority was assigned to the re-evaluation of country risk and risk spread. Rapidly increasing risk spreads sounded the warning signal regarding the increasing risk of countries in the Eurozone. Country risk applies as much to equity markets as bond markets. In the bond market, country risk is understood as the risk of the creditor's insolvency or default risk as a borrower. In the stock market, country risk is affected by many economic factors such as economic growth, the level of interest rates, inflation, taxation, etc. Political factors have an important role in country risk too and include the political situation, the ability of government authorities to create conducive conditions for business, political turbulence, dysfunctional legal system, the level of corruption, etc. all of which significantly affect the risk of investing in the country's stock market.

In the financial markets, investors are exposed to various types of financial risks. While some risks are common to all financial instruments, others are specific to a particular segment of the market. Investors understand risk to be a certain deviation of the actual return from the expected return. In general, the higher the risk, the higher must be the returns, as a compensating mechanism. It should be noted, that high risk – high deviation of actual return from expected return-- signifies not only potential loss, but also potential higher profit. In the bonds market, we consider credit risk to mean the significant prospect of insolvency of the creditor, also known as default risk. Where the issuer of bonds is a sovereign government, we talk about country risk. This issue has been discussed by many top notch global economists. One of these is J. F. Fabozzi (2007) with publications like Bond Markets, Analysis and Strategies to his credit, where he describes the basic characteristics and types of bonds, particular risks on the bond market and several methods for evaluating bonds. The issue of bonds related to mortgage loans and various innovations such as securitized products CMO, CDO and ABS, deserve special attention. The monograph Bond and Money Markets: Strategy, Trading and Analysis (M. Choudhry, 2003) introduces the basic rules of investing in bond markets and describes the specifics of government and corporate bonds, the various risks in the bond market and how we can measure and manage those risks, quantifying the risk with the concept of VAR – Value at Risk.

Many other foreign authors have dealt with the issue of country risk and many working papers prepared by experts of the OECD, IMF and ECB. These works reflect the current problems of the Eurozone's bond market that are closely associated to a country's rising debt. The working paper titled What drives sovereign risk premiums? An Analysis of Recent Evidence from the euro area (D. Haugh, P. Ollivaud and D. Turner 2009), is dedicated to the growing government bond's risk spreads in countries of the Eurozone, during the financial crisis of 2008-2009. They compare yields of government bonds of individual countries to German government bonds (Bunds). They see the problem of high spreads in the inefficient and deficit economy of countries, as well as higher investor risk aversion during the crisis. S. Sgherri and E. Zoli (2009) adopt a similar approach in their working paper Euro area sovereign risk during the crisis. They have examined the relationship between growing risk spreads of countries of the Eurozone and market concerns about the insolvency of these countries. Another working paper Determinants of government bonds spreads in new European countries, (I. Alexopoulou and A. Ferrando 2010) within the ECB, examined the impact of individual fundamentals on the growth of long-term government bond spreads. Fundamentals which affect bond spreads are external debt, exchange rate, inflation, economic transparency, etc.

One of the world's most important authors on the issue of country risk is Professor A. Damodaran from University Stern school of Business in the US. In his book, *Damodaran on valuation: Security analysis for investment and corporate finance* (2006), he focuses on the quantification of the country risk premium. He describes the reasons for differing premia in different countries favoured investors. Dealing with more complex issues in greater depth than the other authors, he quantifies the risk spreads not only in the bond market, but also in the stock market. He describes various methods for measuring country risk, as well as the factors that an investor should take care of, when deciding the best method for measuring risk. Damodaran also discussed the above issues in his working paper *Equity risk premiums* (2016), which is updated every year.

However, while we mentioned a few monographs which were especially aimed at the study of the theoretical background of country risk, we need to look at current literature—working papers and their research problems. Micu, *et al.* (2006) found that credit rating announcements have a large influence on CDS spreads. Longstaff *et al.* (2011) analysed CDS spread in emerging markets and found that sovereign spreads are more influenced by global factors, rather than local factors. Arghyrou and Kontonikas (2012) also analysed macroeconomic factors in country risk, finding evidence of contagion effects, particularly among EMU periphery countries. Beirne & Fratzscher (2013) analysed country risk determinants like public debt/GDP, real GDP growth or current account/GDP to CDS spread in 31 countries. They found that there is a "wake-up call" contagion, as financial markets have become more sensitive to countries. Aizeman *et al.* (2013) analysed sovereign risk for fifty countries based on fiscal space and other economic fundamentals and found that CDS spreads are partly explained by fiscal space and other economic determinants. Lee *et al.* (2017)

analysed oil prices and country risk and reached the conclusion that country risk is significantly affected by oil price shocks, but the impacts were different.

2. Aim and Methodology

The aim of this working paper is to show the importance of selected determinants of country risk. Monitoring these factors is becoming more important in recent years, because of the financial and debt crisis in the Eurozone. We will first measure the country risk of Spain by two methods and thereafter compare country risk to selected factors.

Country risk can be measured by several methods. We will use the rating-based method and market-based method. Both methods have the same core and simply compare a risky country to a risk-free country. We can characterize a risk-free country as the country with the best rating. For our measurement, we chose Germany as the risk-free country, because of her long-term Aaa rating. The second market-based method is credit default swap spread (CDS spread) which is simply the difference between bond yields of country X and bond yields of risk-free country. We chose long-term bonds with maturity of 10 years. We will quantify CDS in Spain during the period 2000 – 2016, so as to capture several big market events. We choose German Bunds as risk free bonds. Both methods quantify country risk in basis points (BP), and 100 BP is equal to one percentage point. In the Table 1 we can see spreads assigned to the different ratings of country. We will use this table later in our text. We will use correlation analysis to look at the relationship between macroeconomic factors and CDS.

In this work, we used data from different databases, along with mathematical and statistical methods to compile the acquired data, processing the same from the Eurostat database available at www.tradingeconomics.com, www.yahoofinance.com and the ECB published data at www.ecb.org.

Table 1Rating and default spread. July 2016

investment grade										
Rating	Aaa/AAA	Aa1/AA+	Aa2/AA	Aa3/AA-	A1/A+	A2/A	A3/A-	Baa1/BBB+	Baa2/BBB	Baa3/BBB
Spread	0	44	55	67	78	94	133,00	177,00	211,00	244,00
	speculative grade									
Rating	Ba1/BB+	Ba2/BB	Ba3/BB-	B1/B+	B2/B	B3/B-	Caa1/ CCC+	Caa2/CCC	Caa3/ CCC-	Ca/CC
Spread	277	333	399	499	610	721	831	998	1108	1330

Source: own processing based on www.stern.nyu.edu

2.1 Market-based Measures

Investors can use one of the market-based methods, if they don't think that rating or scoring methods are sufficient and reliable for country risk measurement. Investors like market-based methods, because they reflect the actual situation in the market. It should be noted that market-based methods are characterized by more frequent fluctuations, in comparison to the scoring or rating methods. Market reactions to different events or irrational investor behaviour is the cause for these fluctuations, which we can explain by the psychological analysis.

In Damodaran (2016), we can find four market rates of country risk. Credit default swap spread (CDS) is the simplest and most commonly- used model for quantifying country risk. This model is simply the difference between the bond yield of country X and bond yield of risk – free country, as we can see in equation (1). A high spread indicates increased risk of country X. In a situation where CDS is zero, we can say that country X has the same country

risk as the risk-free country, making country X too risk-free. This method can be used only if both government bonds are denominated in the same currency. In case bonds are denominated in different currencies, we can use the rating-based method. The first condition of the rating method is that both countries have to be rated by the same rating agency. We may want to quantify country risk of some emerging country, but this country may not issue bonds in euro or dollar currency. Since developing countries usually have a rating, we can use the rating-method. The method is based on the assumption that countries with similar credit risk should have the same rating and based on this we assign a given country spread.

$$CDS = bond\ yield\ of\ country\ X - bond\ yield\ of\ riskfree\ country$$
 (1)

2.2 Determinants of spreads

We can divide factors, which affect the level of risk spreads of government bonds, into three groups. The first group is **credit risk** or the level of government debt. In this group we can also talk about macroeconomic factors, which affect the ability of a country for paying its liabilities on time. The ability of countries to pay their liabilities on time is determined by several factors. The condition of public finance is one of the most important and significant factor, which affects the yields of government bonds. Sustainability of public finance of the country is weakened by repeated government budget deficit and resultant increasing public debt. Problems of public finance are one of the reasons for downgrading the rating of government bonds, what increases the cost of debt service. The increasing debt of the country may not be a problem if it grows more slowly than GDP. Therefore, it is important to pay due attention to the overall aspect of the economy - GDP growth. Real effective exchange rate and balance of payments are also very important factors. Both are indicators of the competitiveness of the country. If the country has a long-term problem of adverse balance of payments, the currency of the country will depreciate. Inflation rate is one of the macroeconomic indicators of financial stability. The optimal rate of inflation is now considered to be below and close to 2%, which is ECB's inflation target. However, at present, we have a deflation problem in Europe.

The second group is **liquidity risk**. Low liquidity of the market can mean significant problems for the investors, if they suddenly need to sell their assets and get cash. In the case of a low liquidity market, investors will suffer huge losses. Because of the issues described above, investors require liquidity premium in emerging markets.

The third group is **risk aversion**. This factor has come to the fore, especially since the times of financial crisis, when investors don't want to undertake high risk and channel their investments into safer assets. There are also investors who are looking for risky assets, but they also require higher risk premium. Risk premium affects bond yields. Index of volatility is used as an indicator of investor's risk sentiment. We can also use an alternative method – measured by spreads. If the spread is growing between two countries with different ratings, investors will shift from the risky country to the less risky country.

3. Results

In the Table 2 we can see the rating of Spain during the years 2000 - 2016. At the beginning of the period, Spain had a rating of Aa2, which means that government bonds of Spain should be higher by 94 basis points, i.e., 0,94 percentage points, over the German Bunds. (For example, if yield of German Bunds is 1 %, the yield of Spain bonds should be 1, 94 %). In 2000, Spain had a stable outlook, and in 2001 positive outlook, which signified the improvement of rating. In 2001, Spain's rating improved to— Aaa, which is the best possible rating from Moody's agency. From this moment, we could say that Spain was a risk-free

country. From 2001 to September 2010, yields of government bonds of Spain were considered to be the safest on the market. During this period, we could make calculation of CDS (equation 1) for risky country, and for no-risk country, we could choose Spain. In September 2010, the rating of Spain deteriorated to Aa1. From then on, the rating worsened progressively to Baa3 in October 2012, which is the lowest rating above the speculative zone. From February 2014, Spain has had a rating of Baa2, which means that yields of Spanish bonds should be higher than German Bunds by 2. 11 percentage points.

Table 2Rating and outlook for Spain – Moody's

Date	1.1.2000	1.9.2000	1.12.2001	1.6.2010	1.9.2010	1.3.2011	1.7.2011
Rating	Aa2	Aa2	Aaa	Aaa	Aa1	Aa1	Aa2
Outlook	stable	positive	stable	negative	stable	negative	Negative
Date	1.10.2011	1.2.2012	1.6.2012	1.10.2012	1.12.2013	1.2.2014	1.2.2016
Date Rating	1.10.2011 Aa2	1.2.2012 A1	1.6.2012 A3	1.10.2012 Baa3	1.12.2013 Baa3	1.2.2014 Baa2	1.2.2016 Baa2

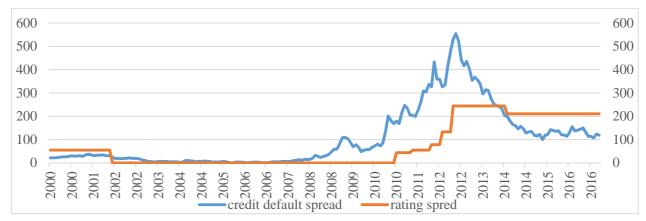
Source: own processing based http://www.tradingeconomics.com/spain/rating

In the Figure 1 we can see our first rating-based method compared to the second market-based method. In the second method, we simply compare yields of Spain's bonds and yields of Germany's bonds. We calculate CDS as in equation (1) above in the text. During the period 2000 to 2016, several events happened in the world. Firstly is the dot.com bubble, also known as tech bubble or Internet bubble. It was a speculative bubble covering years 1995-2001. During this period, the growth of stock values of companies associated with internet, was extremely high compared to other companies. Due to the rise in the commercial growth of the Internet, venture capitalists saw a record-setting growth, as dot.com companies experienced meteoric rises in their stock prices and therefore moved faster and with less caution than usual. The collapse of the bubble was in 2001. We can see that the rating of Spain was Aa2 in 2000 and was reduced to Aaa in 2001. At the beginning of our season, we can see a small fluctuation of CDS. Similarly, CDS was on a low level and after 2001, when it started decreasing to a level under 10 basis points, which means that yield of Spain's bonds was higher than Germany's by 0.1 percentage point.

The second market event was the financial crisis, also known as the global financial crisis, during the years 2007 - 2009. Many economists concluded that it was the worst financial crisis since the Great Depression of the 1930s. Everything began in 2007 with the subprime mortgage in the USA. Subprime mortgage is a type of mortgage normally issued by a lending institution to borrowers with low credit ratings. As a result of the borrower's lower credit rating, a conventional mortgage is not offered, because the lender views the borrower as having a larger-than-average risk of defaulting on the loan. Lending institutions often charge interest on subprime mortgages at a rate that is higher than a conventional mortgage, in order to compensate themselves for the higher more risk. Many of these loans were also bundled together and formed into new financial instruments called mortgage-backed securities, which could be sold as low-risk securities. Subprime mortgage crisis developed into a banking crisis, with the collapse of the investment bank Lehman Brothers on September 15, 2008. Because of factors like the level of globalization and specific relationships between financial institutions of different countries, we can talk about a worldwide crisis. As we can see in the Figure 1, CDS started growing in 2008 and reached a peak in 2009. In 2010, we can see a small drop in CDS. But during financial crisis, the rating of Spain remained unchanged, so we can say that market-method (CDS) reacted better to the market events, than the rating-method. From these two situations, we can conclude that the CDS method portrays the situation of country risk much better.

The third event is the debt crisis in the Eurozone, multi-year debt crisis brewing since the end of 2009. A few countries of the Eurozone (Greece, Portugal, Ireland, Spain and Cyprus) were unable to repay or refinance their government debt or to bail out over-indebted banks under their national supervision, without the assistance of third parties like other countries of the Eurozone or the International Monetary Fund (IMF) and the European Central Bank (ECB). As we can see in the Figure 1, the end of 2009 started with an enormously increasing CDS. Government bonds of Spain were more risky than those of Germany, because of the former's enormous government debt. The spread reached the peak in 2012, when Spain got the rating of Baa3. We can see that CDS started growing one year sooner than when the rating started worsening. We can again conclude that the CDS method reacted better than the rating. After 2012, CDS started decreasing and stabilized at a level of about 110 basis points, i.e., 1.1 percentage points. Two years after this, Spain's rating improved to – Baa2. As we mentioned above, CDS fluctuated more than the rating, meaning that it reacts better to market situations, and could sometimes even give us a fake signal. But during our chosen period we can say that CDS predicted the change of rating of Spain.

Figure 1 CDS spread and rating based spread (in BP) in Spain between 2000 and 2016



Source: own processing based on ec.europa.eu/Eurostat

3.1 Selected determinants of CDS spread in Spain

Prior to the financial crisis of 2008, GDP growth of Spain was one of the largest in the Eurozone. As we can see from figure 2, before 2008, the Spanish economy was growing at around 4 % per year, along with a growing GDP. During this prosperity, we can see that the rating of Spain was very high and CDS was also on a low level. However, in the second quarter of 2008, the growth of Spain stopped and turned negative and in fourth quarter of 2008, GDP growth too reached negative numbers. From this point, we can talk about stagnancy in Spanish economy. Nominal GDP started decreasing from this point. During 2009 – 2012, economic growth of Spain was negative. This situation was confirmed by the CDS too, which was growing to enormous numbers during this period. From 2012, the economic growth of Spain revived, but very slowly. Also, we can see that from 2012, CDS started decreasing, and from 2014, it is stable at about 110 basis points. From our observation, we can conclude that there is a negative correlation between CDS and GDP growth. During 2000-2008, CDS was stable at around 20 basis points, with economic growth too being stable level at about 4 %. In 2008, we found CDS increasing with the decelerating economic growth of Spain.

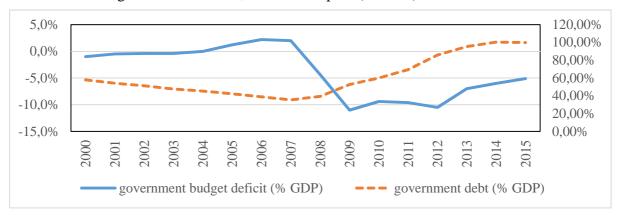
300 000,0 8,00% 6,00% 280 000,0 4,00% 260 000,0 2,00% 0,00% 240 000,0 -2,00%220 000,0 -4,00% 200 000,0 -6,00% --- Spain - GDP growth Spain - GDP

Figure 2Quarterly GDP in Spain, seasonal and calendar adjusted, and quarterly GDP growth

Source: own processing based on ec.europa.eu/Eurostat

In the Figure 3 we can see the proportion of government budget deficit to GDP and government debt to GDP in Spain, during 2000 – 2015. Similarly, as we saw in the figures above, the season of 2000 – 2008 is characterized by low level of CDS, stable economic growth, increasing nominal GDP, as well as positive budget deficit and decreasing government debt. During this season, when Spain's macro-economic factors showed positive results, Spain had a rating of Aaa, making it a risk-free country, comparable to Germany.

Figure 3Government budget deficit and debt, to GDP in Spain (% GDP)



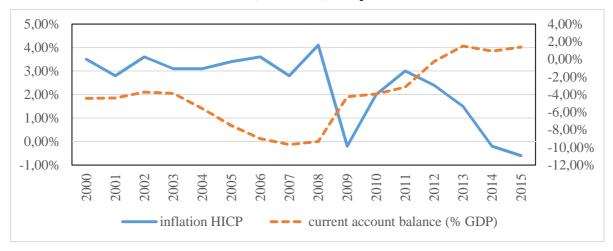
Source: own processing based on ec.europa.eu/eurostat

Investors had no doubt about the quality of Spain's bonds and that's why they did not require high bond yields. In 2007, the budget deficit of Spain was 2 % of the GDP and government debt was 35.5 % of GDP, which was really low, compared to the averages of the European Union (EU). For comparison, Germany's government debt was 63.6 % of the GDP and the average of the EU was 57,.8 % of the GDP. After 2008, Spanish government debt started to grow continually. Also, budget deficit was negative during 2008 – 2015. But why did CDS start growing in 2010 and not in 2007, when debt started rising? We can conclude that the debt of both Spain and Germany grew from 2007 to 2010. However, in 2010, Germany's debt started continually decreasing, while that of Spain debt stayed unchanged first and then started rising. Also, in 2010 Spain's rating worsened to – Aa1. So we can say that there is strong relation between CDS and government debt.

In our last figure, we can see the inflation and current account balance to GDP in Spain. From 2000 till 2008, inflation was on a stable level of about 3 % - 4 %. In 2009, it was -0. 2 % (deflation). CDS was stable till 2008, similarly to inflation. The second time when

Spain was experiencing deflation was during 2014 and 2015. Nevertheless, we see that CDS stayed stable during deflationary periods. We cannot precisely posit a direct relationship between inflation and CDS, but there is a connection between inflation and GDP growth. Hence, from this point of view, there is an indirect relationship between CDS and inflation. Extremely high or low inflation (deflation) is not good for the country. The optimal figure of inflation is below but close to 2 %, which is enough for the economy to fully reap the benefits of price stability (target of ECB). Current account balance to GDP was on stable level, at about -4 % till 2003. From 2003 till 2008, it fell to -9, 33 % of GDP. From this point, we can see a continual rise of current account balance in Spain. Again, we cannot jump to the conclusion of a straight relation between current account balance and country risk measured by CDS. But the deficit of current account balance does exert a depreciatory pressure on the local currency: such depreciation can stimulate exports, because the local currency will be "cheaper" for foreign countries, so that they are able to obtain more goods for their currency. In a chain reaction, increased exports will increase GDP and better GDP growth makes the country safer.

Figure 4
Inflation and current account balance (% of GDP) in Spain



Source: own processing based on ec.europa.eu/Eurostat

In the Table 3 we can see correlation analysis between our selected factors – GDP, GDP growth, government debt to GDP, government budget to GDP, inflation and current account balance to credit default swap spread in Spain, during 2000-2016. Between GDP (in millions of EUR) and CDS, there is a positive relationship, which means that when GDP increases.

CDS will increase too. The better relationship we can see between GDP growth and CDS. When the GDP starts rising, the CDS will start falling, and conversely, a decreasing GDP growth will prompt a rising CDS. Between government debt and CDS also, we see a good relationship, CDS rising with a rise in debt. The correlation between government budget to GDP and CDS is at the level of -0.77. It should be noted that the budget is calculated as expenditures minus revenues, so positive numbers in these statistics are good. So when the budget goes into deficit (i.e. when expenditure exceeds revenue), CDS will rise and, on the other hand, when the budget is in a surplus, the CDS will fall.

Table 3 Correlation analysis in Spain. (2000-2016)

	GDP	GDP growth	government debt to GDP	government budget to GDP	inflation HICP	current account b.
CDS	0,42	-0,80	0,72	-0,77	-0,32	0,66

Source: own processing based on ec.europa.eu/Eurostat

Between inflation and CDS, we see a low negative relationship and between current account balance and CDS, we see a positive relationship at the level of 0.66.

4. Conclusions

During 2000-2016, the Spanish economy was confronted by several events: first by the stock bubble in 2000 also known as dot.com bubble, and then by the mortgage bubble, which mushroomed into a global financial crisis in 2008, and finally by the debt crisis after 2010. We saw six macroeconomic factors which affect country risk - in our case, measured by CDS. We can conclude that during 2000-2008, economic growth of Spain was on a stable level of about 4 % per year, nominal GDP increased too, budget deficit was positive, with the government reducing its debt. Inflation was also on a stable level of about 3 – 4 %, all of which resulted in the best possible rating for Spain – Aaa from Moody's agency, and a low CDS at an average level of about 10 basis points. However, after 2008, economic growth stopped and government debt started increasing. In 2008, we can also see a small fluctuation in CDS. But in 2010 – 2012, we saw the sharp rise of CDS, as well as growing government debt and negative economic growth. In 2012 - 2014, CDS was restored to a stable level of about 110 basis points. In our long-term analysis, we also see several changes in the sovereign rating of Spain. We can conclude that these changes followed the changing CDS; we can hence conclude that market-based method predicts rating. From correlation analysis, we can conclude that the best relationship is between GDP growth, government debt to GDP, government budget to GDP and credit default swap spread. Other factors have low or inverse relationship.

