

CONFERENCE PROCEEDINGS

EDAMBA 2016

International Scientific Conference for Doctoral Students and Post-Doctoral Scholars

Open Science & Open Innovation: Opportunities for Economics, Business, Management and Related Disciplines

University of Economics in Bratislava, Slovak Republic 10 - 12 April 2016

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Foreword by Rector of the University of Economics in Bratislava

Organised in the year of the 240^{th} anniversary of publication of the work by Adam Smith "An Inquiry into the Nature and Causes of the Wealth of Nations" (1776) as well as in the context of science diplomacy and frontier research by the University of Economics in Bratislava as the most specialised Higher Education Institution in the field of economics, business and management in the Slovak Republic – located in the region of Central Europe and operating in the European Higher Education Area and the European Research Area – the 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" held at the University of Economics in Bratislava on 10 - 12 April 2016 aimed to provide a forum for exchanging state-of-the-art knowledge and findings of doctoral students and post-doctoral scholars.

Smith's "*The Wealth of Nations*" – published in the context of the Agricultural Revolution, the Industrial Revolution, and the American Revolution – represents "the birth of the economics as an independent science, that is why it is also referred to as the Bible of economics," Ján Lisý (2016) claims, continuing that "[t]he book was an immediate great success. Only during the author's life (by 1790), it was published in five editions in England and also was translated into French and German languages. [...] Owing to "*The Wealth of Nations*" Smith remains a great authority not only among economists.". As a matter of fact, there are three main books by Adam Smith, namely *The History of Astronomy* (1756); *The Theory of Moral Sentiments* (1759); and – last but not least the respective – *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776).

In the argumentation of Piet Keizer (2015), "[o]rthodox/neoclassical economics has searched for and found a universal principle, which is the human drive to reduce scarcity as much as possible. A whole series of principles are logical implications from this, such as the law of decreasing marginal utility and the law of decreasing marginal returns. Unfortunately, they do not take into account the social and the psychic world. Post-Keynesian economics tried to develop a different economics by the introduction of uncertainty and irrationality. The social world is almost absent, however. Behavioural economics is a reaction to the lack of empirical validity of neoclassical economics. Unfortunately, more empirical analysis does not necessarily lead to more realistic theory." Should we honour A. Smith as the founding father of economics and maintain that understanding of economies necessitates a theoretical apparatus integrating social, psychic, and economic motivation, we shall then advocate Keizer's case for economists focusing on a multidisciplinary approach.

Indeed, contemporary civilisation – witnessing the Fourth Industrial Revolution – faces issues of not just economic, societal, ethical, political, and philosophical nature. May, thus, any of the UN 2015 Sustainable Development Goals be central to your (multidisciplinary) attention, we wish to facilitate interdisciplinarity also in the framework of the forthcoming 20^{th} edition of 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" to be held at the University of Economics in Bratislava on 4 - 6 April 2017.

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 Royal Society (UK) publishing the world's oldest scientific journal in continuous publication Philosophical Transactions of the Royal Society (since 1665) identified the context of science diplomacy in its "New Frontiers in Science Diplomacy report" (2010) as: science in diplomacy (in terms of informing foreign policy objectives with scientific advice); diplomacy for science (in terms of facilitating international science cooperation); science for diplomacy (in terms of using science cooperation to improve international relations between countries); five years later, the European Commissioner for Research, Science and Innovation Carlos Moedas reiterated the Royal Society's dimensions of science diplomacy in his speech "The EU approach to science diplomacy" presented at the European Institute in Washington. At the occasion of the 75th anniversary of its establishment the University of Economics in Bratislava – as a renowned Higher Education Institution (HEI) in the Slovak Republic with tradition, international engagement and pursuit of specialisation in the area of economics, business and management – fostered its orientation on science diplomacy in 2015 also in the framework of its International Scientific Conference for Doctoral Students and Post-Doctoral Scholars EDAMBA 2015 titled ,, The Era of Science Diplomacy: Implications for Economics, Business, Management and Related Disciplines" the full-text proceedings of which have been registered in the prestigious Web of Science database.