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Specifics of Family Businesses and Problems of their Financing

Paulína Srovnalíková

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: srovnalikova@stonline.sk

Abstract

Family business, its development, importance, examination, evaluation and interpretation of results have a long tradition in developed economies. Family business includes an extremely large number of businesses in the world. Many economists and professional institutions deal with problems of family business and its definition. Specifics of companies in family business and their financing problems create a non-negligible number of questions that are not answered. This article aims to analyse the family business and defines the principles of specific differences between family businesses and related problems of their financing. External and internal factors are analysed in the article as factors that affect business activities of family businesses and their economic results. The main specific differences of family businesses, which are the subject of our analysis, include: employment of family members, problems of succession in family businesses, institutional support of family business, and raising funds for newly created and existing family businesses.

Keywords: family business, specifics of family businesses, financing, succession, family members

JEL classification codes: M1, M2

1. Introduction

Family businesses are usually classified as small and medium enterprises and represent a significant part of the economic system because they have a positive effect on important macroeconomic indicators of economic development such as gross domestic product, employment, added value, state budget revenues, etc. (Fetisovová et. al., 2014). SMEs are an important group of businesses with decisive influence on the economic, social and political spheres of society in economically developed countries. Family businesses have a high responsibility not only for their business but also for the surroundings and the region where they do business, employ people, pay local taxes, develop infrastructure, engaging in local and regional cluster cooperation (Havierniková, 2016). Family businesses generally do not belong to a group of businessmen, a group that aims to maximize profits. On the contrary, they focus on long-term operation of their family companies with a vision for the future that their descendants will take over management of the family business as their heritage (Astrachan, 2010).

In this context, it encourages the owners to build a strong corporate stable platform that allows its descendants continue to implement and build on the already built foundations. Family members are usually characterized by togetherness and family businesses therefore have a longer-term stability, businesses might survive several generations sometimes. By (Arrégle et.al. 2007), an important aspect of the family business is more enthusiasm of family members, use of their abilities, skills, knowledge as well as the mutual trust. Relationships

and overall coherence of family members is increasing, in addition to benefits in terms of economic and financial security of the family. This way of doing business is often more efficient than mutual foreign business people. Each family has a natural desire to survive and if existence depends on the results of its activities. Common efforts are better in the family business than non-family enterprise to successful outcome (SFA, 2016).

Status and trends in family business, its importance and evaluation are different in the various Member States of the European Union. By (EurAktiv, 2009) two-thirds of small businesses are in the hands of families in the UK. Federation of Small Businesses (FSB) reported that 6% of them inherited and 9% draw the funds from money of family members in their statistics. From them on their future looks positively only 21%. On the contrary, family businesses are developing slowly and we can find them in the list of companies with high turnover in France rarely. On the other hand, family businesses have a long tradition in Italy. "Analysis of Hyperion Corporate Finance states that 60% of Italian companies will experience a generational change in next five years. The demographic crisis caused that many companies are managed by people over 70 years, although many people (50 age) are still waiting to take over the business from the older generation ".

Family companies are confronted with competitive disadvantages in the financial sector, manufacturing, human activities and the legal and policy issues that they arise from the nature of SMEs, unlike large enterprises (Kalusová, Fetisovová, 2015). Number of authors around the world deal with specific problems of family businesses and their financing. They refer particularly to differences of business between non-family persons and family members in the family business, its advantages and disadvantages. However, most attention is dedicated to the economic performance of family businesses, investment decisions and financing of family business in specialist publications (Block, 2012; Bocatto et al., 2010; Dawson, 2011; Miller et al., 2008; Molly, 2010; Villalonga – Amit, 2009; Zellweger, 2007). The object of investigaton are the questions about business strategies of family businesses, its strategic direction in response to these problems (Astrachan, 2010; Gudmundson et al., 1999;) and management of financial risks (Belás et al., 2016; Virglerová et. al., 2016). Considerable attention is given to succession in family businesses and other specific attributes of family business (Tagiuri – Davis, 1996).

1.1 Research objective and methodology

Based on the above, the main objective of this study is to analyze the specific differences in family business and determine their impact on the process of obtaining sources of financing business activities of family businesses. One of the main tasks that contribute to the realization of this objective, it is to analyze specific differences in family business, to define the positive and negative potential and its impact on the economic results of family businesses. The next task is to analyze and define the external and internal factors affecting fundraising and financing of business activities of family businesses.

We have characterized the present state of financing of family businesses and its impact on their further development based on our acquired findings. We have used the methods of theoretical analysis of macroeconomic, microeconomic indicators of economic development of family businesses, evaluation and assessment of the causal relationship between specific factors of family business and the problems of funding of family businesses in article. We have used mainly traditional scientific methods as comparison, induction and deduction.

2. Theoretical basis of investigation of the specifics of family business and family businesses funding

Family businesses are an important part of the economy of countries, they are a stabilizing element in the economic system and the sector with the greatest potential for growth. They have indispensable task in job creation, balanced regional development and introduction of innovation into economic practice, mainly (Havierniková et. al. 2016). Family businesses provide jobs for more than two-thirds of the active labor force and contribute to the creation of more than half of value added in the non-financial business economy. However, they are more sensitive to the quality of business environment, they also face a number of specific problems (Šúbertová, 2016). Also for this reason, an important task for governments is the systematic improvement of environment for business, it is subsequently reflected in the improvement of their competitiveness in the domestic, European or global market. (SBA, 2010). Despite its high flexibility and the ability to fill gaps in the market, businesses have complicated access to funding sources and they are very vulnerable to fluctuations in the environment and unexpected changes. Predatory large domestic or foreign corporation "does not absorb" the family business at a reasonable state support and their owners are not forced to seek more favorable conditions for doing business in other countries when tax holidays will end or labor costs do not create a competitive advantage.

Explicit attention is not given to family businesses particularly within the strategies of government institutions, nor in Western Europe (and even less in Eastern European countries). Only certain measures and policies of government institutions are dedicated to the development of SMEs in terms of long-term perspective. These measures apply mainly to reduction of administrative burden, tax cuts, on funding sources and access to funding, to internationalization of their business and the like. (Šúbertová, 2016). We consider the measures of the Ministry of Employment and the Economy in Finland as an exception. The Ministry established a working group to define the family businesses and to assess their importance and position in the international dimension. Group gives opinions on proposals of laws and regulations in terms of their influence and the impact on family businesses if i tis necessary.

The issue of family businesses is not addressed specifically in any legislative standards or support in the area of advice in the event of transfers of family businesses in Slovakia. Family business is at its base, as we have already mentioned, different from business companies where the founders, owners, management employees and regular employees are strangers to each other. Founder and owner of the family business is usually at the same time managing director respectively director of the company and determines its direction, he must learn to manage his time. He affects the the development of his family business in the long term, and he has a key position. There is no separation line between work and private life, and therefore the entrepreneur must solve the fundamental question of priorities between business and private activities for the whole business. Overlap between work and private life is reflected in the effort to involve family members in the business. "Family interest" can arise by involving key members of the family in the business. It can be indicated as a key element of family business that operates on its success and differentiates its from non-family business.

Family businesses are forming within the natural development of gradual inclusion of the family members in the business, it creates a stronger family and gives better preconditions for the transfer of experience from generation to generation. Trust exists in a personal family relationships, trust is transferred to the business and trust constitutes the specific climate of the family business. One of the leaders of family businesses commented, "family company means to me trust and I know that family members will do maximum for the company. What is good for business is good for me and my family" (SBA, 2014). Personal factors that enter into the family business, it is therefore a source of stability and formation of traditions. In the

context of family work, we meet with the trend of their preference in leadership positions. The trend is a consequence of trust climate and also it serves to ensure succession in the enterprise. If a family business withstand at least one generation of a family on the market, it means that the main actors in the family business partially or fully lived most productive professional life, while their working time with family time passed concurrently with other family members.

Important feature of family businesses is to create of tradition and its maintenance through the transfer of experience from generation to generation. This creates a strong basis for the continuity of operations of the company and its future well-being. Of course, this is true if common goals are clear, crucial for the company, and family members are involved together on the objectives. Low ratio of circulating capital and physical capital in the production structure of family businesses, simple administration and transparent organizational structure create conditions for flexible decision making about financial security of company and operation of all business processes (Gubitta – Gianecchini, 2002). Specific benefits include the use of their own skills and abilities and their development, build family relations, sustained support of family members, a common interest regardless of the immediate financial benefits, interest to maintain traditions, to fulfill long-term goals and honor common values in the family business.

3. Specific problems and their impact on family businesses and their state of funding

Family business in comparison with other forms has great differences, some of which are beneficial for family businesses and other cause some problems. For example, the employment of family members who transfer conflicts from the family to business, and vice versa. These conflicts can eventually affect the company operations and its economic results, to bring a successful company into bankruptcy. It is important that the founder was aware the significance of these relationships, and he devoted himself to the development this relations with proper attention. Difficulties in the employment of family members also arise in labor-law relations. Consequences for violations of labor discipline, failure to perform assigned tasks or low performance at work apply to family members more complicated than to other employees. Involving of family members in business is tied to the preparation of young people for taking over business. The importance of training in succession intensifies with increasing age of the founders.

Slovak family businesses are in a period in which the first generational change is in progress or will prepare in most businesses. This moment can be regarded as critical. Intergenerational family relationships in a family business are the usual objects of scientific interest (Zellweger et al., 2012). The survey of family businesses in Slovakia (PwC, 2014) shows that only one third of the businesses in which generational change took place, this process managed successfully. The first step for successful intergenerational exchange is the inclusion of potential successors in business and the creation of a family interest among followers. The owners can not underestimate the preparation of succession. Underestimation may lead to the fact that the successor will not accept the business, he would not have formed a sufficient interest to maintain it, or he will want to get rid of the company as an unwanted burden.

Businesses must also ensure preparation for the takeover with followers (SBA, 2014). World statistics data of family businesses suggests that 7% of all family businesses will be sold in the changeover period to the second generation. Only 3% of family businesses enlarge and increase the value after the transition to the second generation. 10% of companies does not change size and up to 80% of family businesses end in a period of generational change (Makarová, 2017).

Many businesses ends due to the problems of marketing, financial, or because of bad relationships and other problems in the family that are transferred to the company. This may include a struggle within the family father with his son, siblings with each other, divorce, death of the founder, or child, major diseases of founders who can not handle the situation and they sell the business. Rules and discipline in the family are an important tool how to survive generational change in the family business, the owner can not close eyes to the black sheep in the family, but he has to deal with them. Founder should decide in advance which member of the family and why he replaced him in the leading position. The owner must choose his successor by personality analysis. He must know that the successor will fulfill the conditions for the leader of the company and he will manage important role (Makarová, 2017).

Family businesses are also facing to problems of inadequate legislative institutional support in addition to the above mentioned specific problems. The subject of research is support to the growth of innovative and competitive family businesses in many countries. Numerous approaches are identified through which the strategic and tactical objectives are achieved in industrialized countries. Effective methods, techniques and tools are necessary to facilitate optimal decision making in overcoming the barriers associated with the implementation of innovations in practical terms (Kováčová, 2009; Mura – Sleziak, 2015). For example, the recent economic crisis has given impetus given to finding solutions to the most sensitive areas of the business sector in Slovakia. The Small Business Act for Europe (SBA) has been focused improving the business environment, which is intended to form the "Think Small First" principle in policy making from regulation to public service, and support the growth of SMEs and family businesses by helping them tackle the remaining problems which hamper their further development (SBA, 2010).

Institutional framework to support plays irreplaceable role in the sector of family businesses. Many business owners and supporters of such enterprises exist in the Slovak Republic. Slovak Business Agency said "the current support scheme is relatively less apprehensible, the system involves many actors dealing with issues of support for SMEs and it is also characterized by complicated links. Attention is given to central state administration authorities whose tasks are concentrated mainly around policy development and sourcing and particularly specialized agencies, banking institutions and funds, which mainly serve to implement these policies, even if the initiator and founder may be government authorities and further interest, professional and professional organizations" (SBA, 2017).

Constantly changing business environment threatens the resilience and competitiveness of family businesses. Family businesses are exposed to the difficulties in financing their businesses. Solution of known issues with the financing of family businesses is becoming more difficult in times of economic difficulties and crisis situations in the economy because a large number of family businesses is not associated with faster economic growth or poverty alleviation. Therefore, it is important to distinguish between the different segments of small medium enterprises and family enterprises especially among small self-sufficient businessmen and transformation businessmen. That some segments of family businesses can alleviate funding problems is related to existing rules for family businesses and their access to financing during the economic cycle and during crisis situations (Beck, 2013).

Introduction of innovation increases resistance to the effects of economic fluctuations and competitiveness of family businesses (Majdúchová, 2015). By portal cfo.sk (2013) current unstable market environment provides no possibility for family businesses like constantly reassess their situation and modify the operational strategy. Rolling planning is therefore the best practice tools of modern financial management. Its importance has increased significantly with the onset of the financial crisis, which has led to increased instability of the market environment, as well as rapid technological changes - shortening of product life-cycle. Changing market environment requires a continuous assessment of the new situation and the

company's ability to respond flexibly to changes. By Lesáková et al. (2013) in terms of small family businesses (especially individual family entrepreneurs - physical persons) financial planning and report on the state of their finances generally contains less content elements and economic indicators. The focus is often on short-term financial planning. The output is a plan of economic results, financial balance and projected cash flow plan. Several financial plans and decisions are not writing at all.

Subjective approach entrepreneurs or company management, their knowledge and experience in the field of business and labor intensity affect the choice of range structure, methodology of the financial plan and funding often. Accumulation of tasks and activities, absence of own accountant or economist is typical for small businesses. Managers of such enterprises usually do not have sufficient knowledge and experience in financial management, they are busy with daily tasks. Managers do not considere planning as priority, this can have a negative impact on continued survival of family business.

4. Conclusion

Financing issues and the specifics of family business require even deeper extensive evaluation, analysis and review by expert and academic communities. Specifics of the advantages and disadvantages of family business are often intertwined, so that straight line can not be drawn between them. Difference of opinion is a disadvantage and even risk, but this is almost inevitable part of any business. However, the ability to name and solve problems before they turn into an unsolvable situation in the business and entrepreneur in the family (or in families of other participants) can be considered as an advantage. Only in case of conflict in family businesses can test how the legal system is set up and whether it is able to deal with family-business conflicts, or whether the system can deal with certain situations in advance that disputes will not arise later (eg. through the establishment of family governance). Suitable solution is to establish a family council that meets regularly and potential problems should solve before they will become threatening for the enterprise.

The basic rules are the same for other businesses as well as family businesses, regardless of any specifics, according to our findings. Cash flow, capital flow and financial resources is shown in the corporate finance, during which the company should be in variety of qualitative and quantitative relationships with other entities. Family businesses are looking for answers to the same questions associated with the development and functioning of the firm, the same functions of financial management are for them, and firms are trying to the same basic financial goals as all businesses. A specific feature is that family businesses are different from other businesses by, for example, financial target of survival of enterprise will be with regard to the pursuit of long-term exposure and maintenance of enterprise for future generations. The family business considers a financial target of survival more important as compared to non-family business, for which the most important goal is to make profits. Entrepreneurs starting small businesses learn to particular responsibility because any uncertainty (political, economic and even family) can mean for them and their business implications of failure, even to the possible termination of business.

We can say that each person who establishes or own a small business, gives an opportunity for new jobs, develops regions and creates value, which form irreplaceable part of the business. We think that small and medium enterprises and family business has certain advantages over large enterprises. Many unanswered questions and specific problems are also in institutional support and financing family businesses, particularly in obtaining financial resources for start-up family businesses. Entrepreneurs are faced with a number of bureaucratic barriers and findings that financial resources from the EU funds are not available for them, and they often have to face with some corruption. In the professional public, we have a lot of opinions and recommendations for starting a family business and funding it. We

believe that the appropriate solution for the support of this type of business would be that the government would be able to introduce certain tax reliefs, possibly following the fulfillment of certain tax relief criteria for a certain period, which would be a source of funding for the family business and its further development, and thus lowering the level of unemployment.

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Deindustrialisation: Is it a Real Problem for Developed European Countries?

Erika Stracová

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: erika.stracova@euba.sk

Abstract

This paper deals with the process of the so-called deindustrialisation, which has been recently associated with many developed countries. Over the last decades, technological progress and reorganisation of production activities across industries and national economies has led to an overall decline in employment and value-added shares of manufacturing in advanced countries. After the recent economic crisis, policymakers across the globe called for an 'industrial renaissance' and took steps for a re-industrialisation of their economies. On the other hand, outsourcing and continuous fragmentation of global value chains decrease the relevance of direct employment and value-added effects of manufacturing for overall economic performance. Therefore, an analysis of deindustrialisation processes calls for an approach that considers complex linkages among industries. Input-output analysis is a suitable tool for capturing these indirect effects, which cannot be visible in simple statistics. The aim of the paper is to investigate the magnitude and the significance of the so-called deindustrialisation in selected European countries, with emphasis on Slovakia. The analysis is based on data from the World Input-Output Database. In this paper, the version released in 2013 covering the period from 1995 to 2011 including the socio-economic accounts with employment data is used. These data are used for the analysis of indirect effects of manufacturing on production, value added and employment. They are also used for the analysis of both value added and employment development in Slovakia.

Keywords: deindustrialisation, manufacturing, industrial policy

JEL classification codes: C67, L60

1. Introduction

In recent years, a decreasing share of industry on the overall value added and employment in national economy can be observed. This is being caused by a constant increase in labour productivity. This leads to discussions about deindustrialisation and maybe to a premature conclusion about a decreasing importance of manufacturing for the economic development of countries (Rodrik, 2015). However, industry has always been the driver of innovation and it will play a key role in the 4th industrial revolution as well. Moreover, it is closely linked to services, which means that it also generates value added and employment indirectly in other industries. Many authors emphasise the increasing importance of manufacturing and a need for outsourcing and increased employment in industrial sectors (e.g. Aiginger, 2007).

Also, the European Commission (2014) has been drawing attention to the increasing importance of manufacturing. They point out that, on average, 1 in 4 jobs is created in industry and it generates 0.5 to 2 jobs in other industries. Moreover, 80 % of private investments into science and research are directed into industry and industrial products account for about 80 % of the export from Europe. Also, industry is strongly resilient to

crises, which is another advantage. The history has shown that countries with strong industrial base (e.g. Germany) have been able to recover from the financial and economic crisis better and more quickly than other countries. Thus, European Commission calls for 'industrial renaissance' and believes that building a strong industrial base will lead to a revival of European economy and to a strengthening of its competitiveness (European Commission, 2014; Euractiv.sk, 2013).

Nowadays, the term industry does not include only production. The whole process starts with raw materials and energy and ends with business and consumer services, and tourism. Bieńkowska (2015), European Commissioner for Internal Market, Industry, Entrepreneurship and SMEs, on the Forum Europe conference about re-industrialisation emphasized that manufacturing and services had to be viewed as two sides of the same coin. In a modern economy, there is no choice between one and the other option. These two sectors are becoming more intertwined, as evidenced by the fact, that 40 % of jobs in the European manufacturing are linked to services. In other words, outsourcing and continuous fragmentation of global value chains decrease the relevance of direct employment and value added effects of manufacturing for overall economic performance. Many activities, once taking part in manufacturing, are now supplied by businesses in the service sector and many high value added activities are being outsourced to companies outside the manufacturing industry. Thus, the question about the real magnitude of the so-called deindustrialisation arises.

2. Data and Methodology

In order to identify the real extent of the so-called deindustrialisation, the input-output analysis is used. It is a useful tool for capturing not only the direct but also the indirect effects of industries. Examining industry from the viewpoint of indirect effects may reveal that the extent of deindustrialisation is different from what can be observed from simple statistics.

The analysis in this paper is based on data from the World Input-Output Database. The version released in 2013 covers the period from 1995 – 2011, including the socio-economic accounts with employment data. The data are used for the analysis of the development of both value added and employment. A detailed description of the input-output model can be found in the publication by Miller and Blair (2009).

The model calculation is based on the Leontief inverse matrix expressed as follows:

$$(\mathbf{I} - \mathbf{A})^{-1} = \mathbf{I} \tag{1}$$

Matrix L represents the complex linkages among industries, which connect the final demand with the whole production. Using the Leontief inverse matrix, the input-output model can be written as:

$$x=(I-A)^{-1}y=L.y$$

Vector \mathbf{y} in the model is exogenously given and by multiplying it by matrix \mathbf{L} from the left side, the whole production by industries in a national economy (vector \mathbf{x}) can be calculated. Using various modifications, this model has a multitude of applications for the economic analysis of national economies.

Until now, only the vector of the final use (y) was considered. For the purposes of this analysis, the vector was split into four different vectors of final use in order to be able to observe the effects of individual industries on production, value added and employment. The four vectors are the following: \mathbf{y}^{man} , $\mathbf{y}^{\text{trade}}$, $\mathbf{y}^{\text{other serv}}$ and $\mathbf{y}^{\text{other ind } 1}$. For instance, vector \mathbf{y}^{man} expresses the final use of manufacturing products, vector $\mathbf{y}^{\text{trade}}$ expresses the final use of trade services etc. Subsequently, it is possible to determine the whole production, value added and employment generated by the final use of products in individual industries.

The calculation of these effects will be shown on the example of employment generated by the final use of manufacturing products. Employment data (in thousands of people for every industry) are extracted from the socio-economic accounts available at the World Input-Output website. These data are represented by row vector \mathbf{e}^t . In order to get the cumulative coefficients of employment, the coefficients of direct labour intensity ($\mathbf{e}^t_{\mathbf{c}}$) have to be calculated first. Each value of vector $\mathbf{e}^t_{\mathbf{c}}$ represents the number of people in a given sector needed for producing one unit of production of a given industry. By multiplying this coefficient by matrix \mathbf{L} from the right side, one can also reveal the indirect linkages connected with employment. This is expressed as follows:

$$\boldsymbol{e}_{m}^{\prime} = \boldsymbol{e}_{c}^{\prime} \cdot \mathbf{L} \tag{3}$$

The individual values of the vector \mathbf{e}_{m}^{\prime} show the overall employment in the economy generated by a unit of final use of commodity j. Equation (4) can be used to identify the number of persons employed in manufacturing, trade, other services or other industries directly and also indirectly. Furthermore, their share on the overall employment in the national economy can be determined as well.

$$e^{industry} = e_m^{\dagger} \cdot y^{industry} \tag{4}$$

Using the input-output analysis, it is also possible to identify the number of jobs generated by the final use of manufacturing products for USD 1 million. This can be done using the *multipliers of employment for manufacturing*. It can be found by dividing the number of persons employed generated by the final use of manufacturing products by the volume of their overall final use. Similar calculations can also be performed in the case of production and value added.

3. The Importance of Manufacturing for the National Economies of Selected European Countries

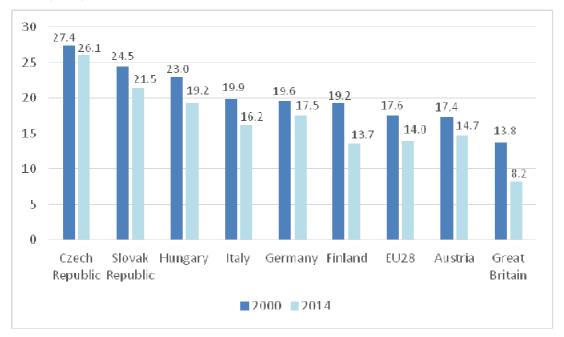
Many advanced economies experienced a major decline in the employment in manufacturing compared to the overall employment. As can be seen in Figure 1, a rapid decline can be identified especially in the UK and Finland (more than 5 percentage points). With a decline of 3 p.p., Slovakia is not an exception. This is closely related to a continuous increase in labour productivity in manufacturing. When looking at the structure of employment in EU28 in 2014, almost 75 % of people were employed in services, compared to only 16 % of people working in industry, out of which about 14 % worked directly in manufacturing.

All of this may lead to premature discussions about deindustrialisation of advanced economies. Does it mean that the importance of industry for the development of advanced economies is decreasing? Looking at the direct indicators only may suggest so; however,

¹ Industries constituting the individual vectors are listed in Appendix 1.

there is a different approach which may disprove this hypothesis. It is worth to point out the indirect effects of manufacturing on other industries, as well. This can be done using the input-output analysis described in the previous chapter. This allows us to identify complex linkages among industries, which can be seen in the Figure 2.

Figure 1The share of employment in manufacturing on the whole employment in selected countries, 2011 (in %)

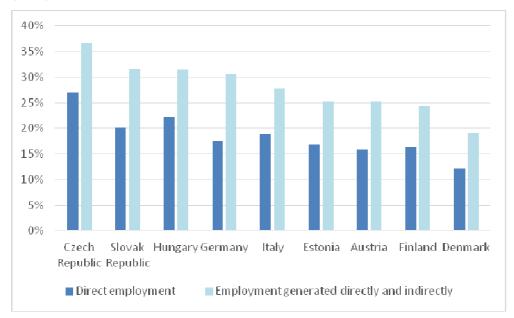


Source: Author's calculations based on data extracted from Eurostat, National accounts employment data by industry.

While the direct employment in manufacturing, except for the Czech Republic and Hungary, is well below 20 %, the employment generated by the final use of manufacturing products is much higher. Employment generated directly and indirectly is above 30 % in the Czech Republic, Slovakia, Hungary and Germany, which implies that approximately every third employee is directly or indirectly generated by the final use of manufacturing products. Even when looking at Denmark, where the direct employment in industry is very low, almost every fifth job is created by the final use of these products. Thus, the importance of industry for creating new jobs is definitely not negligible.

Simple statistics cannot reveal such linkages; however, they are really important from the national economic viewpoint. A significant part of the services sector would not be created if it was not for a well-functioning manufacturing. This should be taken into account when talking about deindustrialisation and a decreasing importance of industry for the development of economies.

Figure 2The share of employment generated by manufacturing directly and directly + indirectly, 2011 (in %)



Source: Author's calculations based on data extracted from Eurostat, National accounts employment data by industry.

4. Importance of Manufacturing for the Slovak National Economy

In this chapter, the indirect effects of manufacturing will be examined in more detail on the example of Slovakia. As has been already mentioned, this will be done using the input-output analysis. Table 1 includes a comparison of direct and also generated (direct + indirect) effects of manufacturing on the whole national economy of the Slovak Republic.

Table 1The national economic effects of manufacturing on production, value added and employment in the Slovak Republic, 2011

	Production in USD bn	The share on the whole production	Value added in USD bn	The share on the whole value added	Employment in thousands of people	The share on the whole employ- ment
Direct effects	72.9	34.0 %	17.2	19.6 %	452	20.1 %
Direct + indirect effects	91.9	42.9 %	27.4	31.2 %	711	31.6 %

Source: Author's calculations based on World Input-Output Tables from www.wiod.org.

The whole production in the national economy of Slovakia was worth USD 214 billion in 2011, out of which the largest part (almost USD 92 billion) was generated directly and indirectly by manufacturing. While the direct production in manufacturing accounted for only one third of the whole production, the production generated by the final use of manufacturing products directly and indirectly accounted for almost 43 %. A significant part of the indirect effects was generated in trade. Overall, the final use of manufacturing products directly and indirectly generated a higher level of production than the final use of the remaining industries. The importance of manufacturing for the Slovak economy can also be evaluated using the

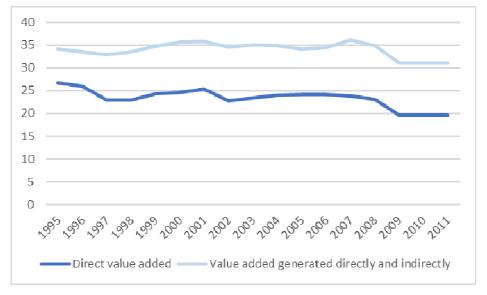
multipliers of production. The value of the multiplier for manufacturing in Slovakia was 1.57 in 2011. This can be interpreted as follows: The final use of manufacturing products for USD 1 million generated USD 1.57 million of production directly and indirectly in the whole Slovak economy.

The difference between the shares of the whole value added generated directly and directly + indirectly by the manufacturing in Slovakia is also significant. Almost 20 % of the whole value added in the economy is generated by manufacturing. If the indirect effects are taken into account as well, the whole production created by the final use of manufacturing products accounted for almost one third of the whole value added in the Slovak economy in 2011. A significant part was again generated in trade. When looking at the multiplier of value added, the final use of manufacturing products for USD 1 million directly and indirectly generated value added in the Slovak economy for USD 470 thousand.

Using the input-output analysis, it is also possible to analyse the effects of different industries on employment. In Slovakia, there were 2.25 million persons employed in 2011. There were 452 thousand people working directly in manufacturing (almost 20 % of the whole employment), while further 260 thousand jobs were generated indirectly. This implies that 711 thousand jobs (31.6 % of the whole employment in the economy) were closely related to manufacturing. In other words, one hundred employees in manufacturing indirectly generated 57 jobs in the remaining industries in the Slovak economy in 2011.

So, is it really correct to talk about deindustrialisation? Does the manufacturing lack importance in the development of advanced economies? In order to answer these questions in more detail, it is useful to look at the development of value added and employment in manufacturing from 1995 to 2011 (Figure 3 and Figure 4). The share of value added generated directly by manufacturing has experienced several decreases throughout the years. The development of the direct and indirect value added generated by the final use of manufacturing products almost copied the waveform of the direct value added, however it has been experiencing significantly higher values during the observation period. Moreover, the gap between the two lines on the graph is gradually widening.

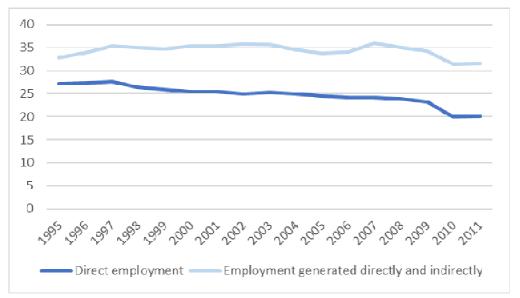
Figure 3
The shares of value added generated directly and directly + indirectly by manufacturing from 1995 – 2011 in Slovakia, (in %)



Source: Author's calculations based on World Input-Output Tables from www.wiod.org.

The widening of the gap between the lines representing the development of the direct employment and employment generated directly and indirectly by manufacturing throughout the years, is even more visible (Figure 4). This implies that the indirect effects of the final use of manufacturing products have been rising. In other words, the final use of industrial products generates more jobs in the remaining industries indirectly compared to the beginning of the observation period.

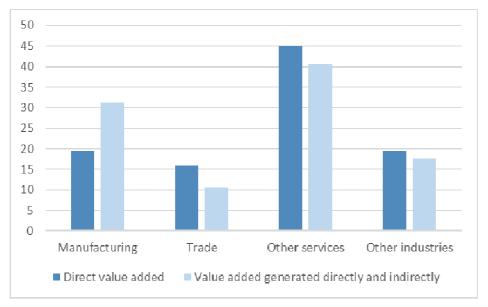
Figure 4 The shares of employment generated directly and directly + indirectly by manufacturing from 1995-2011 in Slovakia, (in %)



Source: Author's calculations based on World Input-Output Tables from www.wiod.org.

Compared to the remaining industries (trade, other services, other industries), the final use of manufacturing products generated the highest indirect effects on the Slovak national economy. This can be seen in the Figure 5 and in the Figure 6. When looking at value added, the majority of indirect effects have been generated in trade, followed by other services and other industries. Industry is generally known for its lower share of value added on production; however, as can be seen on the Figure 5, it is able to generate a high level of value added indirectly in Slovakia.

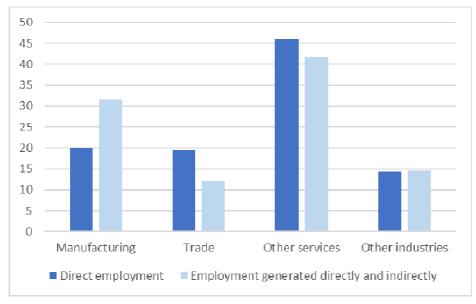
Figure 5The comparison of value added generated directly and directly + indirectly by four main sectors in Slovakia, 2011 (in %)



Source: Author's calculations based on World Input-Output Tables from www.wiod.org.

Furthermore, many activities, once a part of manufacturing, are now supplied by sale, wholesale trade, retail trade or other services and many high value added activities are being outsourced to companies outside the manufacturing industry. However, many of these activities would not exist without industry.

Figure 6The comparison of employment generated directly and directly + indirectly by four main sectors in Slovakia, 2011 (in %)



Source: Author's calculations based on World Input-Output Tables from www.wiod.org.

5. Conclusions and policy implications

The continuously declining shares of direct value added and employment in manufacturing raise the question whether this is the start of an era of the so-called deindustrialisation. In this paper, not only the direct effects of manufacturing but also its indirect effects have been examined. This approach revealed that many high value added activities outside manufacturing would not exist if it was not for a well-functioning industry. The same can be concluded in the case of employment. The natural processes of outsourcing, as a consequence of globalisation, and the increasing labour productivity have led to a lower rate of employment in industry. In other words, many activities, once a part of manufacturing, have been outsourced to trade services or other services. One has to be aware that otherwise, these jobs would not have been created. Many manufacturing activities are responsible for high levels of value added and employment in advanced economies. To conclude, the relevance of direct employment and value added effects of manufacturing for overall economic performance has been decreasing but the validity of such data may be limited. Indirect effects prove that the extent of the problem may not be as serious as previously thought.

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Appendix 1 Industries constituting the individual vectors

15t16 –36t37	Manufacturing
15t16	Food, Beverages and Tobacco
17t18	Textiles and Textile Products
19	Leather, Leather and Footwear
20	Wood and Products of Wood and Cork
21t22	Pulp, Paper, Paper, Printing and Publishing
23	Coke, Refined Petroleum and Nuclear Fuel
24	Chemicals and Chemical Products
25	Rubber and Plastics
26	Other Non-Metallic Mineral
27t28	Basic Metals and Fabricated Metal
29	Machinery, Nec
30t33	Electrical and Optical Equipment
34t35	Transport Equipment
36t37	Manufacturing, Nec; Recycling
50-52	Trade
50	Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel
51	Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles
52	Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods
H-P	Other services
Н	Hotels and Restaurants
60	Inland Transport
61	Water Transport
62	Air Transport
63	Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies
64	Post and Telecommunications
J	Financial Intermediation
70	Real Estate Activities
71t74	Renting of M&Eq and Other Business Activities
L	Public Admin and Defence; Compulsory Social Security
M	Education
N	Health and Social Work
0	Other Community, Social and Personal Services
P	Private Households with Employed Persons
AtB+C+E+F	Other industries
AtB	Agriculture, Hunting, Forestry and Fishing
C	Mining and Quarrying
E	Electricity, Gas and Water Supply
F	Construction

Source: Author based on National Input-Output Tables from wiod.org.

Indicator of Consumer Confidence in Slovakia and its Evaluation in Chosen Period of Time

Katarína Súkeníková

University of Economics in Bratislava Faculty of Commerce Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: ksukenikova@gmail.com

Abstract

The aim of this paper is to evaluate the level of consumer confidence in Slovakia, referring to the Consumer Confidence Index (CCI), and to compare its values from the beginning of October 2015 to the end of October 2016. In the paper, we emphasise the importance of monitoring atmosphere among consumers for different entities on the market as well as define consumer confidence and the methodology in terms of the Slovak Republic. Moreover, we present the results of research titled Consumer Survey IV., which was conducted and published by the Statistical Office of the Slovak Republic. Besides the overall indicator of consumer confidence we refer to the level of its four individual parts so that we could compare individual values of those indicators. We found out that the doubts of consumers were by 5.2 points lower than in the same period of the previous year, taking into account all the respective four parts.

Key words: Consumer Confidence Index, consumer confidence, Slovak Republic

JEL classification codes: D10, D12

1. Introduction

The consumer confidence and its macroeconomic impact is a topic, which raise the attention of economists, politicians, journalists and financial analytics. The main reason is the fact that the consumer confidence, measured by indexes created from the households' survey, is an important factor affecting not only present, but also future consumption expenditures of households. The results of the study of consumer confidence are part of fundamental information which can significantly move the market. These indicators are mostly important in the countries, where there is a higher share of consumer demand on GDP. The meaning of the Consumer Confidence Index is important in Slovakia as well. Based on it, it is possible to predict the development of the economy, therefore is its movement thoroughly monitored (McIntyre, 2007).

Monitoring of the CCI is an important action of many subject of the market. Investors, producers, retailers, banks or governmental institutions use it to plan their activities. The ability to predict important changes within consumer confidence give these subjects an ability to reconsider the consumers' willingness to buy, thus they can adjust their followings steps.

When the consumer confidence falls and consumers expect lowering of their expenditures, most of the producers react by lowering the volume of their production. Hence in general, when producers expect lowering of the retail buying from the consumers, they lower their stock or can delay their investments to new products or equipment. This works mostly for more expensive products or products with durable consumption. Banks can as well reduce their lending activities if they expect that the consumers lower their expenditures. Builders

plan lowering the volume of home contracts in this situation. The government will be preparing for lowering of future tax revenues.

On the other hand, if the consumer confidence is increasing, the volume of their shopping increases as well. Builders are preparing for higher price of building materials and housing in general. Banks can plan activities for the stimulation of demand for loan products. The government can expect the rise of tax revenues based on the increase in consumer expenditures.

1.1 Model and Data

In the Slovak Republic, the Statistical Office of the Slovak Republic is responsible for monitoring and measuring of consumer confidence. It creates survey of consumers called Consumer Survey, by which it detects how citizens rate individual aspects of the economic development of the country and the financial economy of their household. The summary indicator of consumer confidence is therefore made up of four areas:

- expected financial situation in the household,
- expected economic situation in Slovakia,
- expected unemployment,
- expected household savings.

This survey is a part of harmonized program of business and consumer surveys which are carried out in all 28 EU member states and in its candidate countries. Surveys are coordinated and supported by the Directorate-General for Economic and Financial Affairs of the European Commission. Respondents of the survey, which is the subject of this paper, compared the present with the past 12 months, i.e. the period between October 1, 2015 and September 30, 2016. Questions to determine the expectations of respondents concerned the next 12 months, i.e. the period between October 1, 2016 and September 30, 2017.

Collection of the data was carried out by trained associates – interviewers during October 1-11, 2016. It was realised by the method of structured interviewing. According to the unified international methodology, the survey focused on 16-year-old and older people. Given the size of the population, which consisted of 4,508,419 people aged 16 and over, i.e. 83.54% of the total 5,397,036 inhabitants to May 20, 2011, the selected sample was scheduled for 1,200 interviews. The sample was created by free quota sample with randomization as the last step. Controlled variables were: gender, age, nationality, education, size group of municipality and region. After evaluating the level of field work, factual and logical control of completed questionnaires, 1,200 questionnaires were returned, representing a 100% return. One respondent in this survey represented 3,757 inhabitants of Slovakia aged 16 and over.

Table 1Representativeness of selected sample in relation to gender, age and education

Attribute	Basic sample (%)	Selected sample (%)	Differenc e	CHI2 Test HV 5%
Gender:				Differences are not
Man	48,17	48,00	-0,17	
Woman	51,83	52,00	0,17	statistically significant
Age:				
16-17	2,97	2,92	-0,05	Differences are not
18-24	12,20	12,25	0,05	Differences are not
25-29	9,71	9,67	-0,04	statistically significant
30-39	19,72	19,75	0,03	

40-49	16,23	16,17	-0,06	
50-59	17,11	17,00	-0,11	
60-64	6,91	7,08	0,17	
65 and over	15,15	15,17	0,02	
Education:				
Primary	17,62	17,58	-0,04	
Lower	28,56	28,33	-0,23	Differences are not
secondary				statistically significant
Secondary	36,65	36,92	0,27	
University	17,17	17,17	0,00	

Source: Statistical Office of the Slovak Republic. (2016b). *Consumer Survey IV*. [Online]. Available at the URL: https://slovak.statistics.sk:443/wps/portal?urile=wcm:path:/Obsah-SK/Publikacie/vsetkyPublikacie/d8ee66a8-2e34-4233-9f93-627beaa9b40a. [Accessed 22.11.2016].

Table 2Representativeness of selected sample in relation to nationality, size group of municipality and district

Attribute	Basic sample (%)	Selected sample (%)	Differenc e	CHI2 Test HV 5%
Nationality:				
Slovak	87,03	87,25	0,22	Differences are not
Hungarian	9,40	9,33	-0,07	statistically significant
Others	3,57	3,42	-0,15	
Size group of				
municipality:	30,02	29,92	-0,90	
till 1999 2000-9999	21,94	22,00	0,06	Differences are not
10000-49999	24,89	24,92	0,03	statistically significant
50000-99999	10,75	10,75	0,00	
100 000 and over	12,40	12,42	0,02	
District:	11,42	11,42	0,00	
Bratislava	· ·	10,50	0,00	
Trnava	10,47	,	,	
Trenčín	11,29	11,25	-0,04	Differences are not
Nitra Žii	13,06	13,08	0,02	statistically significant
Žilina	12,66	12,67	0,01	, ,
Banská Bystrica	12,32	12,33	0,01	
Prešov	14,49	14,50	0,01	
Košice	14,29	14,25	-0,04	

Source: Statistical Office of the Slovak Republic. (2016b). *Consumer Survey IV*. [Online]. Available at the URL: https://slovak.statistics.sk:443/wps/portal?urile=wcm:path:/Obsah-SK/Publikacie/vsetkyPublikacie/d8ee66a8-2e34-4233-9f93-627beaa9b40a. [Accessed 22.11.2016].

2. Definition and measurement of consumer confidence

Consumer confidence is defined as the degree of optimism of consumers about the overall state of economy and their personal financial situation (Piger, 2006). When the economy grows, people have jobs and purchase products. When the economy stagnates or declines, people are losing their jobs and are scared to spend money, so they rather save them. Thereby they complicate re-launching of the economy, as in developed countries, the demand for goods and services is important, we may say the main factor of economic growth. Confidence

in the economy is closely linked to expenditures. When expenditures are reduced, the economy declines and unemployment increases. Consumer confidence is used as an indicator of future expenditures, which have paramount importance for the economy.

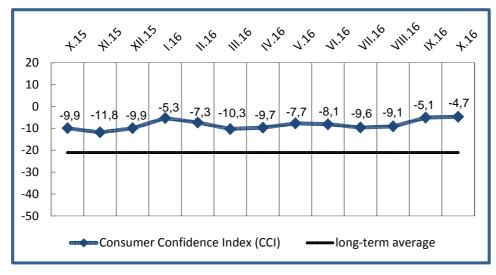
The measurement and monitoring of the development of consumer confidence is conducted by the Consumer Confidence Index (CCI). It was created in 1967 by American non-profit business group called The Conference Board (Ludvigson, 2004). This indicator is calculated as the arithmetic average of balanced expected development of the economy, unemployment, and development of financial situation, and savings on one's own household (unemployment is counted with negative sign). All four components have the same weight.

The frequency of publishing the results is once per month and it contains the data of the previous month. Consumer indexes are not standardized in individual countries; therefore, their results can differ in the method of calculation, the number of respondents and the frequency of their publication. Some indexes are composed of the questions focused on labour market, some on the expenditures, other expenditures or the outlook of the economy in the future. Each has therefore a different explanatory power. There is a high degree of probability that the results of examined statistic files are valid for entire society.

2.1 The development of summary indicator of consumer confidence for the selected period

In this paper, we describe the current state of consumer confidence in Slovakia, therefore we choose the period of one year, from the beginning of October 2015 until the end of October 2016 for a solution. The values of the corresponding coefficients vary between minus one hundred to plus one hundred. The value -100 concentrates maximum fears, mistrust and pessimism. The value +100 represents maximum consumer confidence, satisfaction and optimism. Figure 1 shows the seasonally adjusted values of CCI in the monitored period.





Source: Statistical Office of the Slovak Republic. (2016b). *Consumer Survey IV*. [Online]. Available at the URL: https://slovak.statistics.sk:443/wps/portal?urile=wcm:path:/Obsah-SK/Publikacie/vsetkyPublikacie/d8ee66a8-2e34-4233-9f93-627beaa9b40a>. [Accessed 22.11.2016].

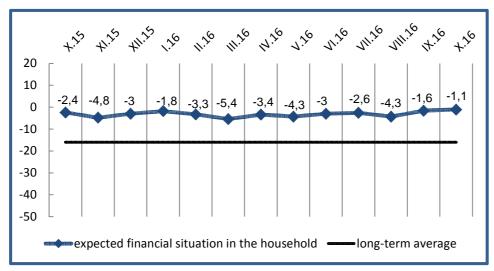
The Figure 1 shows that all values of the indicator are above its long-term average value. The highest level was reached at the end of the monitored period and it was exactly -4.7 points. The lowest level of consumer confidence in Slovakia was measured in November 2015. Its value was -11.8 points. Based on the figure above, it can be concluded that the consumer mood has improved in October 2016. The value of the index was 5.2 points higher

after seasonal adjustments than it was at the same time in the previous year and it exceeded the long-term average. The long-term average represents the period between April 1, 1999 and October 31, 2016. The summary indicator was increased by 4.9 points compared to the situation prior quarter.

2.2 The development of the consumer confidence indicator according to its individual components

In the Figure 2, we can see the indicator reflecting the situation regarding the expected development of financial situation in Slovak households. Its value was -1.1 point at the end of the survey. This result is 0.5 point more favourable than the value of previous month, it exceeds its long-term average as well as the coefficient from the same period of the preceding year (by 1.3 point). The Figure 2 shows the development of the indicator since October 2015.

Figure 2Values of expected financial situation in the household in Slovakia (October 2015-October 2016)



Source: Statistical Office of the Slovak Republic. (2016b). *Consumer Survey IV*. [Online]. Available at the URL: https://slovak.statistics.sk:443/wps/portal?urile=wcm:path:/Obsah-SK/Publikacie/vsetkyPublikacie/d8ee66a8-2e34-4233-9f93-627beaa9b40a. [Accessed 22.11.2016].

The second indicator shows the perspectives of saving in households. In October 2016, it reached -16.5 points, which continued to exceed the long-term average. In the respondents' answers, there was 0.7 point less pessimism in comparison with the previous month and with the same period of the preceding year (by 5.4 points). The results about the perspectives of savings in household are presented in the Figure 3.

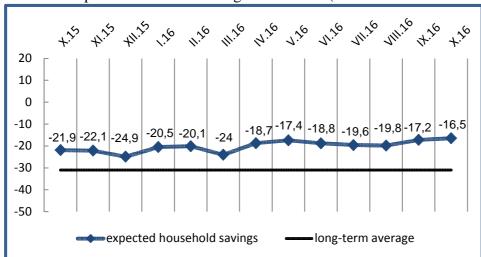
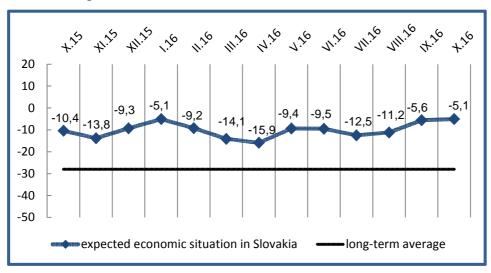


Figure 3 Values of expected household savings in Slovakia (October 2015-October 2016)

Source: Statistical Office of the Slovak Republic. (2016b). *Consumer Survey IV*. [Online]. Available at the URL: https://slovak.statistics.sk:443/wps/portal?urile=wcm:path:/Obsah-SK/Publikacie/vsetkyPublikacie/d8ee66a8-2e34-4233-9f93-627beaa9b40a. [Accessed 22.11.2016].

Next data, which makes up the summary consumer confidence indicator, are created by expectations of improvement, respectively deterioration of the economic situation in the Slovak Republic. Its value at the end of monitored period was -5.1 points. Over the last month, the indicator rose by 0.5 point, it surpasses the value of its long-term average. As the Figure 4 indicates, the respondents are less pessimistic than a year ago, by 5.3 points.

Figure 4Values of expected economic situation in Slovakia (October 2015-October 2016)



Source: Statistical Office of the Slovak Republic. (2016b). *Consumer Survey IV*. [Online]. Available at the URL: https://slovak.statistics.sk:443/wps/portal?urile=wcm:path:/Obsah-SK/Publikacie/vsetkyPublikacie/d8ee66a8-2e34-4233-9f93-627beaa9b40a. [Accessed 22.11.2016].

The last component is the expected development of the unemployment. The data shows that the index value has -3.9 more pessimism than a month ago (by 0.3 point), but it has less pessimism than a year ago (by 8.9 points). The current result is more favourable than the long-term average. The calculated data on expected development of unemployment are presented in the Figure 5.

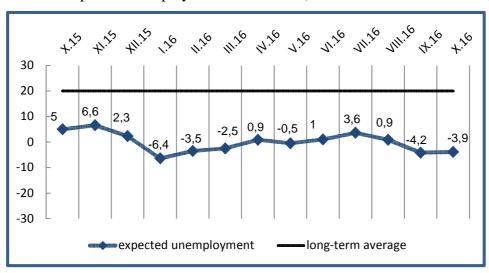


Figure 5Value of expected unemployment in Slovakia (October 2015-October 2016)

Source: Statistical Office of the Slovak Republic. (2016b). *Consumer Survey IV*. [Online]. Available at the URL: https://slovak.statistics.sk:443/wps/portal?urile=wcm:path:/Obsah-SK/Publikacie/vsetkyPublikacie/d8ee66a8-2e34-4233-9f93-627beaa9b40a>. [Accessed 22.11.2016].

3. Conclusions and policy implications

The survey showed that the consumer mood in Slovakia has averagely improved during the period from October 1, 2015 till October 31, 2016. It even reached its most favourable level in October 2016 since February 2008. The seasonally adjusted consumer confidence indicator reached the value of -4.7 points after an increase of 0.4 point compared to the previous month. The current seasonally adjusted result was higher than in the same period of the preceding year by 5.2 points and it exceeded the long-term average. Compared to the situation of the previous quarter, the summary indicator has increased by 4.9 points. Compared to the value from half a year ago, it has increased by whole 5 points.

All components of the indicator differed from the results of a month ago, by less than one point. Summary indicators indicated improvement in quarterly as well as annual comparison for macro indicators and in the households' economy. The smallest one-year difference was an improvement by 1.3 point and the biggest difference was by 8.9 points.

Consumer confidence indicator is a dynamic indicator which is constantly changing. Therefore, the one of the weaknesses of the survey is the fact that facts and conclusions mentioned above are applicable only for the selected period, not generally for long-term evaluation of the development of this indicator. The survey is designed to reflect current state of consumer mood in the Slovak Republic. Another drawback of the survey is that the seasonal adjustments may differ by settings of the input parameters (monitored period, chosen model) and the software used. Another alternative to the survey would be tracking the indicators without seasonal adjustments, which values are also published by the Statistical Office of the Slovak Republic.

Acknowledgement

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Eco-efficiency of District Heating Systems in Slovakia

Alžbeta Šiškovičová

University of Economics in Bratislava Faculty of National Economics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: alzbeta.siskovicova@euba.sk

Abstract

District heating is an essential source of heat and hot water for households in the Slovak Republic. It is important to study the sector to be able to realistically assess the benefits and drawbacks that may result from the current state of the heating equipment as well as from the characteristics linked to its nature. In the paper we decided to calculate eco-efficiency using data envelopment analysis and then to compare the results of eleven companies producing heat in the country. The main goal of this analysis is to present the possibilities of this approach in the district heating sector as well as in other industries in future studies.

Keywords: district heating, eco-efficiency, data envelopment analysis

JEL classification codes: Q50, P28

1 Introduction

District heating (DH) systems are key providers of heat and hot water for Slovak households and are, therefore, particularly important in social terms. High share of district heating on heat supply is mainly caused by historical development in all eastern European countries, where the DH systems were built in high amount of towns. The paper is focused on the current state of DH systems with special attention to environmental factors. District heating systems were first established in the United States in the late 19th century, and came in Europe in the beginning of the 20th century. The first generation of district heating systems was developed in 1880s and consisted of radiators, which were making use of the steam condensation to provide heat. In 1930s the second generation of systems was presented in the markets, in which hot water (higher than 100 °C) under pressure was used in the radiators, while the first combined heat and power systems were introduced in the networks. The third generation of DH systems, in 1970s, was using pressurized water of low temperatures (below 100 °C) and instead of petrol oil various local fuels like coal, biomass or waste were used (Sayegh et al., 2017).

District heating was established in Slovakia in the first half of the 20th century to increase the profitability of power plants. It became an independent industry in the 1950s (Hallon, 2004). The beginnings of Slovak heating industry before 1945 were very modest and limited to the territory of Bratislava. Older thermal power plants were of a great importance in this stage of DS systems. They were gradually rebuilt for the purpose of heating industry. Heating sector experienced a remarkable boom during 1960s to 1980s. The experiences of cities that began with DS systems already in the 50s were used in drafting construction projects of central systems in other cities.

Heating industry has maintained an important role in supplying the population with heat. District heating covers about 10% of the total heat demand in the European Union and it delivers heat to around 64 million inhabitants daily (KPMG, 2004). Currently, in Europe 4,174 DH systems exist. However, many of them require small modifications or

modernization to bring them to a reliable standard (Hallon, 2004). In February 2016, the Commission proposed an EU Strategy on Heating and Cooling. In this document developing a strategy to make heating and cooling more efficient and sustainable was identified as a priority for the Energy Union. The reason for this is mainly the fact that heating and cooling consume half of the EU's energy, much of which is wasted. With 50% (546 Mtoe) of final energy consumption in 2012, heating and cooling is the EU's biggest energy sector. In Central and Eastern Europe the proportion of demand covered by district heating is even higher than in western countries - up to 37% (KPMG, 2004). Slovakia has an extensive centralized heat supply system covering more than 54% of the overall demand for heat. Heat consumption for heating and hot water service in residential properties supplied with heat from central heating systems decreased by 26% between 2004 and 2014. (MH SR – SIEA, 2015).

2 District heating systems and the environment

Sustainability is one of the widely discussed topics (Korhonen - Luptáčik, 2004). The concept of sustainability represents an effort to meet current needs in such a way that future generations can meet their needs as well. This definition implies the close interconnectedness of economic, social and environmental aspects. DH systems can have significant environmental and economic benefits arising from economies of scale and the use of cogeneration (OECD – IEA, 2004).

Table 1 Share of heat produced in combined heat and power (CHP) plants in 2015.

1	T .	G 1	**	D 1 1	C1 1:
	European Union	Czech	Hungary	Poland	Slovakia
		Republic			
CHP plants	40 224.8	2 288.0	493.2	4 457.4	589.8
heat only plants	16 392.0	609.4	749.3	2 263.6	285.8
share of heat produced in CHP plants	71%	79%	40%	66%	67%

Source: Eurostat

Different fuels can be used in heat production. Natural gas and coal are the most commonly used in most countries. From the environmental point of view it is interesting to analyse the share of renewables in heat production, such as biomass, geothermal energy, solar energy and municipal waste. Currently, renewable energy sources such as solar and geothermal systems are progressively incorporated into networks. Renewables accounted for 18% of the primary energy supply for heating and cooling in 2014 In EU. Renewable energy sources share of energy used in heating and cooling is highest in Baltic and Nordic Member States (ranging from 45% in Estonia to 68% in Sweden). On the other hand Slovakia belongs to countries where the share of renewables is below 10%.

3 Model

Data envelopment analysis is a nonparametric, mathematical programming-based technique of measurement of efficiency. In this method producer is defined as an economic agent that transforms a set of inputs into set of outputs and we refer to this producer as a decision making unit (DMU). DEA can be used to address a large variety of questions about the transformation of inputs into outputs by a DMU (Fried – Lovell – Schmidt, 1993). CCR model was originally proposed by Charnes, Cooper and Rhodes in 1978. It is one of the basic DEA models and we decided to use it as an illustration of how does DEA compute the efficiency score for DMUs. The model will be explained according to Cooper, Seiford and Tone (2007). In this model we assume the constant returns of scale and we compute the efficiency by radial measure.

Suppose m inputs and s outputs are selected. Let the input data for DMUj be $(x_{1j}, x_{2j},...,x_{mj})$ and the output data $(y_{1j}, y_{2j},...,y_{sj})$. The input data matrix X and the output data matrix Y can be consequently arranged as follows:

$$X = \begin{pmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \vdots & \vdots & \dots & \vdots \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{pmatrix}$$
(1)

$$Y = \begin{pmatrix} y_{11} & y_{12} & \dots & y_{1n} \\ y_{21} & y_{22} & \dots & y_{2n} \\ \vdots & \vdots & \dots & \vdots \\ y_{s1} & y_{s2} & \dots & y_{sn} \end{pmatrix}$$
(2)

We measure the efficiency of each DMU and therefore we also need n optimizations, one for each DMUj. Let the DMUj to be evaluated on any trial be designated as DMUo where o ranges over 1,2,...,n. To obtain values of input (v) and output (u) weights we need to solve the following fractional programming problem:

$$\max_{v,u} \theta = \frac{u_1 y_{1o} + u_2 y_{2o} + \dots + u_s y_{so}}{v_1 x_{1o} + v_2 x_{2o} + \dots + v_m x_{mo}}$$
(3)

s.t.

$$\frac{u_1 y_{1j} + \dots + u_s y_{sj}}{v_1 x_{1j} + \dots + v_m x_{mj}} \le 1 \ (j = 1, \dots, n)$$

$$v_1, v_2, ..., v_m \ge 0$$

 $u_1, u_2, ..., u_s \ge 0$

We can replace the above fractional program by the following linear program for easier computation:

$$\max_{\mu,\nu} \theta = \mu_1 y_{1o} + \dots + \mu_s y_{so} \tag{4}$$

s.t.

$$\begin{array}{l} \nu_1 x_{1o} + \ldots + \nu_m x_{mo} = 1 \\ \mu_1 y_{1j} + \ldots + \mu_s y_{sj} \leq \nu_1 x_{1j} + \ldots + \nu_m x_{mj} \ (j = 1, \ldots, n) \\ \nu_1, \nu_2, \ldots, \nu_m \geq 0 \\ \mu_1, \mu_2, \ldots, \mu_s \geq 0 \end{array}$$

DMUo is CCR-efficient if $\theta^* = 1$ and there exists at least one optimal (v^*, u^*) , with $v^* > 0$ and $u^* > 0$. Otherwise, DMUo is CCR-inefficient. $\{v^*, u^*\}$ are the set of most favourable weights for the DMUo. v^* is the optimal weight for the input item i and its magnitude expresses how highly the item is evaluated, relatively to other inputs and outputs.

4 Data

Aim of the paper is to highlight the opportunities and potential use of Data Envelopment Analysis (DEA) in evaluating the eco-efficiency of the firms in energy sector. This paper analyses district heating using CCR method (based on Charnes – Cooper – Rhodes, 1978).

The aim of this work is not to perform detailed analysis of district heating, but rather to demonstrate the possible future direction of the analysis of efficiency in the sector. Therefore we decided to carry out the analysis using data for only 11 DH companies. Reason for the simplification is the difficulty to collect data on firm level. However this simplification has some advantages – it has enabled us to interpret the results more clearly and it has also opened up the possibility of graphic display of the results.

Table 2 DMU used in analysis

company name	DMU
BARDTERM, s.r.o. Bardejov	Α
COM – therm spol. s r.o., Komárno	В
DOMSPRÁV s.r.o. byty, teplo a iné služby, Michalovce	С
POV BYT, s.r.o. Považská Bystrica	D
SLOBYTERM spol. s r.o. Stará Ľubovňa	E
SLUŽBYT, s.r.o. Svidnik	F
SOUTHERM, s.r.o. Dunajská Streda	G
SPRAVBYTKOMFORT, a.s. Prešov	Н
TEPLICO, s.r.o. Turčianske Teplice	I
TOMA, s.r.o. Topoľčany	J
Trnavská teplárenská, a.s. Trnava	K

Source: processing by the Authors of the paper

In the Table 2 the 11 companies used as the DMUs are introduced. We collected the data about the CO2 emissions (tons), heat sold to customers (GJ) and amount of used fuel to produce the heat (tons). The data are available in the following table. In the paper environmental factor are included in the evaluation of efficiency. This is done using approach introduced by Korhonen and Luptáčik (2004), including undesirable outputs as an input into the model. This ensures that they are minimized together with the inputs.

Table 3
Inputs and outputs of the model

	A	В	С	D	E	F	G	Н	T	J	K
I1	13923051	13221678	12418053	7684179	5029623	5389000	10074700	34339769	402679	8717846	10878000
12	22289	26826	23454	41665	9500	10980	20378	61083	9847	12189	38203
0	364824	169667	392181	252443	140458	151246	304502	1025752	26263	305975	355812

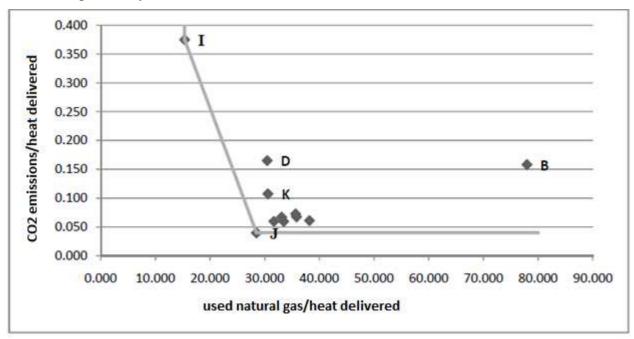
Source: processing by the Authors of the paper based on data collected from development concepts for heat management

5 Results

To calculate the efficiency of simple CCR model with constant returns to scale, it is possible in the case of two inputs and one output to convert the data in the way that we will have inputs per unit of output. Data transformed this way are possible to use in graphical interpretation as shown in Figure 1. On vertical axis there are CO2 emissions per unit of delivered heat and on the horizontal axis there is amount of natural gas used to create unit of output. The production possibility frontier is illustrated as well. From the data points it is obvious that the efficient DMUs are the ones that lie on the frontier. There are two efficient

DMUs. First one is DMU I (company TEPLICO, s.r.o. Turčianske Teplice), second one is DMU J (company TOMA, s.r.o. Topoľčany).

Figure 1 Production possibility frontier



Source: processing by the Authors of the paper

It was clear from the figure with the frontier that DMU I and DMU J will have efficiency score equal to 1 and that every other DMU will have efficiency score below 1. In the Table 4 there are the scores of analysed DMUs what is the main results of the DEA analysis. From the results we can see that by far the least efficient DMU is DMU B (COM – therm, s.r.o. Komárno) with efficiency of 36% which means that in order to gain efficiency score equal to 1 it would have to decrease both inputs by 64.28%. No other DMU reaches a value lower than 0.5 and DMU which came closest to the efficient frontier (excluding DMUs I and J) is DMU C (DOMSPRAV, Ltd. Michalovce). This company would have to decrease inputs radially by 11.63%. The full results including the values of inputs and outputs projected on the efficient frontier are presented in the Appendix 1.

Table 4 Efficiency score

DMU	A	В	С	D	Е	F	G	Н	I	J	K
Score	0.74	0.36	0.88	0.81	0.78	0.78	0.84	0.84	1	1	0.86

Source: processing by the Authors of the paper

6 Summary

The paper addresses the environmental dimension of heat production. In mid-20th century, people started to notice the challenges that were created by human intervention into the nature. Threats to the environment under the influence of globalization have acquired menacing proportions. It is therefore necessary for the analysis of heat sector to pay considerable attention to eco-efficiency. In this paper were environmental effects simplified into one variable CO2 emissions (due to data availability). Heating plants, however, produce also other polluting substances. This is an important possibility for future research of DH

systems. Future research opportunities also arise with different fuels used in the heat plants and with comparison of results in combined heat and power plants with heat only plants. Similar analysis might lead to important implications for energy policy in Slovak Republic. Energy regulator might be able to identify the most environmentally efficient technology of producing heat and allocate the resources accordingly.

Acknowledgement

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Appendix 1 Full results of DEA analysis

No.	DMU, I/O	Score, Data	Projection	Difference	%
1	A	0.74			
1	Input1	38.16	28.28	-9.89	-25.90%
	Input2	0.06	0.05	-0.02	-25.90%
	Output	1.00	1.00	0.00	0.00%
2	В	0.36	1.00	0.00	0.00%
		77.93	27.84	50.00	-64.28%
	Input1			-50.09	
	Input2	0.16	0.06	-0.10	-64.28%
2	Output	1.00	1.00	0.00	0.00%
3	C	0.88	27.00	2.69	11 (20)
	Input1	31.66	27.98	-3.68	-11.63%
	Input2	0.06	0.05	-0.01	-11.63%
4	Output	1.00	1.00	0.00	0.00%
4	D	0.81	24.70	7.66	10.500/
	Input1	30.44	24.78	-5.66	-18.59%
	Input2	0.17	0.13	-0.03	-18.59%
	Output	1.00	1.00	0.00	0.00%
5	E	0.78			• • • • • • • • • • • • • • • • • • • •
	Input1	35.81	27.98	-7.83	-21.86%
	Input2	0.07	0.05	-0.01	-21.86%
	Output	1.00	1.00	0.00	0.00%
6	F	0.78			
	Input1	35.63	27.83	-7.80	-21.89%
	Input2	0.07	0.06	-0.02	-21.89%
	Output	1.00	1.00	0.00	0.00%
7	G	0.84			
	Input1	33.09	27.84	-5.24	-15.84%
	Input2	0.07	0.06	-0.01	-15.84%
	Output	1.00	1.00	0.00	0.00%
8	Н	0.84			
	Input1	33.48	28.09	-5.38	-16.08%
	Input2	0.06	0.05	-0.01	-16.08%
	Output	1.00	1.00	0.00	0.00%
9	I	1.00			
	Input1	15.33	15.33	0.00	0.00%
	Input2	0.38	0.38	0.00	0.00%
	Output	1.00	1.00	0.00	0.00%
10	J	1.00			
	Input1	28.49	28.49	0.00	0.00%
	Input2	0.04	0.04	0.00	0.00%
	Output	1.00	1.00	0.00	0.00%
11	K	0.86			
	Input1	30.57	26.41	-4.16	-13.60%
	Input2	0.11	0.09	-0.01	-13.60%
	Output	1.00	1.00	0.00	0.00%

Source: processing by the Authors of the paper

Analysis of Competition and Concentration on the Slovak Banking Market

Lenka Škodová

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: skodova.lenka@gmail.com

Abstract

The lingering financial crisis has brought about changes in the Slovak banking environment. Not just the crisis itself, but also the impact of globalisation and the specific conditions on the market have qualified to create new bank mergers, acquisitions, with few coming from the Slovak environment. Banks focus on improving the quality of offered services and providing new products to attract clients and, thereby, to increase their competitiveness and market shares. The aim of this paper is to analyse the competitive environment and concentration on the Slovak banking market.

Key words: concentration, concentration ratio, Herfindahl-Hirschman Index

JEL classification codes: G01, G21, G29

1. Introduction

The competition in the environment of the Slovak banking sector creates the potential for the improvement offered banking products and services to clients, while better enforcement of the banks in the market and satisfied customers ultimately. The banks in an attempt to get the most important position on the market, implement new advanced products, services and applications on the environment. Large bank houses in order to obtain the greatest numbers of clients, use their position and try to prevent their competitors to increase their market share. Important role plays the state through the legislation which provides the creation and protection of the competition on the market.

The important factors forming the competitive environment as well as the sole activity of banks, which aim is to promote the best place on the market, are also the level of the economic growth, the volume of the, households consumption, unemployment rate, increase or vice versa decrease in prices.

The aim of this paper is to analyse the competitive environment and the concentration on the Slovak banking market between 2011 and 2015. The selected indicators are Concentration Ratio of the three leading banks in Slovakia and the Herfindahl-Hirschman Index. Mentioned concentration indices are calculated on the banks operating in Slovakia in the analysed period. The level of the concentration has been analysed through total assets, total loans, the loans towards the non-financial corporations and through loans to non-financial corporations, total securities and derivates and total deposits.

2. **Literature Review**

The necessity for a thriving economy, according to Medved' (2012) is a functioning and healthy sector. "In the transition economies is undeniable influence on the strength of banks' non-transparent environment, market imperfections, strong information asymmetry and underdeveloped capital market (Medved' et al., 2012)."

Concentration is often measured in banking sector, it is usually associated with measuring the effectiveness and efficiency of banking institutions.

The banking sectors of most countries have been characterized by a relatively high concentration. For the measurement of the concentration have been used different approaches, methods and indexes. The methods are usually divided into two groups; methods measuring the degree of concentration in the industry and methods measuring the degree of economic strength of individual business units.

"Very simply, it is possible to say that all methods of measuring the concentration of (the banking sector) essentially quantifies the extent to which the studied trait (eg. The volume of deposits, interest income or expenses) of individual firms (banks in the banking sector, insurance companies in the insurance market etc.) involved in the total sum of values of this feature the banking, insurance, etc.) sector (Polouček et al., 2006)."

Two types of concentration are defined within individual sectors; absolute concentration and relative concentration.

The **concentration ratio** (*CRk*) is a commonly used method for measuring the concentration of the strongest companies in the sector in terms of market share of homogeneous production. Applying the degree of concentration of the strongest companies in the industry, it expresses their market share in the total production by all companies in the sector. The concentration ratio for the strongest companies in the industry is calculated as follows:

$$CR_k = \sum_{i=1}^k r_i$$

While for ϵ <1; k>; n represents the number of banks in the banking sector and the share of i-ri of the bank in the item in the banking sector (e.g. total assets, loans, deposits). This indicator can take values from the interval <0; 1>; or similarly: <0%, 100%>. And the banking sector is most often quantified for the three or five largest banks in the industry. In practice, therefore, we are faced with CR_3 or CR_5 exploited to measure the level of concentration on either the total assets, market lending operations, or market acceptance of deposits.

The **Herfindahl-Hirschman Index (HHI)** is the most widely treated summary measure of concentration in the theoretical literature and often serves as a benchmark for the evaluation of the other concentration indices. The Herfindahl-Hirschman Index takes into account the number of banks in the sector and their market share. Its construction is based on the hypothesis that the importance of banks in the banking sector is a function of the square of its market share. This index is a standard recognized assessment methodology of absolute concentration in the industry.

$$HHI = \sum_{i=1}^{n} (r_i)^2$$

HHI index values vary between <1 / n, 1>. The former shows perfect market-sharing; the latter shows a monopolistic situation. After adjusting the value of HHI, using the multiplier (10000), I can talk about an unconcentrated market (HHI <1,000), a moderately concentrated market (1000 <HHI <1800) and a highly concentrated market (HHI> 1800).

Both of the indexes belong to the group of indicators that reflect the absolute concentration of the industry.

The Law on Competition, Act No. 136/2001 Coll. as amended solves the competition and concentration, which is in line with current EU legislation. The Act deals with competition of its limitation as well as the creation of conditions for further development for the benefit of consumers. "The concentration in the Slovak banking sector regularly has been measuring and monitoring by the National Bank of Slovakia, through Kočišová (2015, p.102)

In the environment of the Slovak and Czech banking sector, the issue of the competition and concentration topic has been analysed by the authors such as: Medved' (2012), Brezina, Pekár and Čičková (2013), Kočišová (2014, 2015). The authors in their works usually use the Herfindahl-Hirschman Index (HHI), Concentration Ratio (CR3 and CR5), the rate of entropy (EM), Gini Index (GI), and Hall-Tideman Index. They evaluate the banking sector and the Czech Republic as moderately concentrated. In some of their works, the authors interest with and change concentration values if simulating a new subject which entered the market.

3. The Analysis of the Concentration in the Slovak banking market

The business environment of the banks in the Slovak Republic is strongly influenced by regulation, globalization and concentration as well as the level of development of the whole economy.

In the analysed period from 2011 to 2015, we can take a conclusion that not only Slovakia but also the whole euro area was affected by important factors, such as the lingering debt crisis, followed by gradual growth of economies, a slight decrease in unemployment, moderation of the rules and monetary policy as well.

The years 2011 and 2012 were characterized by the economic growth in Slovakia. GDP growth in 2011 reached 3.3% (r. 2012 has only increased by 2%) and a clearly was the most influenced by foreign demand of the key trading partners Germany and the Czech Republic. On the other hand attenuation in household consumption was recorded as a result of worries regarding the possible subsequent recession and high unemployment, but unemployment already decreased to 13.5% in 2012. Increase in VAT from 19% to 20%, the consolidation of public finances, growth in energy and food prices, conditional inflation at 4% were characteristic for 2011.

The significant milestone for banking institutions was just the year 2012 in Slovakia when the bank tax was introduced. This fact, together with the unfulfilled expectations of banks about their activities and results, contributed significantly to the decision to exit the Slovak banking market by HSBC plc. and CréditAgricole.

In 2013 the growth of the Slovak economy decelerated, reaching a value of 0.9%, compared to growth of 1.8% in 2012. Under the slower growth of the Slovak economy signed weaker performance of the European economy also failed to repeat the success from the previous year in the field of production capacities increasing in the automotive industry. Finally household consumption began to rise after four years.

The year 2014 was marked by the extrication themselves from the euro zone recession, real GDP growth, which in Slovakia reached 2.4%. Extremely good times not only for the Slovak economy but also for the whole euro area were in 2015. The growth of the Slovak economy caused a substantial improvement in the labour market, the unemployment rate fell to 11.5%. Investments dominated due to the accelerated drawing of EU funds for the period 2007 to 2013. The Slovak economy was pulled by domestic demand and consumption only and savings of households recorded a significant increase. Slovakia did not dispose of the deflation, prices fell for the second year. The ECB further liberated rules of the monetary policy.

These facts had significant impact on bank activities in Slovakia during the whole analysed period, which resulted to the increase of the total assets by 20% in the sector for the period of five years. Economic growth was affected throughout the area of lending and loans and advances to customers increased by 28% positively. Business environment was emerging from a lingering crisis only slowly, the banks provided the business loans under the stricter conditions and therefore, the banking sector recorded the decline from 2011 in the area of business loans, but good year 2015 caused the annual growth of business loans by 9%.

Table 1The assets and liabilities in the Slovak banking market

v tsd EUR	2011	2012	2013	2014	2015
Total assets	58 976 222	60 965 458	62 417 606	65 594 977	70 558 751
Total loans	36 412 287	37 211 943	39 325 260	41 874 126	45 548 278
Loans granted tow. Corporates	15 536 341	15 000 034	14 612 592	14 389 291	15 685 700
Securities and Derivates Total	14 569 985	13 990 948	14 071 606	13 856 380	14 320 834
Total deposits	40 126 664	42 365 214	44 301 615	46 070 535	50 456 566

Source: Internal sources of NBS

Concentration ratio CR3

Table 2CR3 index Total assets. Total loans, Loans towards corporates, Total deposits

in %	2011	2012	2013	2014	2015
CR3 Total assets	55,78	54,65	54,22	54,48	54,73
CR3 Total loans	54,54	55,15	54,21	55,62	57,37
CR3 Loans towards Corporates	48,51	50,01	49,50	53,00	53,76
CR3 Securities and Derivates Total	62,00	61,56	61,92	57,78	58,94
CR3 Total deposits	55,23	53,73	54,15	54,17	55,52

Source: Author's calculations based on the internal sources of NBS and annual banks of the commercial banks in Slovakia

Based on the analysis of market shares and concentration indexes, i.e. index CR3 individual banks in total assets, total loans, loans granted to the corporate clients total securities and derivates and total deposits in the years from 2011 to 2015, we concluded that on the market of total assets dominate three banks with foreign capital with a long tradition on the Slovak market – SLSP a.s., Tatrabanka, a.s. and VÚB, a.s. All the three banks participated stable with their 55% on the total assets of the sector. Their dominance confirm also in the area of the granted loans and received deposits.

The fact that significantly influenced the increase of the index CR3 of three leading banks in the area of lending was mainly benefit from synergy effects enhancing the environment mentioned above, as well as simplification and improvement of internal loan approval procedures. The banks strengthened their position in the area of corporate financing by 5.25% also due to the fact that Crédit Agricole Corporate and Investment Bank SA, branch of a foreign bank, HSBC Bank plc. branch, which are market-oriented segment of corporate clients left the market in 2012. Three major banks used their position in the market and increased the market share of granted business loans. Mentioned facts did not significantly affect the entry of the corporate oriented bank BKS Bank AG, a foreign bank branch in 2011.

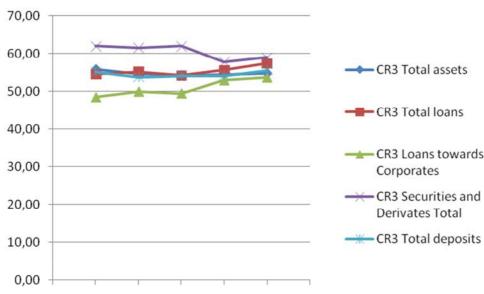


Figure 1 CR3 of Total assets, Total loans loans towards corporates and total deposits (2011 – 2015)

Source: Author's calculations based on the internal sources of NBS and annual banks of the commercial banks in Slovakia

Herfindahl-Hirschman Index (HHI)

2010 2011 2012 2013 2014 2015 2016

The analysis of the HHI index shows that the Slovak banking market was moderately concentrated in all measured items (see Table 2) from 2011 to 2015. The analysed HHI index increased slightly in all the monitored assets and liabilities, confirming the assertion that competition decreased slightly and the concentration increased from the same reasons as mentioned above. Its peak reached in 2015.

Table 2
Index HHI

in %	2011	2012	2013	2014	2015
CR3 Total assets	55,78	54,65	54,22	54,48	54,73
CR3 Total loans	54,54	55,15	54,21	55,62	57,37
CR3 Loans towards Corporates	48,51	50,01	49,50	53,00	53,76
CR3 Securities and Derivates Total	62,00	61,56	61,92	57,78	58,94
CR3 Total deposits	55,23	53,73	54,15	54,17	55,52

Source: Author's elaboration based on the internal sources of NBS and the annual reports of the commercial banks

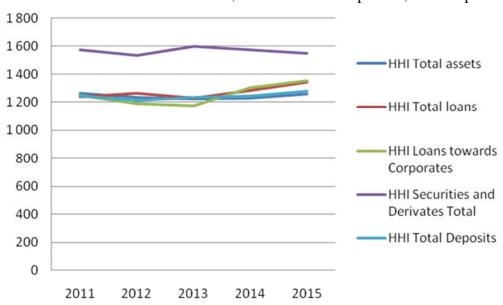


Figure 2
HHI index Total assets. Total loans, Loans towards corporates, Total deposits (2011 – 2015)

Source: Author's calculations based on the internal sources of NBS and annual banks of the commercial banks in Slovakia

4. Conclusion

The aim of this paper was to analyse the concentration of the Slovak banking market by the index and the concentration ratio of the three major banks (CR3) and HHI index.

Based on the analysis of the market shares and concentration ratios, i.e. index CR3 in the area of total assets, total granted loans, loans granted to corporate clients, total securities and derivates and total deposits in the years from 2011 to 2015, we concluded that on the market of total assets dominate three banks with foreign capital with a long tradition on the Slovak market - SLSP, a.s., Tatrabanka, a.s. and VÚB, a.s..

In our considerations we assumed that the Slovak banking market and competitive environment was influenced significantly not only by the regulation in the form of the strict rules according to which banks are required to carry out their activities, as well as the macroeconomic conditions in the years 2011 to 2015.

The business environment was influenced by significant changes in the analysed period. The market shifted up after the debt crisis, the economic growth noticed a gear, which was driven only by the foreign demand in the years 2011 and 2012, but the economic growth was made up only by domestic household consumption and the government expenditure in 2014 and 2015.

It is important to mention that the banks used the favourable situation, when the capacities of the automotive industry were increased in 2012 and 2013 and as well as the faster absorption of the EU funds from the previous period (2007 - 2013). This caused the higher volumes on the granted loans.

Pessimistic consumer behaviour and the households consumption due to the high unemployment and increase of the prices in 2011 was changed gradually to the higher household consumption the savings in 2015. The households benefited from higher disposable income and the consumer prices were falling for two years.

All these factors have contributed to the fact that the whole banking sector increased by 20% in 2015 compared to 2011. The banks in Slovakia recorded the growth in total deposits received, but also in total granted loans and the loans granted towards the non-financial corporations. The synergistic effect of the automotive industry capacities, the faster absorption of the EU funds, and the exit of two corporate banks (Crédit Agricole and HSBC Bank plc.) and the optimistic households behaviour used the bank to raise the granted loans by 9,4 bln EUR from 2011 to 2015.

The Analysis of the HHI index (Herfindahl-Hirschman Index) showed that the Slovak banking market was moderately concentrated in all measured items (see Tab. 2) from 2011 to 2015. HHI index increased slightly in all the monitored assets and liabilities, confirming the assertion that competition decreased slightly and the concentration increased from the same reasons as mentioned above. Its peak reached in 2015.

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Comparative Framework of Criteria for Excellence Models

Lenka Škodová

University of Economics in Bratislava Faculty of Commerce Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: lenka.skodova.of@euba.sk

Abstract

Competitiveness means for companies achieving the same or better results than other business units. To become a permanent part of the market, a company should stand up to competition and actively increase the ability to compete, but this is in today's society with plenty of various changes more and more difficult. The aim of this paper is to create a comparative framework of criteria on the basis of defining, analysis and comparison of selected Business Excellence models (the EFQM model and the Baldrige model) in the context of strengthening competitiveness of companies on international markets. As the comparison related to the chosen Business Excellence models suggests that their evaluation comes from the same, or very similar matter, it can be confirmed that these criteria are success factors, which companies should focus on because analysis and evaluation of these factors belong among the driving forces of business, and ensure optimal conditions for continuous improvement and increase of competitiveness.

Keywords: competitiveness, critical success factors, Baldrige model, EFQM Excellence model

JEL classification codes: F47, M10

1. Introduction

The efficiency of the country's whole economy depends on the competitiveness of enterprises through which they form their position, image and strengths on international markets.

A competitive ability of enterprises requires to achieve the same or better results in comparison with the others. To become a permanent part of the market, a company should stand up to competition and actively increase their ability to compete, but this is in today's society full of various changes more and more difficult.

Business Excellence models are considered as a practical and effective tool that initiates conceptual changes and creates optimal conditions for a continuous improvement and competitiveness of firms. Companies are prepared for a constantly growing customer demands and the increasing pressure of competition. The question is whether businesses just want to just survive or to find a way of dream quality and strong market leader.

1.1 Model and Data

The aim of this paper is to create a comparative framework of criteria on the basis of defining, analysis and comparison of selected Business Excellence models (EFQM model and Baldrige model) in the context of strengthening the competitiveness of companies in international markets.

On the basis of abstraction (that ignore unimportant characteristics of phenomenon), it devotes a relevant characteristic of competitiveness and clarifies the factors contributing to the overall success of companies. An important role consists in defining and comparing the selected models of excellence (Baldrige model and EFQM model) which evaluates the performance of companies on the behalf of improving their position in an international competitive environment. The method of analysis is very closely related to synthesis which integrating the most important findings and components into a single unit.

2. The current situation of solving the problem at home and abroad

2.1 Competitiveness of companies

The competitiveness of corporations is characterized by the ability to meet customer demands in a sustainable way and more efficiently than their competitors but also by providing attractive goods and services in terms of price and other factors. Furthermore, it is possible to describe competitiveness as the extent to which it is able to produce and provide high quality services ensuring the market's success (Malega – Mihok, 2007).

Experts emphasize the competitiveness of companies depends mainly on a higher labour productivity that is influenced by three groups of factors (Teplická, 2007):

- To be informed and familiar with new technology (machinery, equipment, methods of organization and management, sales, know-how, marketing, services...)
- The ability to promptly acquire and successfully apply new technology in case of changing production
- The ability for innovation and business utilization

When a producer is successful in finding a synergy of all these factors and uses them for promotion at domestic market, it has a real chance to penetrate into international markets and to be competitive in this challenging business environment (Teplická, 2007).

Nowadays, enterprises should realize the competitive advantage and competitiveness is reached not only by financial health of the company, marketing strength, innovative capabilities, but there are also important such dimensions as the identity (a company distinguishing various features including: idea, design, ritual and innovation), integrity (a consistent, dynamic and flexible company where every component has their own identity and is linked to the whole company), mobility (a company's ability to adapt to changes as quickly as possible) and sovereignty (a company's position in the business environment).

In order to achieve a competitive advantage a company must be identified by competitors, have a strong resistance as a whole, be flexible in adapting to changes and capable of independent existence.

These mentioned dimensions belong among the "new derivatives" of fundamental attributes of competitiveness. A basic condition for the interactive creation and maintenance of competitive advantage in the global environment depends on the organizational ability itself (Hudáková, 2009).

2.2 Critical Success Factors

"Every organization exists and fulfils its mission in a constantly arising and developing environment where it operates a lot of factors affecting the company's success and prosperity. The role of company's management is to identify these factors and put them into use. Considerable number of them do not influence a prosperity of the organization in the same matter what led to the fact it has been identified only the most important factors, marked as critical success factors (Szabo – Jankelová, 2006)."

Grasseová characterizes them as conditions that must be met in preference in order to achieve its strategic objectives (Grasseová et al., 2010).

These particular factors having a significant impact on business development and success are still changing as a result of economic development. Identification of success factors is one of key requirements imposed on a sectoral and competitive analysis. The actual determination of these factors is quite a difficult process due to the changing economic parameters, competitive conditions and driving forces of market. Critical factors are different in particular sectors and in some cases differ even in the same sector (Plamínek, 2000).

Plamínek believes that a company in order to achieve business success requires four vital signs (Plamínek, 2000):

- Utility a company must be properly incorporated into their surroundings by giving something (products) that is useful for intended and interested recipients.
- Efficiency an ability to advisable use the resources, convert inputs into outputs in the most expedient way for the purpose of adding value with minimal costs and effort.
- Stability this sign is characterized by a steady status according to new conditions. It
 ensures that processes and structures created in the company do not have a potential to
 fall down when the first problems arise.
- Dynamics the effort of firm to prove that it is not enough to respond to changes, it also requires to predict, the firms' effort to prove that it is not enough to respond, but also to predict and control them.

According to Veber, a general determination of success does not exist and therefore there cannot be only one factor that guarantee the company's success.

Administrative bodies (owners, founders) are considered as the main internal attributes of company's success or failure while the external attributes should consist of stock exchanges, investors, banks and so on. Veber considers the performance (benefits) of individual customers, products and processes as resources bringing success to business entities (Veber et al., 2009).

3. Results of the work and discussion

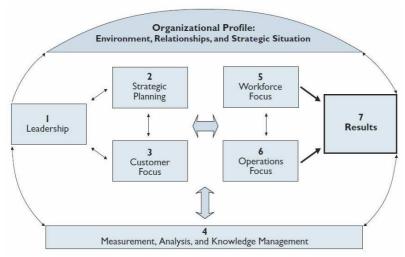
As we have already mentioned, the efficiency of business processes becomes one of the basic conditions of achieving and maintaining a long-term competitive advantage. The success of companies in an international context depends on the optimization of the management system and application of excellence principles in it. Achieving excellence in everything the organization performs is a presumption of getting ahead of strong and persistent competition. It sets the direction and goals in order to continually improve the management processes and increase their competitiveness (Zorkóciová – Ďuranová, 2015).

3.1 Selected models of excellence

3.1.1 Baldrige model

Baldrige model is perceived as the most popular and crucial model coming from the United States. It provides a system for setting a performance at which it reflects the top management practices the organization itself can practice. Whereas it is at a national and an international level seen as a reference model for the excellent performance, Baldrige criteria (this model consists of seven criteria, while six of them are marked as "Processes" and the last one as "Results") represent a common language of communication between organizations with the aim to share best practices and experiences (Ionică et al., 2010).

Figure 1Baldrige Criteria for Performance Excellence Framework



Source: MANN, R. et al. (2012). *Understanding Business Excellence*. [Online]. Available at the URL: http://www.apo-tokyo.org/coe/files/Understanding-Business-Excellence.pdf>. [cited 28.12. 2016].

An organizational profile captures the overall working environment as well as key relationships with customers, suppliers, partners and other stakeholders. Furthermore, it notices strategic benefits, competitive environment and becomes a system which is still more and more efficient (Mann et al., 2012).

Leadership

The way how senior leaders' personal actions manage and sustain an organization and its legal, ethical and societal responsibilities.

Strategic Planning

It is about the development and implementation of company's strategic objectives and action plans which are changed if circumstances require and measures progress.

Customer Focus

The Customers category asks how an organization engages its customers for long-term marketplace success, listens to the voice of the customer, builds customer relationships, engages its purchasers for long-time marketplace success and uses customer information to enhance and to identify opportunities for innovation.

Workforce Focus

The evaluation of workforce capability and capacity needs with the aim to build a workforce environment conducive to high performance. Furthermore, workforce is managed and developed to utilize its full potential in accordance with the organization's overall business needs.

Operation Focus

In order to bring customer value and reach ongoing organizational success an organization design, guide, improves and innovates its products, work processes and improves its effectiveness.

Measurement, Analysis, and Knowledge Management

The Measurement, Analysis, and Knowledge Management category asks how an organization gathers, analyses, manages, and improves its data, information as well as uses review findings to improve its performance.

Results

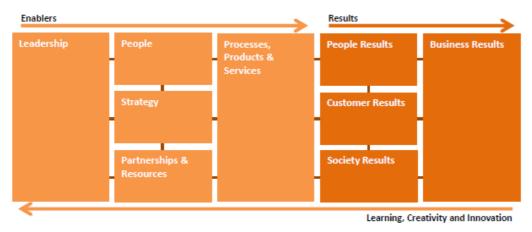
It is an organization's performance and improvement in all key areas – product and process results, customer and workforce-focused results, leadership, financial and market results. A company compares its performance with other competitors and organizations offering similar products (NIST, 2015).

3.1.2 EFQM Excellence model

Improving the quality of management processes in Europe is realized according to EFQM Excellence model that was created by the European Foundation for Quality Management. EFQM Excellence model represents a management tool used for increasing the competitiveness and performance of organizations. It serves as a voluntary comparative and nine criteria framework which is suitable for the implementation by each organization without exception. It helps organizations to understand the tools and resources available for them. In the first step, the EFQM Excellence model enables a comprehensive look at a situation of the organization. This model forces users to be aware of a logical relationship between results and resources as well as an interconnection of all basic organization's criteria (Hornišerová – Karkalíková, 2014).

EFQM Excellence model represents nine basic areas which are the main criteria for self-assessment (Hornišerová – Karkalíková, 2014).

Figure 2 EFQM Excellence Model



Source: EFQM. (2012b). *EFQM Model – Model Criteria*. [Online]. Available at the URL: http://www.efqm.org/efqm-model/model-criteria. [Accessed 28.12.2016].

For every organization it is essential to assess particular criteria and determine their state because it is not evident that the EFQM Excellence model is able to seek resources in order to increase the organizational performance. Despite the fact the self-assessment seems to be a relatively simple and cheap form, the evaluation by an external company is a difficult process (Hornišerová – Karkalíková, 2014).

Enabler Criterion (EFQM, 2012a)

Leadership

The leaders of excellent organisations shape the future and act as role models for its values and ethics. They are flexible, enabling the organization to suppose and react in time to ensure the on-going organization success.

Strategy

Excellent organisations implement their mission and vision by developing policies, plans, objectives and processes to deliver the strategy.

People

This criterion is used to create a culture enabling the mutually beneficial achievement of organizational and personal goals. They develop the capabilities of their people, communicate, care for, reward and recognize, in a way that motivates people and enables them to use their skills and knowledge for the benefit of the organization.

Partnerships & Resources

Excellent organisations plan and organize external partnerships and internal resources in order to promote strategy, policies and the effective operational process.

Processes, Products & Services

The role of excellent organisations is to design, manage and enhance processes for increasing value for customers and other business entities.

Results Criterion (EFQM, 2012a)

Customer Results

Excellent organisations obtain and maintain extraordinary results exceeding the needs and expectations of their customers.

People Results

The important role of all companies is to reach and maintain outstanding results that meet or exceed the people needs and expectations.

Society Results

Excellent organisations obtain and maintain extraordinary results exceeding the needs and expectations of relevant stakeholders within society.

Key Results

This criterion is used to reach and maintain outstanding results that meet or exceed the needs and expectations of their business stakeholders.

3.2 Comparison of Criteria

When comparing the EFQM Excellence model (nine criteria) with Baldrige model (seven criteria) (Table 1) we can notice there is a certain interdependence, respectively similarity in an assessment approach. These individual criteria are also characterized by a great similarity in names (for example "Strategy" in the EFQM model & "Strategic Planning" in the Baldrige model or "Processes, Products & Services" in the EFQM model & "Operation Focus" in the Baldrige model) and what is more, their content is identical, too. Furthermore, the criterion "Results" in the Baldrige Model to some extent a little bit differs because the EFQM Excellence model analyses these criteria in a more detailed way. On the other hand, the Baldrige model involves criterion "Measurement, analysis and knowledge management" even though this criterion is absent in EFQM Excellence model.

Table 1
Criteria of EFQM Excellence model and Baldrige Model

	EFQM Excellence model	Baldrige model
ılar	Leadership	Leadership
ticu	Strategy	Strategic Planning
Par	Partnerships & Resources	Customer Focus

People	Workforce Focus
Processes, Products & Services	Operation Focus
	Measurement, Analysis, and Knowledge Management
Key Results	Results
Customer Results	
People Results	
Society Results	

Source: EFQM. (2012b). *EFQM Model – Model Criteria*. [Online]. Available at the URL: http://www.efqm.org/efqm-model/model-criteria. [Accessed 28.12.2016]. and MANN, R. et al. (2012). *Understanding Business Excellence*. [Online]. Available at the URL: http://www.apo-tokyo.org/coe/files/Understanding-Business-Excellence.pdf. [cited 28.12. 2016].

Each criterion is further split into sub-criteria, which tend to be assessed within the selected models of excellence in order to improve their efficiency and increase the competitiveness of companies. Despite the different number of sub-criteria it is possible to find some coherence in particular criteria, concretely, the criterion "People" or "Workforce Focus" which is the same in case of the EFQM model as well as the Baldrige model deal with the development of employees and their evaluation.

Based on a comparison of particular criteria relating to chosen Business Excellence models (the EFQM model and the Baldrige model), we can conclude that these criteria are fundamentally the same, marked as success factors. Companies should take them into account because the analysis and evaluation of these criteria, or factors, are among the driving forces of business which ensures the optimal conditions for continuous improvement and increase of their competitiveness.

4. Conclusions and policy implications

Competitiveness is a decisive factor influencing the position of enterprises on the world markets. The effort to achieve global competitiveness requires a company's strategy to be focused on improving the efficiency of all production factors as well as relying on business environment that ensures the necessary resources in terms of skills, experience, innovation potential and infrastructure quality.

If companies want to be competitive, they should implement Business Excellence models which are considered today as key mechanism ensuring the improvement of organizational performance and competitiveness. Based on the comparison of particular evaluation criteria relating to chosen Business Excellence models (the EFQM model and the Baldrige model), we can conclude that these criteria are fundamentally the same and marked as success factors. Companies should take them into account because the analysis and evaluation of these criteria or factors are one of the driving forces of business which ensures the optimal conditions for continuous improvement and increase of their competitiveness.

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Use of Math in Selected Areas Regulated in the Income Tax Act

Radka Šumanová

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: sumanova.euba@gmail.com

Zuzana Juhászová

University of Economics in Bratislava Faculty of Economic Informatics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: juhasz@euba.sk

Abstract

This paper deals with the use of mathematics in selected aspects, which are regulated by the Act No. 595/2003 Coll., on income tax, as amended. Currently, an accountant's profession refers not just to familiarity with fundamentals of accounting law, but tax law, too. In both of them math is essential for abiding by every section of tax law. In the field of taxes we focus on the Act. No. 595/2003 Coll., on income tax, as amended. We select four aspects, namely: advances for income tax; tax licences; settlement of tax losses; and dividends, and we show their connection with mathematical calculations. The paper presents 9 tables and 4 practical examples, in which we seek to show how important math operations are in the work of an accountant particularly in the context of the tax field.

Keywords: advances for income tax, tax licence, dividends

JEL classification codes: M40, M41

1. Introduction

Mathematics and accounting are closely related. Mathematics has prepared the basis for accounting. However, currently, in accounting profession, it is not enough to know only basic legislation of accounting. Every good accountant should develop his knowledge by information from wage legislation, company law but above all from tax legislation. Information from tax legislation is used in daily work of accountant. This information is also used in time of preparing the financial statements and processing tax returns for income tax (Tumpach – Baštincová, 2014). This paper deals with usage of math in selected institutes adjusted in Act No. 595/2003 Coll., on income tax, as amended.

2. Usage of math in selected institutes adjusted in Act No. 595/2003 Coll., on income tax, as amended

Currently, taxes are a normal part of work accountant. But not every paragraph of tax legislation is easily feasible. For some section, it is necessary to use mathematical calculations. There are several tax legislations where we need to use math. The good example is Act No. 222/2004 Coll., on value added tax, as amended, Act No. 563/2009 Coll., on tax administration, as amended and Act No. 595/2003 Coll., on income tax, as amended. In the

next chapters of the paper, we focus on four institutes (in the context of legal entity income tax), which are common used in accountant's work and their usage is not possible without knowing math. They are included in Act No. 595/2003 Coll., on income tax, as amended.

2.1 Advances for income tax

The first example how to use math in the context of Act No. 595/2003 Coll., on income tax, as amended is advance for legal entity income tax (next to only "Advance for tax"). This institute is legal regulated in paragraph 42 (Vanková, 2016). Its purpose is divided high income tax liability of taxpayer to several lower sums, which are paid during taxable period. After the end of taxable period, in the deadline for submission of income tax return, will be identified exact amount of income tax liability.

Calculation of sum of Advances for tax and also their terms of payment, which are valid for actual taxable period, depend on amount of income tax for previous taxable period. There are three intervals for amount of tax for previous taxable period. In the Table 1 we can see connection between intervals for previous income tax, sum of advances for tax (valid for actual period) and their terms of payment. In the Table 1 the sum of previous income tax is represented by the variable x.

Table 1Connections between intervals for previous income tax, the actual amount of advances for tax and their terms of payment

Intervals for previous income tax	The actual amount of advances	Terms of payment of the actual
	for tax	advances for tax
x >16 600 €	1/12x	monthly
2 500 €< x≤16 600 €	1/4x	quarterly
x ≤ 2 500 €	0	-

Source: own processing by the Author of the paper according to Act No. 595/2003 Coll., on income tax, as amended, § 42.

The advances for tax calculated this way, is necessary to pay starting with the first month/quarter following the previous taxable period. They shall be payable until the end of the month or quarter, in the context of terms of payment of the actual advances for tax.

To the deadline for submission of the income tax return, after end previous taxable period (we have in mind period from the 1st of January to 31st of March or 30th of June), taxpayer pays advances for tax calculated from the last known income tax liability. After submission of the income tax return, we know actual sum of advances for tax, which is valid from the first day of new taxable period. In this period, it is also possible that paid advances for tax (calculated accordance to last known tax liability) and actual calculated advances for tax will not be the same. If paid advances for tax are lower than their new actual sum, it is necessary to pay the difference to the end of the calendar month following the deadline for submission of the income tax return. If paid advances for tax, in the period from the 1st of January to 31st of March or 30th of June, are higher than their new actual sum, they will be returned to taxpayer by him request or they will be used to cover future actual advances for tax (from 1st of April to 31st of December).

If actual income tax liability is higher than paid advances for tax, which were paid from 1st of January to 31st of December during previous taxable period, the difference has to be paid to deadline for submission of the income tax return. If actual income tax liability is lower than paid advances for tax, tax administrator returns difference to 30 days from the day of the taxpayer request.

Newly established taxpayer, which fills income tax return the first time, does not pay advances for tax from the 1st of January to 31st of March or 30th of June. These missing advances for tax will be paid out to the deadline for submission of income tax return.

To better understanding we have prepared practical Example 1.

2.1.1 Example 1

Accounting unit ZARA LTD has taxable period from 1^{st} of January to 31^{st} of December 2016. The term of submission of income tax return for taxable period 2016 is 31^{st} of March 2017. The last known income tax liability (taxable period 2015) was 24 000 €. The actual income tax liability (taxable period 2016) is 5 000 €. What will be actual sum of advances and also deadlines of their payment for taxable period 2017?

To solve this problem, we will be based on the information contained in Table 1. The first, we must determine the advances for tax resulting from the last known income tax liability (taxable period 2015). The sum of previous income tax is represented by the variable x and sum of advances for tax is represented by the variable k. From the information contained in Table 1 we can see, the last known income tax liability is from interval $x > 16600 \in$, which means that ZARA LTD is required to pay monthly advances. Accordance to information contained in Table 1 we can also calculated their amount:

$$k = 24\ 000 \in /12$$
; $k = 2\ 000 \in .$

The deadline for paying is the end of the relevant calendar month.

After submission of the income tax return by taxpayer (for taxable period 2016, we have to calculate actual amount of advances for tax. From the information contained in Table 1 we can see, actual income tax liability is from interval $2500 \le x \le 16600 \le$, which means that ZARA LTD is required to pay quarterly advances. Their amount we calculate follows:

$$k = 5\ 000 \in /4$$
; $k = 1\ 250 \in .$

Now, we can see, there is a difference. Transparent representation of this situation we can see in the Table 2.

Table 2Transparent representation of situation from Example 1

Transparent representation of struction from Example 1						
Payment terms		Amount of advances for tax	Amount of advances for tax			
(The e	end of)	accordance to information 2015	accordance to information 2016			
	January	2 000 €				
1 st quarter	February	2 000 €	1 250 €			
	March	2 000 €				
2 nd quarter	-	-	1 250 €			
3 rd quarter	-	-	1 250 €			
4 th quarter	-	-	1 250 €			

Source: own processing by the Author of the paper

In the Table 2 we can see paid advances for tax (accordance to information 2015) are higher than actual advances for tax (accordance to information 2016). The difference (y):

$$y = 3 \times 2000 \in -1250 \in y = 4750 \in$$

will be used to cover paying future advances for tax (2nd quarter, 3rd quarter, 4th quarter). The difference (z), in the amount:

$$z = 4750 \in -3 * 1250 \in ; z = 1000 \in$$

will be return back to taxpayer at his request.

After submission of income tax return we can also determine sum of actual income tax liability, which is needed to pay after deduction of paid advances for tax. In our case income tax liability for taxable period 2016 is $5\,000$ €. We also know income tax liability for taxable period 2015 is $20\,000$ €. It is also the same as which sum of advances for tax, which were paid during taxable period 2016. To the deadline for submission of income tax return (for taxable period 2016), taxpayer has not obligation to pay income tax. The difference $15\,000$ € will be return to taxpayer at his own request.

2.2 Settlement of tax losses

Another institute, which is established in Act No. 595/2003 Coll., on income tax, as amended and which is connected with math, is settlement of tax loss. This institute is legal regulated in paragraph 30 (Dobšovič, 2014). The settlement of tax losses is not so simple. It is not possible to deduct whole cumulated sums of these tax losses. Besides limitation of amount, there is also a time limitation. The tax loss, which had been created in one taxable period, can be deducted only under these conditions:

- there is a positive tax base of the next taxable period,
- the next taxable period includes only four immediately following taxable periods,
- in every from the next taxable periods can be deducted only one quarter of created tax loss from one taxable period.

To better understanding we have prepared practical Example 2.

2.2.1 Example 2

Accounting unit TIMEA LTD has actual taxable period calendar year 2016. The term of submission of income tax return, for taxable period 2016, is 31st of March 2017. We know this information about its tax bases or tax losses of taxable periods from 2012 to 2016. This information we can see in the Table 3. What is the tax base after deduction of tax losses in 2016?

Table 3Information about tax losses and tax bases of taxable periods from 2012-2016

The taxable period	2012	2013	2014	2015	2016
Tax base or tax loss	Tax loss	Tax loss	Tax base	Tax loss	Tax base
€	1 200	350	2 400	200	1 700

Source: own processing by the Author of the paper

When we have basic information, we can start with solving. For this purpose, we organized information into transparent matrix in the Table 4. In this matrix, we use coefficient 1, if it is not reasonably possible to deduct tax losses. We use coefficient 0, if there is not created tax base for deducting of tax loss and one quarter of tax loss forfeits. Different coefficient as 1 or 0 we use, if it is possible to deduct tax loss from positive tax base. This coefficient represents the amount of tax loss, which can be deducted.

Table 4The matrix of possible deduction of tax losses

The matrix of possible deduction of tax losses								
The taxable period	2012 -1 200 €	2013 -350 €	2014 +2 400 €	2015 -200 €	2016 +1 700 €			
2012 -1 200 €	1	0	300	0	300			
2013 - 350 €	1	1	350/4	0	350/4			

2014 +2 400 €	1	1	1	1	1
2015 -200 €	1	1	1	1	50
2016 +1 700 €	1	1	1	1	1

Source: own processing by the Author of the paper

From the positive tax base created in 2016 we can deduct only one quarter of each tax losses created in 2012, 2013 and 2015. The calculation of tax base after deduction tax losses in 2016 is following:

$$x = 1700 \in -1200 \in /4 - 350 \in /4 - 200 \in /4$$

 $x = 1262, 50 \in$

The tax base after deduction tax losses for taxable period 2016 is 1 262, 50 €.

2.3 Tax license

In this chapter we focus on another institute established in Act No. 595/2003 Coll., on income tax, as amended, which is connected with math. In this context, we mean a tax license. This institute is legal regulated in paragraph 46b. The tax license applies to all types of accounting units, including micro accounting units (Parajka, 2016). Basically, tax license is minimum amount of income tax (Seneši, 2015). In generally, it is used in two cases:

- the first one covers cases, when income tax liability in income tax return is lower than established amount of tax license and
- the second one covers cases of creation of tax loss.

The sum of tax license is not the same for every taxpayer. Its amount varies depending on the size of annual turnover and value added tax payer status. Compliance with the conditions is assessed to the last day of the taxable period. In the Table 5 we can see connection between annual turnover, value added tax payer status and amount of tax license.

Table 5Connection between annual turnover, value added tax payer status and amount of tax license

Intervals for annual turnover	VAT payer status	Amount of tax license in €
z ≤ 500 000 €	no	480
z ≤ 500 000 €	yes	960
z > 500 000 €	no/yes	2 880

Source: own processing by the Author of the paper according to *Act No. 595/2003 Coll.*, on income tax, as amended, § 46b, sec. 2.

Note: VAT – value added tax.

The exact definition of annual turnover we can find in Act No. 479/2009 Coll., on state administration bodies in the field of taxes and fees, as amended. In double-entry bookkeeping, annual turnover is the sum of revenues from all activities of taxpayer carried out for the relevant taxable period. In the Table 5 the amount of annual turnover is represented by the variable z.

Because the tax license is the minimal income tax, the term of payment is the same as in case of income tax. Of course, there are exceptions from tax license payment. For example, exemption has the taxpayer, who has the first-time obligation to file income tax return. Another example applies to taxpayer, who operates a protected workshop or protected workplace accordance to Act No. 5/2004 Coll. on Employment Services, as amended.

In the context of a tax license we use mathematics under these two conditions:

- In one taxable period has to be created a positive difference between the tax license and primary income tax. This tax license must be paid.
- In three immediately following taxable periods has to exist positive difference between the income tax and the tax license.

These two conditions are expressed in math in the Table 6. The validity of these two conditions is necessary for deduction paid tax license or positive difference between the tax license and primary income tax in one taxable period from positive difference between income tax and tax license in maximal three immediately following taxable periods, before deducting paid advances for tax. The right to deduct paid tax license or positive difference extinguished, if in three immediately following taxable periods do not exist a positive difference between income tax and the tax license.

Table 6Mathematic expression of two conditions which are connected with tax license

Taxable period	M	$M+1_{or}2_{or}3$
it applies:	Paid tax license > primary income tax	Income tax < tax license

Source: own processing by the Author of the paper to Act No. 595/2003 Coll., on income tax, as amended

, on income tax, as amended, § 46b, sec. 5.

Note: M = calendar year.

To better understanding we have prepared practical Example 3.

2.3.1 Example 3

Actual taxable period of accounting unit Laura LTD is calendar year 2016. Laura LTD has a status of value added tax payer. Its annual turnover is 40 000 €. The term of submission of income tax return for taxable period 2016 is 31st of March 2017. We know this information in the context of tax licenses and income taxes of taxable periods from 2014 to 2016. This information we can see in the Table 7. Laura LTD was not obliged to pay advances for tax.

Table 7Information about tax licenses and income taxes of taxable periods from 2014 - 2016

The taxable period	2014	2015	2016
The result of income tax return	Tax license	Income tax	Income tax
€	960	1 500	1 900
The primary income tax	30	1 500	1900

Source: own processing by the Author of the paper

When we know basic information, we can start with solving of Example 3. In the first step, we must check the validity of the conditions from Table 6. In case of their validity, we can calculate the positive differences of all taxable periods. For this purpose, we prepared the Table 8.

Table 8Checking the validity of the conditions from Table 6

Taxable period	M	2014	$M+1_{or}2_{or}3$	2014+1 = 2015	2014+2 = 2016
it applies:	Paid tax	960 €>30 €	Income tax <	1 500 € < 960 €	1 900 € < 960 €
The validity of	license > primary	true	tax license	true	true

conditions	income tax				
v	The positive	960 € – 30 € =	The positive	1 500 € - 960 € =	1 900 € - 960 € = 940
Λ	differences	930 €	differences	540 €	€

Source: own processing by the Author of the paper

The positive difference from paid tax license and primary income tax for taxable period 2014 will be deducted by positive difference between income tax and tax license for taxable period 2015 in sum $540 \in$ and positive difference for taxable period 2016 in the sum $930 \in$ $540 \in$ = $390 \in$.

2.4 Dividends

In this part of the paper, we are focusing on dividends taxation and calculation of health insurance contributions from dividends. The taxation of dividends is legislative established in Act No. 595/2003 Coll., on income tax, as amended, as result Act No. 341/2016 Coll. Health insurance contributions from dividends we can find in Act No. 580/2004 Coll. on health insurance, as amended. This part of the paper deals only with dividends paid out from domestic legal entity to individuals, who are tax residents of the Slovak Republic and who have a business-relationship with legal entity. We mean individuals like executive manager, companion, or shareholder, etc. (Parajka, 2016) For this paper, the term dividends means dividends and also shares in profit paid out in the distribution of profit after tax.

If we want to abide all legislative provisions connected with paying out dividends, it is very important to know information about period of creating the profit, which is object of paying out the dividends. The profit creation periods we must divide into five intervals. It is important, because in each of these intervals are different manners of taxation of dividends and calculations of health insurance contributions from them. These five intervals we can find in the Table 9.

Table 9Matrix of information about manners of dividends taxation and calculation of health contributions from dividends paid out in 2017

Intervals of profit creation periods		x ≤ 2003	2004 ≤ x ≤ 2010	2011 ≤ x ≤ 2012	2013 ≤ x ≤ 2016	x ≥ 2017
Income tax (%)	TR	7	0	0	0	0
	WT	0	0	0	0	7
	ADV	0	0	0	1	0
	%	14	0	10	14	0
Information about health insurance	% SDP	7	0	5	14	0
contributions	ASHI	1	0	1	1	0
	MAB	0	0	442	0	0
	MXAB	0	0	52 980	52 980	0

Source: own processing by the Author of the paper by *Act No. 580/2004 Coll. on health insurance, as amended*, and *Act No. 595/2003 Coll., on income tax, as amended*. Notes: % SDP - % valid for severely disabled person, ADV – advance, ASHI- annual settlement of health insurance, MAB – minimum assessment base in €, MXAB – maximum assessment base in €, TR- tax return, WT- withholding tax at source, x = profit creation period.

In the Table 9 we can see the matrix, which was processed from information about taxation of dividends and also information about health insurance contributions. In the matrix we use coefficient 0 for representation of word no and coefficient 1 for representation of word

yes. We use the different coefficient as 0 or 1 for representing the percentages of health insurance contributions or amount of minimum or maximum assessment base in \in .

We can see that taxation and health insurance contributions are not the same in each of intervals of profit creation periods.

In the context of income tax, we can see the difference in first and last column. The reason is usage of the different manner of taxation of dividends. In column 1 (valid for periods: $x \le 2003$) is necessary submission of income tax return by recipient of dividends. In column 2 (valid for periods: $x \ge 2017$) legal entity has obligation to solve taxation of dividends with use withholding tax at source.

In the context of information about health insurance contributions, we can see a lot of differences. We have divided this information into six following parts (also we have been added a description of the difference):

- advance valid only for dividends from profit, which was created in 2013-2016,
- the first percentage of health insurance contribution in the case of healthy person,
- the second percentage of health insurance contribution in the case of severely disabled person,
- annual settlement of health insurance is not needed in case of dividends from profit created in 2004-2010 and also in 2017 (Dôvera, 2016),
- minimum assessment base valid only for dividends from profit created in 2011-2012.
- maximum assessment base valid only for dividends from profit created in 2011-2016

To better understanding we have prepared practical Example 4.

2.4.1 Example 4

Accounting unit MONA LTD has decided to pay out dividends from profit created in period 2016 to executive manager. Gross amount of dividends is 5 000 €. How much money will executive manager receive from dividends?

The period 2016 is from interval: $2013 \le x \le 2016$. For this period is valid:

- none income tax,
- paying advances by legal entity until 8 days after ends month of dividend payments in amount of 14 % from assessment base,
- assessment base is bounded only from top by number 52 980 €,
- advances, which were paid, will be settlement in annual settlement of health insurance.

The calculation of nett dividend (d) is following:

$$d = 5000 \in *(100-14)/10; d = 4300 \in$$
.

Executive manager will receive dividend in amount 4 300 €.

3. Conclusions and policy implications

Accounting and math are closely linked. Math prepared the basis for accounting. It is also very common used in accounting. Currently, in accounting profession, it is not enough to

know only basic legislation of accounting. Knowledge from tax legislation is very often needed in daily work of accountant, because it has a direct impact on determining the value of the company (Pakšiová – Kubaščíková – Kršeková 2015). But not every paragraph of tax legislation is easily feasible. For some section, it is necessary to use mathematical calculations. In the paper, we focus on four institutes from Act no. 595/2003 Coll. on income tax, as amended. In their cases is math very necessary to adhere all of regulations of tax legislation.

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Supervisory Actions Concerning the Shadow Banking System and the Digital Finance in China

Bence Varga

University of Szeged Doctoral School in Economics Kálvária sgt. 1. Szeged, 6722 Hungary Email: varga.caius@gmail.com

Abstract

This paper presents the main supervisory actions recently taken in China regarding the shadow banking system and the Digital Finance. We seek to find out what reforms were introduced and what tools were applied in the realm of supervision in the recent period, what results they have yielded and whether any further reform is necessary to improve efficiency of the Chinese financial supervision in this regard. This paper focuses on activities and the toolset of the China Banking Regulatory Commission, the main financial supervisory body. As for the shadow banking system, numerous authority notices were issued and awareness-raising measures introduced, followed by new ones, and handling it still remains a challenge for the supervisory authorities. Concerning Digital Finance, several initiatives and specific recommendations have emerged following an initial "light-touch" supervisory approach, but supervising this area calls for the establishment of a relevant legislative environment as well.

Keywords: financial supervision, CBRC, shadow banking system, Digital Finance

JEL classification codes: E59, G18, G21, G28

1. Introduction

Chinese financial supervision has faced numerous challenges recently, which are also linked to the reforms introduced by the Chinese government. These include e. g. the introduction of deposit insurance, the comprehensive formal liberalisation of interest rates, the introduction of the People's Bank of China's Macro Prudential Assessment, the launch of pilot programmes linked to securitisation (IMF, 2016), and we can also mention the market-oriented monetary policy and the "New Normal" monetary policy regime which indirectly also affects the financial supervision system. Besides the aforementioned, Chinese supervision – like the European supervisory authorities – will also face challenges from the Basel IV reforms drafted by the Basel Committee and the introduction of the Total Loss Absorbing Capacity. In this paper we attempt to present two distinguished challenges, namely the shadow banking system, which has been present in China more than a decade, and a relatively new challenge, i. e. the Digital Finance, emphasizing the P2P (peer-to-peer) lending within this issue.

2. Shadow Banking System

One of the major financial supervisory challenges for China is the shadow banking system, which has gradually and increasingly gained significance since 2008, and by 2015 it has reached 54 billion CNY. This financing system operating alongside the banking system plays a definitive role in the Chinese economy (Lasak, 2015). The characteristics of China's shadow banking system differ from those found in Western countries in many regards. Specifically,

China's shadow banking system mainly affects the domestic financial system, is mainly driven by commercial banks, features an underdeveloped secondary market, and the shadow banking system comprises less complex financial instruments, most of them initiated by individuals (Linden, 2015). The willingness to seek out alternative forms of financing has also been driven by the funding shortages affecting certain sectors and industries and the generally low interest rate levels. The two main "products" of the Chinese shadow banking system are WMPs (Wealth Management Products, like certain structured financial products without any guarantee of the repayment of capital and/or interest) and TPs (Trust Products, like reverse repos); the former are mainly issued through financial intermediaries, which are not licensed to collect deposits or engage in lending, but are authorised to manage such activities. These products are more similar to loans based on their characteristics, but there are some that are very speculative in nature. Trust Products are mainly offered by non-bank financial institutions, such as trust companies, brokers, and insurance companies, in partnership with banks. WMPs and TPs accounted for more than 50% of China's GDP in 2015.

Drafting regulations on the shadow banking system has been a priority for China's government recently, in the context of the 12th five-year (2011-2015) plan. A need to specify the allocation of responsibility among the various supervisory bodies was laid down, as the current supervisory system applies a sectoral approach, under which different supervisory bodies (i. e. China Securities Regulatory Commission, China Insurance Regulatory Commission, China Banking Regulatory Commission (CBRC)) is in charge of supervising the institutions they authorise, but this presents the danger of inadequate assessment of risks stemming from enhanced relationships between institutions and cross-sector products within the shadow banking system. This divided supervisory structure may also contribute to the emergence of disagreements between the various bodies (He, 2014), as a result of which the "supervision" of the shadow banking system is shared among several institutional bodies. In addition, increasing transparency or the integration of supervisory bodies is also priority, as the shadow banking system, due to its nature, decreases the transparency of capital flows and financial institutions, which in turn lowers the effectiveness of macro-prudential regulation. It is therefore paramount to improve the transparency of the statistics and information policy on the shadow banking system. Other shortcoming can be mentioned regarding the regulation, which lacks a systemic-level guiding principle that factors in both economic development and risk prevention and regulates the associated financial innovation in such a manner that supports real economic development. There has been progress occurred, i. e. commercial banks are required to restrict their WMP exposure; while this measure only restricts the shadow banking system without eradicating it, though it deserves special attention (Linden, 2015).

The measures introduced to address the shadow banking system have spurred the appearance of newer and newer shadow banking system products. The CBRC adopted numerous supervisory measures to fight against WMPs, mainly in the form of authority notices. In these notices, the CBRC stipulated that the ratio of non-traditional assets to the WM portfolio could not exceed 30%, and the proportion of the WM portfolio within the balance sheet total could not exceed 4%, and requirements for disclosing the data of such products were also defined. At the same time, 2009 saw a further increase in WMPs, which necessitated the issuance of additional notices. In two notices issued in 2009, the CBRC regulated the reporting system of WM services and rolled out tighter rules for managing investment funds, but these regulatory documents failed to duly address the links within the risks inherent to WM services. The aforementioned measures significantly slowed the spread of WMPs, but gave rise to a new shadow banking system activity through WM cooperation between banks and trust companies in 2010 in a bid to circumvent the relevant rules, referred to as trust-based lending, which affects banks' off-balance sheet items (Hu et al., 2016).

In response to this, the CBRC issued new notices in 2010 and 2011 to reinforce the regulation of WM cooperation between banks and trust companies, in the context of which commercial banks were required to transfer their off-balance sheet assets within a deadline of two years (later amended to one year and four months), which was regularly monitored by the CBRC. If a bank failed to comply, it had to set aside a 10.5% risk reserve on its exposure of this type. These measures helped decrease banks' hidden off-balance sheet risks and to curb trust-based lending, but 2012 saw the emergence of non-traditional loan intermediation (e. g. reverse repos) on the Chinese money market with the participation of banks and trust companies, or other third party players. In 2014 the CBRC created a supervisory framework to address these products (Zheng, 2015) and issued numerous authority notices (e.g. capping investments in non-traditional credit instruments and crafting related risk management methods). Nevertheless in this period in order to avoid the introduced rules banks may use WMPs to repackage and invest in other WMPs. With this move it can show parallels with some of the more complex collateralized debt obligations (CDOs) that exacerbated subprime losses in the United States in 2008. Banks' lending to non-financial institutions has increased by 44% from 2015, therefore it presses Chinese authorities for introduce newer and newer rules (Bloomberg, 2016). However, solving these problems would only be sufficient to address the existing issues in the short term; material change would require structural reforms, including deeper reform within the financial system (Hu et al., 2016).

For the sake of international comparison, in Europe, it was the CRR (Capital Requirements Regulation) that granted the EBA (European Banking Authority) the power to draft a recommendation for restricting banks' exposure to the shadow banking system. According to the EBA's recommendations on the shadow banking system, banks must apply effective processes and control mechanisms, coupled with internal frameworks, individual and aggregate limit systems, and also be able to identify their associated individual exposures and control these risks. However, tightening regulations governing banks is not enough, as this may further push their activities towards the shadow banking sector (Seregdi, 2016). So the measures introduced by China's supervision and its capacity to react to the shadow banking system does not fall short of the measures seen in Europe, but there are uncertainties surrounding its degree of success.

3. Digital Finance

The definition for Digital Finance can be considered relatively broad; it includes all types of financial services (such as payments, savings accounts, credit-, insurance- and other financial products). The customers can be all types of users (including individuals at all income levels, businesses of all sizes and government entities at all levels). The service providers can also be considered widely, including all types of providers of financial services (including banks, payment providers, other financial institutions, telecoms companies, financial technology (FinTech) start-ups, retailers, and other businesses) (McKinsey & Co., 2016). Within this broad category, P2P platforms are online services supplied by innovative firms in the context of which lending and borrowing takes place with the intermediation of financial institutions and insurance companies, but typically without them.

The marked rise in online financial services (e. g. Alipay) in China began in 2013, and there were over 2,500 P2P platforms operating by 2015, representing capital in excess of RMB 375 billion, which is expected to growth in the future due to higher technical developments (e. g. smartphone subscription and penetration, financial innovations). Initially, the CBRC adopted a lenient approach to supervising these activities in a bid to offer a partial solution to the funding difficulties faced by small- and medium sized enterprises. Meanwhile, these were also regarded as a main instrument fostering the broader spread of financial ser-

vices. The idiosyncrasies of the credit- and price system, including a shortage of market loans, the impact of non-market mechanisms on certain prices etc., and more generally, the short-comings of China's financial system contributed the rising share of Digital Finance products (Hu et al., 2016). The regulation of Digital Finance prior to 2015 remained so called "light-touch" in spite of the fact that many P2P service providers went bankrupt as early as in 2011 due to payment difficulties, and most industry professionals supported regulation of this area (Zhou et al., 2015).

As a result of lenient supervision, nearly one third of all P2P platform transactions became nonperforming, or raised the suspicion of misappropriation of the capital involved. As a result of the above, the regulation of online financial services became a priority, and in 2015, the PBC announced its objective to create a regulatory framework for Digital Finance as soon as possible at the 12th National People's Congress. Accordingly, the CBRC issued guidance and draft regulation in 2015, and further regulatory steps are expected in the future. Based on the CBRC's approach to P2P, no minimum capital or licensing requirements would be defined, and the authorisation of platforms would mainly occur in the context of registration, with the requirement of disclosure certain information. In addition, the range of unauthorised activities would be defined, e.g. transactions between parties within the same circle of interest, the assumption of principal guarantees, the pledging of collateral, etc. The regulatory framework includes the requirement for platforms to distinguish their own funds from foreign funds, placing the latter on a deposit account at a financial institution. The regulation issued by the PBC in 2015 also emphasised the importance of customer identification, and depending on the authentication methods used, payments per account will be limited to RMB 1.000 over the life of the account, RMB 100.000 or RMB 200.000 per year (Jingu, 2016).

Hence, significant progress has been made in terms of the regulation of Digital Finance by the Chinese supervisory authorities, but the financial products classified as Digital Finance currently and will continue to create challenges for them, as Digital Finance functions within a mixed operating model that involves multiple sectors, and the decentralised nature of supervisory bodies renders their supervision more difficult. The high level of innovation and IT support, the changing nature of business models, the technological issues stemming from the virtual environment also pose challenges for on-site examinations and the finding of evidence; addressing these and prioritising disclosure and consumer protection considerations will be warranted in the future (Hu et al., 2016).

An international comparison shows that the EBA has highlighted several tools for the supervision of online financial services, which allow the efficient measurement and management of the risks associated with P2P. These include the disclosure of the general risks inherent to P2P, the rating of creditors and borrowers, KYC (Know Your Customer) tasks, the establishment of protection for financial transaction participants in the event of P2P platform operating malfunctions, and the licensing or at least the registration of P2P platform operation (EBA, 2015). In this paper, the EBA also emphasises the regulatory practices applied in England, France, Spain and Italy, member states which all have P2P specific regulation, adding, however, that Italy's regulations do not cover every type of P2P lending. Based on all of this, China has reacted rather late to the supervisory challenges posed by P2P, prioritising certain risks. It can be mentioned however, that China's P2P regulations remain relatively less robust than those in developed markets, such as the United Kingdom. Therefore supervisory authorities are still cognizant of needing to allow for the continued ease of establishment and expansion of these firms.

The Chinese legislature is implementing a more substantive data protection framework, driven by concerns over highly publicised data security breaches. The new framework also regards certain EBA recommendations, such as risk control systems and KYC measures, and

amends with People's Bank of China's additional requirements for non-bank payment institutions around effective protective measures and rules of handling sensitive information (DBS Bank & Ernst & Young, 2016).

4. Conclusions

With the spread of the shadow banking system, supervisory bodies were unable to respond with sufficient efficiency to overcome the challenges this area. Numerous authority notices were issued and awareness-raising measures introduced, followed by new ones, and still handling the shadow banking system remains a challenge for supervisory authorities, although this also arises from the financial institutional system's attributions.

Handling Digital Finance and the associated risks is also a priority for supervisory bodies. In this regard, several initiatives and specific recommendations have emerged following an initially "light-touch" supervisory approach, but supervising the area calls for the establishment of a relevant legislative environment. Nevertheless, studying the supervisory tools linked to the rise of shadow banking system and Digital Finance is more than pivotal to the European supervisory authorities as well.

In order to overcome the challenges arising from the shadow banking system and the Digital Finance, supervisory authorities will be required to enhance their cooperation and improve the allocation of responsibilities among them. Because of the aforementioned challenges show cross-sectoral nature, the integration of relevant supervisory authorities can also be considered.

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Innovation Clusters in the European Union: Theory and Case Studies

Marta Vovk

Prydniprovs'ka State Academy of Civil Engineering and Architecture Economic Faculty Chernyshevskogo 24a Dnipro, 49600 Ukraine

E-mail: marta.bravin@gmail.com

Denys Braga

University of Economics in Bratislava Faculty of International Relations Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: denys.braga@euba.sk

Abstract

The aim of the article is to determine effectiveness and necessity of innovation clusters in the European Union. Recent research concludes that innovation and knowledge clusters are widely recognised as one of the key drivers of economic growth and development. The phenomenon of clustering in industries has been described and existing research has been examined. Current situation regarding innovation clusters in the European Union has been analysed – based on the example of the SEAM cluster through its contribution and positive effects achieved by a participant of this cluster. It can be concluded that such initiatives have positive impact on all contributors and stakeholders.

Keywords: innovation clusters, economic clusters, innovations in the EU

JEL classification codes: O31, O38, R12

1. Introduction

Knowledge and innovation are widely acknowledged as key drivers of growth and economic development. An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations (OECD, Eurostat 2005).

Clusters are geographic concentrations of interconnected companies or institutions that manufacture products or deliver services to a particular field or industry(Porter, 2000; Januska – Kurkin – Miller 2011; Renna, 2013). Clusters generally consist of companies from the same or very close industries or manufacturing area that use same production infrastructure, supply chains and distribution networks. In the same time companies that joining in clusters pulling to the cluster a variety of likeminded firms that provide support with resources, materials, spare parts and different kind of support services from related industries for cooperation and developing joint solutions and relocate combined resources to receive as much as possible advantages of markets. These peripheral firms and organizations very often compete with each other directly, nevertheless even more frequently they functioning in a harmonious way.

Modern cluster structures could contain companies from more than one business area or industry and, in globalized world, from more than one geographical region, and advanced and well developed clusters are something bigger than just a supplier-producer-buyer pattern.

An economic cluster, or numerous clusters, function as the driving power in most regional economies. Examples include Detroit's auto industry concentration, computer chip manufacture and IT R&D centres in California's Silicon Valley, world important financial sector in London, the Napa Valley's wine production, and Hollywood's movie production industry (Fallas, 2012).

The concept of clustering was developed and popularized by Michael Porter (Porter, 1998a). Porter (1998b) also uses term agglomeration to describe such interconnected groups of companies. Developed techniques describe how communities should examine their present business and manufacturing bases and construct their economic progress basing on those strengths.

During the last decades, EU has moved political attention to innovation, the knowledge economy and sustainable competitiveness. Cluster based approaches took a central place in industry policy, but also in connection with regional and science policy at the EU level. Europe's future is connected to its power to innovate.

Cluster based approaches – as part of industry, innovation, regional and science policy – should account for both a transformation of established industries in Europe, as well as paving the ground for new emerging industries. The chances of success are improved if such policy initiatives will be fact-based.

2. Literature review

Alfred Marshall was one of the first who described economic clusters (he defined them as "industrial districts") as "concentration of specialised industries in particular localities" (Marshall, 2014). Starting from far 1916th economic texts have proved the existence of a unified market of specialized workers, markets that provide specific materials received from suppliers of goods and services. The texts also have defined a rapid flow of business-related knowledge between firms, which leads to the flow of technologies. It can be difficult to predict in advance where clusters will emerge, but their growth is easier to predict because of the benefits arising from such strategies. A variety of terms are synonymous to the cluster they include co-location, industrial areas, agglomerations as well as innovative milieus.

The diffusion of innovation in Europe starting from 16th century was discussed in the works by Carlo M. Cipolla (Cipolla, 1972). Author conclude that inflow of "good brains" and receptiveness to new ideas were among the main sources of the success stories of England, Holland, and Sweden in the 16th and 17th centuries (Cipolla, 1972). For Europe, in particular, relationships are increasingly international in scope as firms located in relatively small geographical region seek the most befitting partners, irrespective to their location, in order to improve their competitiveness (Tracey – Clark 2003).

The conditions and criteria for recognition and empirical judgments about whether scientifically analysed specific cases of innovation actions the justify regional innovation system and argument that the source of Europe's innovation gap with the United States based on depends on excessive government involvement, which means a major reverse recoil in the markets (Cooke, 2001).

Theoretical approaches' dealing with the organization of knowledge flows within clusters or industries, and with determinants of the spatial concentration of innovative industries have been disused by Jordi Suriñach and others, as well as the empirical studies' that evaluate

various factors qualifying firm productivity and regional innovativeness (Suriñach – Moreno – Vayá, 2007; Bode, 2009).

In different EU countries, different tools of commercialization of innovations may be used, as corporate ethics, a question of diplomacy are not the same in all countries (Raneta – Kunychka 2015).

A critical evaluation of past policies of economic development on the hypothesis of regional innovation clusters and research rationality for the popularizing of regional innovation clusters (RICs) and their implementation in the political arena have been discussed by Junbo Yu and Randall Jackson (Yu – Jackson, 2011). Also, authors define links between RICs and active investigations in the area of industrial policy and professional agglomerations, systems of innovations concentrated in one region and regional economic development. The analysis has been done to identify those most important issues for the conceptualization and theorizing RICs (Yu – Jackson, 2011).

Also, other authors made a significant contribution in the studies related to the RICs: Brenner (Brenner et al., 2011) and Babtists (Baptists, 1996); the innovation and knowledge clusters have been analysed by Montresor & Marzetti (Montresor – Marzetti, 2008) and by Carlos Scheel (Scheel, 2002). The creative industries have been discussed by Baculáková (Baculáková, 2014) and comparison of European corporate culture with American has been analysed by Kordoš (Kordoš, 2015).

3. The advantages and weaknesses of the EU

Advantages of the EU can be grouped of five points. Firstly, industry chain links between scientists & research institutions and industries, which build cooperation on the basis of mutual benefit and collaboration between public and high innovative sectors. Secondly, the platform for policy development provide a basis for exchange and cross-policy decisions in field on innovations and not only. Third, high technology innovations can accelerate the modernization and diversification of the regional economies. Fourth, the governments is an active players as stakeholders from innovative firms activities that lead to legal status of such as a non-profit organization, and helping them to create the most favourable conditions for doing business at an early stage of growth. The last but not least, the support of economic growth with an intelligent, lead to a high level of employment.

Features of the EU innovations policy can be defined in three main points. First, focus on R&D and technological innovation flowing out from the results in knowledge transfer activities, starting from the idea of an innovative company to be turned it into innovative products and innovative products for commercialization and technology transfer fade from country to country or from organizations. Second, long-term strategic economic development tool for the society, helps to diversify the economy and increase tax revenues. Finally, the business climate in order to maintain the essential elements in the innovation process of entrepreneurs creates the best conditions for the growth of start-ups.

Threats and weaknesses of the EU are the most difficult to investigate in some respects. This is due to the fact that innovation systems are potential tool in the strategy of the countries with different points of view and to combine all the elements of influence on the development and usage of innovations in such aspects as economic, social, political and organizational.

3.1. Innovation clusters in Europe, comparison of cases

Over the past five years a number of actions have been done to create a more accurate data about European clusters. About a third of all European countries has conducted systematic attempts to identify and quantify the relevant clusters, a process often referred as cluster

mapping. According to a report prepared for the European Commission maps covers all European countries, or economies, but not all kinds of industries and linkage among them. Any successive data does not exist, however, to monitor the frequency and clusters performance throughout Europe (Europäische Kommission, 2002).

The Global Competitiveness Report provides comparative data about strength of clusters on the total number of 75 countries, including all European countries. Research data generated by survey includes a specific query on the state of cluster development, and includes a number of additional issues that may be used to calculate the general indicators of cluster strengths (Porter, 2001).

The European Union has two main directions to develop innovations clusters. First path is to reduce resource consumptions or make this resource usage more effective. The second one is to increase competitiveness of involved to the clusters companies.

One of such clusters called SEAM or Safe Efficient Advanced Materials. SEAM in the European RTD-cluster (Research and Technical (or Technological) Development) on lightweight design (SEAM, 2017).

The SEAM cluster has been launched with its main purpose order to organize and harmonize the four European projects SafeEV (SafeEV 2017), ENLIGHT (ENLIGHT, 2017), ALIVE (ALIVE, 2016) and MATISSE (MATISSE, 2017).

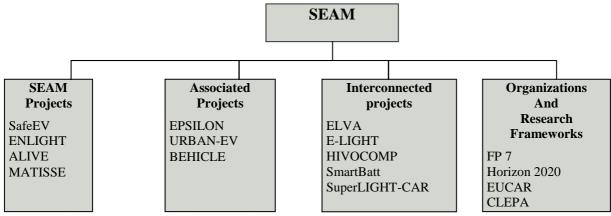
The cluster was established in October 2012 and till for September 2016 with its main purpose to realize and monitor activities between four projects on RTD and to activate joint dissemination and exploitation actions.

The joint dissemination and exploitation activities are coordinated by the SEAM cluster office, which is hosted by the Fraunhofer LBF and Bax & Willems Consulting Venturing (SEAM, 2017). Today SEAM is:

- biggest European RTD-Cluster on lightweight design;
- 47 partner from 10 countries;
- about €19Mil. funding;
- platform for joint dissemination activities between the SEAM partners.

The structure of SEAM cluster is presented below in the figure 1.

Figure 1
The structure of SEAM cluster



Source: author contribution based on SEAM cluster data (SEAM, 2017)

Due to participation in SEAM, project ALIVE has reached design freeze complete vehicle and has already started to produce conceptual components. The final design of BIW is a multi-material approach using high-strength steel and aluminium grades, together with cost-effective fibre strengthened plastic for the housing roof concepts with solar batteries and concepts of light doors (front and rear) made for aluminium. New technologies have been developed and are selected, for example, in-situ candidates of the front sub-frame and the aluminium profiles received by extrusion technology or semi-hot-formed upper assembly C-pillar node (ALIVE, 2017).

The ENLIGHT results include the development of cost-effective combination of technologies and production of new materials suitable for medium-scale production (50,000 units/year). Refinement of energy-efficient processes, providing CO₂ foot print equal to or lower than that of conventional solutions made from metal. Development of continuous manufacturing processes for the new, modern lightweight materials that reduce cycle time by half or better to reduce production costs by at least 20% lower than the approved by SotA (ENLIGHT, 2017). New, modern lightweight materials implemented in the optimal design of electric vehicles. LCA is implemented as a parameter in the design of the vehicle.

4. Conclusions and directions for further investigation

Identification of the importance of systemic innovations at the regional level have shown that a comparatively new phenomenon in Europe. However, more detailed studies showed that a large part of the responsibility for support in the European regions was putted on the shoulders of government officials at various levels, including those with the growing extent, are not always were adequate. It is not difficult to conclude that these public innovation systems, where they exist, and it is not everywhere, not competitive with private systems operating in the United States. This is not the fault of the staff, but the policy which Europe seeks to ensure that, because there was a market failure to provide innovation support for private infrastructures. The obvious conclusion is the policy that can be drawn from this analysis is that policies should encourage the growth of strong private institutional investors, which will have a profit-motive as an incentive to be more active than the public system has shown itself to be capable of.

Connected companies and industries tend to be found in close proximity to create clusters for a variety of reasons. Nevertheless, there is reason to believe that while clusters of enterprises can be localized in some regions they can also be organized as spatially extended networks at higher spatial scales, and that it is likely to be more common due to the benefits achieved thought transportation and communication systems.

Of immense importance for the future competitiveness and effective implementation of the EU strategy is that systemic innovation policy based on world-class cluster approach will be further developed and implemented, instead of detached less effective (and outdated) linear RTD and industrial policies, Nevertheless, SEAM cluster shows a great result in benefiting of all its partners.

In this sense, international networks can be an important source of innovation and innovative ideas.

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Price and Income Demand Elasticity Analysis of Selected Goods in Slovakia

Kristína Vrtíková

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic

E-mail: kika.vrtikova@hotmail.com

Abstract

The aim of identification and examination of the most suitable mathematical function is to demonstrate mutual dependence between the variables being studied. With compilation of the econometric model used, it is necessary to further analyse the statistical significance and explanatory power of the model chosen. On the basis of estimated demand function it is possible to calculate the coefficient of price elasticity of demand and income. When compiling a function of demand, it is necessary to analyse the behaviour of the market as a whole. The motion in the Slovak Republic to reduce the rate of VAT on selected food products to 10% sought to increase domestic consumption of these goods. One of these products is bread, which belongs to staple foods in the home. In order to check the impact of reduction in the rate of VAT on the amount of consumption, we opted for the period of 11 years (2005-2015).

Keywords: demand, price elasticity, income elasticity

JEL classification codes: D01, D24, D91

1. Introduction

Economists study demand in the individual transaction, at the level of the company and its consumers, an also overall level of demand in the economy (Sethna – Blythe, 2016). The main tasks include the examination of the economics and the quest for understanding consumer behaviour. The goal is to meet each consumer's individual needs as far as possible. Analysis of consumer behaviour is the starting point for the derivation of individual consumer demand after the selected goods and services. Several factors affect the rate of demand. Relationship between the volume of consumption and the factors that influence, analytically expressed demand function.

One of the key determinants of a consumer behaviour is their tastes and preferences (Schroeder, 2003). The most important factor, which changes the volume of consumption of goods and services include the price and the amount of disposable income of consumers. The consumer responds to changes to these factors in a certain way and quantitative expression of these changes, it may have importance for the adoption of economic measures. For this reason, we have focused on the examination of price and income elasticity of demand of the bread.

1.1 Model and data

The data necessary for the calculation of price and income elasticities of demand we have gained from the Statistical Office of the Slovak Republic from the Slovstat and data published on the website of the social insurance agency. For the relevance of the results obtained, we have chosen a period of eleven years, namely from 2005 to 2015.

In designing the models we use are based on demand feature quantitative mathematics-statistical methods. Statistical methods we have focused mainly on the regression and correlation analysis. In the calculation of the parameters of the estimated demand functions we have used, in particular, mathematical and statistical methods in Microsoft Office Excel and the data of the statistical program Statgraphics Plus 5.1.

2. The calculation of the price elasticity of the bread

Bread is one of the staple foods in the home. The volume of consumption from 2005 onward, and that of the 35 kg per capita 45,8 kilograms per capita in the year 2015, representing a decrease of consumption of 10,8 kg. The price of bread during the reporting period grew from $0.90 \in$ per kg at $1.34 \in$ per kg in the year 2015. The evolution of prices and average consumption, is provided in the Table 1.

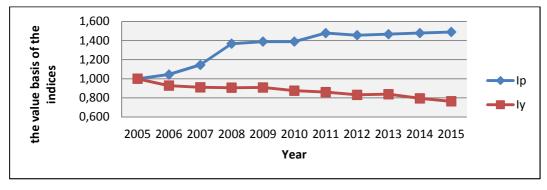
Table 1Average price development and consumption of bread during the period 2005-2015

Year	Average price in EUR/kg per year	Average consumption per capita per year (kg)	The basic price index	The basic consumption index
	p	y	$\mathbf{I}_{\mathbf{p}}$	$\mathbf{I_y}$
2005	0,90	45,8	1,000	1,000
2006	0,94	42,5	1,044	0,928
2007	1,03	41,7	1,144	0,910
2008	1,23	41,5	1,367	0,906
2009	1,25	41,6	1,389	0,908
2010	1,25	40,1	1,389	0,876
2011	1,33	39,4	1,478	0,860
2012	1,31	38,1	1,456	0,832
2013	1,32	38,4	1,467	0,838
2014	1,33	36,4	1,478	0,795
2015	1,34	35,0	1,489	0,764

Source: own processing by the Author of the paper

The development of base indices prices and bread consumption is shown on figure 1. With the rising price (Ip), decreased year on year (Iy).

Figure 1
The development of base indices prices and consumption of bread



Source: own processing by the Author of the paper

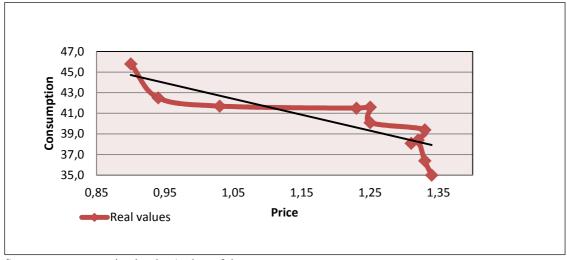
To carry out the calculation of the price elasticity of demand, it is necessary to determine the most appropriate type of regression function and level of the coefficients of determination. When estimating regression functions of each type, we came to the following results:

```
regression a linear function y = -15,419x + 58,59, R^2 = 0,703 logarithmic regression function y = -17,02\ln(x) + 43,026, R^2 = 0,6899 regression power function y = 42,979x^{-0,419}, R^2 = 0,6669 exponential regression function y = 63,069e^{-0,38x}, R^2 = 0,6817
```

Of these features has the highest coefficient of determination function of linear regression, up to $R^2 = 0.703$, on the basis of which we have carried out the calculation of the price elasticity of demand. The other features the same high amount of regression showed a dependence of the size of the volume of consumption of bread from prices, up to approximately 70%.

The Figure 2 shows the demand curve, which is declining. This phenomenon demonstrates the assumption that the growth in the average price of bread, dropping its consumption.

Figure 2
Regression a linear function



Source: own processing by the Author of the paper

On the basis of the values we will verify the parameters of the econometric model used. Linear regression function shows the dependence of the amount of the highest copper consumption and prices of bread, so we will focus on the verification of this function.

The general shape of the linear function is:

$$y = \beta_0 + \beta_I x \tag{1}$$

The following table summarizes the estimated parameters of the linear model.

Table 2Parameters of linear model

Parameter of linear model	The value of the parameter	The standard deviation of the parameter	T - statistics	P - value
eta_0	58,5904	4,05257	14,4576	0,0000
β_1	-15,4191	3,34103	-4,61508	0,0013

Source: Statgraphics plus 5.1 and processing by the Author of the paper

The regression coefficient β_1 has a negative sign, implying that there is an indirect relationship between the price and the amount of consumption, confirming the validity of the law of demand.

For an assessment of the statistical significance of a linear regression model, it is necessary to verify the significance of parameters, test and verify the quality of the model.

For an adequate assessment of the linear regression model, it is necessary to carry out the calculation of the confidence intervals. To calculate the top or bottom of the interval for the parameter β_0 , we use the formula (Šoltés, 2015):

$$P(\beta_0 - t_1 - \frac{\alpha}{2} S_{\beta 0} < \beta_0 < \beta_0 + t_1 - \frac{\alpha}{2} S_{\beta 0}) = 1 - \alpha$$
 (2)

For a confidence level of $\alpha = 0.05$ applies, 1 - 0.05 = 0.95. It follows that $1 - \frac{\alpha}{2} = 0.975$.

We elected the interval of observation (11 years -2005-2015), reduced by two years to enter into force in the tables of the Student's t distribution value 0,975 (9) = 2,262. Based on the estimated and calculated values, we can test the confidence intervals for linear regression function.¹

We can conclude that with 95% probability, the actual value of the parameter β_0 reaches between < 49.42348666, 67,75731334 >.

The same process we choose for the calculation of a confidence interval for the parameter, β_1 .

$$-15,4191 - (2,262 * 3,34103) < -15,4191 < -15,4191 + (2,262 * 3,34103) = 0,95$$

With 95% probability, the value of the parameter, β_1 , is in interval <-22.97650986, 7.86169014 >.

The next step for the assessment of the significance of the regression model, is carrying out a test of significance.

Parameter β_0 has no evidence value, therefore, we will focus on the parameter through which we check the value of the β_1 of T-statistics. Using a T-test to verify the hypothesis H_0 , which says that the price of bread does not affect the amount of consumption, compared to the alternative hypothesis H_1 , which says that the amount of consumption of bread depends on the price.

The above hypothesis, write as follows:

$$H_0 = \beta_1 = 0$$

$$H_1 = \beta_1 \neq 0$$

When testing is based on the following assumptions:

- the reporting period -n = 11 years,
- $\alpha = 0.05$

• $t_{0.975}$ (9) = 2,262

¹ These intervals refer to as confidence, which with $100 (1-\alpha)\%$ confidence say that repeated samples are going to be the real value of the chosen parameters appear in this interval.

The value of the T-statistic for the parameter $\beta 1$ is shown in the table with a value of +4.61508.

It follows that the
$$|t| > t_1 - \frac{\alpha}{2} (n-2)$$
, $|-4,61508| > 2,262$.

The value of the T-statistic, we compared with the value of the student's t distribution for the significance level $\alpha=0.05$. The value of the T-test is larger in absolute value than the tabular value, based on which we can conclude that, with a 5% probability we can reject the null hypothesis and with 95% probability, we found that the consumption of bread depends on the price.

Another statistical method for the verification of hypotheses, the P-value. P-value represents the lowest level of significance of α , the null hypothesis can be rejected. If the p-value is greater than the value of the parameter α , null hypothesis will be rejected. Conversely, if the value of α is less than p-value, the null hypothesis are accepted.

In our case, the p-value for a parameter, we can say that the amount of the β_1 0,0013, therefore significance level $\alpha = 0.05 > \text{P-value} = 0.0013$ and hypothesis H₀ won't be refuse.

To assess the statistical significance of the model as a whole, it is necessary to know the following parameters of the linear regression model:

- F-value = 21,30
- the coefficient of determination, $R^2 = 70,296\%$
- correlation coefficient =-0.838427

The F-test, considering the two hypotheses, namely:

 H_0 = studied model is not statistically significant,

 H_1 = studied model is statistically significant.

For the assessment of the value of the F-test is based on the assumption that v1 = 1 v2 = n-2, the level of significance of $\alpha = 0.05$ (1- α), and comparing with the tabulated value of a Fisher.

$$F > F_{1-\alpha} (1; n-2)$$

 $F_{0,95} (1;9) = 5,12$
21.30 > **5.12**

The estimated value of the F-test for the linear regression model is greater than the table amount. It follows that, with 95% probability, we can reject the null hypothesis and studied the regression model is statistically significant.

Another parameter to assess the statistical significance of a linear regression model, the correlation coefficient, which is-0.838427. This value indicates to us a fairly high correlation between the amount of consumption and the price of bread. A negative value of the indirect dependencies between variables, tells us about the linear analysed.

Due to the highest values of the coefficient of determination (70,296 %) obtained at linear models and demonstrate the highest addiction rates, we will use this information to calculate the consumption of the price elasticity of demand of the bread. The calculation and the results are presented in the Table 3.

Table 3Calculate the price elasticity of demand

Year	The evolution of prices (EUR/kg)	Parameters of linear function		Estimated consumption	Price elasticity of demand
	X	a	b	y'	$\mathbf{E}_{ extsf{PD}}$
2005	0,90	58,59	-15,419	44,713	-0,3104
2006	0,94	58,59	-15,419	44,096	-0,3287
2007	1,03	58,59	-15,419	42,708	-0,3719
2008	1,23	58,59	-15,419	39,625	-0,4786
2009	1,25	58,59	-15,419	39,316	-0,4902
2010	1,25	58,59	-15,419	39,316	-0,4902
2011	1,33	58,59	-15,419	38,083	-0,5385
2012	1,31	58,59	-15,419	38,391	-0,5261
2013	1,32	58,59	-15,419	38,237	-0,5323
2014	1,33	58,59	-15,419	38,083	-0,5385
2015	1,34	58,59	-15,419	37,929	-0,5447

Source: own processing by the Author of the paper

The results of the price elasticity of demand of the bread are inelastic demand, since the value of price elasticity in terms of absolute value less than 1. Consumers will find their way to other products in the same or substantially meet their required needs. $E_{DP} < 1$ which means that invokes the price change less of a percentage change in volume of bread.

2.1. Calculation of the income elasticity of the bread

To determine the size of the impact of income being consumed volume of bread, as a significant factor, we carried out an analysis of the basis of the indices, as well as the estimate of the regression function, and the coefficient of determination. The amount of the average pension in the Slovak Republic is presented in the Table 4.

Table 4 Evolution of the average income and consumption of bread

Year	Average income in EUR per year	Average consumption per capita per year (kg)	The basic income index	The basic consumption index
	R	\mathbf{y}	$\mathbf{I_p}$	$\mathbf{I_y}$
2005	573,4	45,8	1,000	1,000
2006	622,8	42,5	1,186	0,916
2007	668,7	41,7	1,273	0,899
2008	723,0	41,5	1,376	0,894
2009	744,5	41,6	1,417	0,897

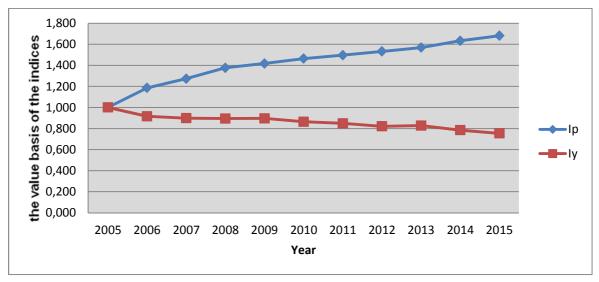
2010	769,0	40,1	1,464	0,864
2011	786,0	39,4	1,496	0,849
2012	805,0	38,1	1,532	0,821
2013	824,0	38,4	1,569	0,828
2014	858,0	36,4	1,633	0,784
2015	883,0	35,0	1,681	0,754

Source: own processing by the Author of the paper

Of the basis of indices it is obvious that the average pension has grown from year to year but consumption of bread.

Figure 3

The development of the basis indices of average income and the consumption of bread



Source: own processing by the Author of the paper

To determine the size of the impact of the different types of regression function, we calculate with the following results:

```
linear regression function y = -0.03x + 62.56, R^2 = 0.9208
logarithmic regression function y = -21.37 \ln(x) + 181.39, R^2 = 0.9034 regression power function y = 1332.8x^{-0.53}, R^2 = 0.8892 exponential regression function y = 69.946e^{-7E-04x}, R^2 = 0.9115
```

From the above results show that addiction of consumption of bread is to a large extent dependent on the level of the average income of the population. However, from an economic point of view is not possible a logical interpretation of the estimated results. In the growth of the average income of the consumer, the average consumption is declining. For this reason, we will not continue to count pension elasticity.

2.3. The impact of prices and average income per consumption of bread

On the basis of previous estimates, we carried out an analysis of the multiple regression model to estimate the demand for bread, depending on the function of two variables, price and the average income for the period 2005-2015. The estimated results in Statgraphics 5.1. Plus, they are listed in the Table 5.

Table 5The values of the parameters of a linear regression model

Parameters	The value of the parameter	The standard deviation of the parameter	T - statistics	P - value
$oldsymbol{eta_0}$	62,6651	1,373	45,641	0,0000
β1	13,3225	3,38439	3,93645	0,0043
$oldsymbol{eta_2}$	-0,0514777	0,00575196	-8,9496	0,0000

Source: Statgraphics plus 5.1 and own processing by the Author of the paper

On the basis of the given values, we can write the regression function as follows:

$$Y = 62,6651 + 13,3225*P - 0,0514777*R$$

P-values for all parameters examined do not achieve acceptable results. The significance level $\alpha = 0.05$, we can consider a statistically significant parameter β_1 .

We test the hypothesis

 H_0 : $\beta_1 = 0$ the regression coefficient β_1 is not statistically significant,

 H_1 : $\beta_1 \neq 0$ regression coefficient β_1 is statistically significant.

Since the P-value for the coefficient β_1 is less than the level of significance of α (0,0043 < 0.05), the hypothesis H₀ will be rejected.

Even if the model exhibits 97,3%, consumption has been studied the variability of bread, it is necessary to analyse the relevance of the model. The results of the investigation, the regression model are presented in table 6.

Table 6The value of the regression model

F - value	P - value	\mathbb{R}^2	
144,29	0.0000	97,3026	

Source: Statgraphics plus 5.1 and own processing by the Author of the paper

The p-value is 0, and therefore this study model is not statistically significant. From the above review suggests that a significant amount of the consumption of bread, particularly affects the average price.

3. Conclusions and policy implications

Microeconomics theory assumes that a reduction in the price of the goods, will increase the demand for this product. On the basis of this claim, the microeconomic theory does not indicate what the mathematical relationship between the demand and the price of the selected goods is. Because of this, we use quantitative analysis using Econometrics, which brings together economic and statistical expertise.

On the basis of the analyses performed, we concluded that the amount of bread consumption affects the amount of the price to around 70%. The remaining 30% is affected by other factors. There has been a reduction of in the Slovak Republic to the VAT rate of 10% on selected products. Reduction in the rate of VAT on goods like bread, had a meaning and the desired effect, as with a reduced price increased consumption of goods for the period after this.

In reducing VAT for other goods, it is necessary to know the price elasticity and the response of consumers.

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