The follow-up EDAMBA 2016 edition titled "Open Science & Open Innovation: **Opportunities for Economics, Business, Management and Related Disciplines**" (University of Economics in Bratislava, 10-12 April 2016) reflects the "Open Innovation, Open Science and Open to the World" EU agenda launched in 2015. Furthermore, joint initiative of the European Commission (DG Education and Culture) and the Organisation for Economic Cooperation and Development (LEED Programme) – highlighted in 2016 by events such as the "i3: iGNITE. iNSPIRE. iNNOVATE." conference in Brussels and the "TAIEX Seminar on Building Opportunities for Youth Employment and Entrepreneurship - Twenty Years of Sharing EU Expertise" (in co-operation with the Ministry of Foreign and European Affairs of the Slovak Republic) in Bratislava - is represented by the recently relaunched HEInnovate tool. The structure of *HEInnovate*: "Leadership and Governance"; "Organisational Capacity: Funding, People and Incentives"; "Entrepreneurial Teaching and Learning"; "Preparing and Supporting Entrepreneurs"; "Knowledge Exchange and Collaboration": "The Internationalised Institution"; and "Measuring Impact" facilitates besides HEI self-assessment also country reviews (launched in Bulgaria, Ireland, Poland, Hungary and the Netherlands).

In terms of continuity, let me as the Ambassador-at-Large for Science and Innovation at the Ministry of Foreign and European Affairs of the Slovak Republic acknowledge also the focus (enforced in the framework of the "Proposal for a new European Consensus on Development" under the current Slovak Presidency of the Council of the European Union between 1 July 2016 and 31 December 2016) of the **20th edition of 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*" to be held at the University of Economics in Bratislava on 4-6 April 2017.

Igor Hajdušek

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

Open Science, Open Innovation – EDAMBA 2016

The EU published in 2016 the document "Open Innovation, Open Science and Open to the World – a Vision for Europe". In his opening statement President of the EC J.-C. Juncker wrote "Most of the political priorities set for my mandate as president of the EU depend on a greater or lesser extent on research and innovation." and his Commissioner Carlos Moedas followed "The advent of digital tools is making science and innovation more open, collaborative and global. These exchanges led me to set three goals for the EU Research and Innovation policy which I have summarized as Open Innovation, Open Science and Open to the World." These goals coalesce with the UN Agenda 2030 – Transforming Our World making all of them the most important political documents of our time. Their realization cannot be reduced just to political leaders. All of us forming – what Alexis de Tocqueville called – associations and actually being academia: universities, institutes, researchers, scholars, educators, artists, non-governmental organizations, civil organizations, regional associations – have to be harmoniously involved in accomplishing the UN Agenda and accomplishing the transformation of our world – creating a new societal paradigm.

It is remarkable that the University of Economics in Bratislava organized the International Scientific Conference EDAMBA 2016 "Open Science & Open Innovation: Opportunities for Economics, Business, Management and Related Disciplines", April 10-12, 2016. This is one in a series of international conferences organized by University of Economics in Bratislava, but focused on currently an essential topic and attracting remarkable contributions. Of course, the organization of a successful conference always depends on those few who lead it and it is my honor and pleasure to thank the team of Denisa Čiderová and her close collaborators for this great event that represents such an important contribution to our global efforts as well as of that of the EU.

Ivo Šlaus

World Academy of Art and Science, The Club of Rome, Academia Europaea, Pugwash Council, European Leadership Network, Croatian Academy of Sciences and Arts, Dag Hammarskjöld University College for International Relations and Diplomacy, Ruđer Bošković Institute, Zagreb, Croatia

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Innovation, Innovation Systems, Innovation Policy and Regional Aspects of Innovation in Literature

Peter Adamovský

University of Economics in Bratislava Faculty of National Economy, Department of Economics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: adamovskypeter@atlas.sk

Abstract

The aim of the article is to sum up literature on innovation and its research from the regional point of view for understanding the importance of the networks between thematic articles and the contribution of various authors of literature to the world-wide knowledge – in this context to the knowledge on innovation on the regional level. The first chapter is devoted to the historical evolution of the innovation research. In the introduction there are several definitions of the concept of innovation. In the next section of the chapter author focused on explanation of the creation process of innovation idea and on lock-in as a decelerating factor. In the second chapter the author brings the literature review of experts who have specialised in research on innovation on the regional level. The chapter also explains the idea of innovative milieu and points out some of the reasons for the disparities between European regions at the end of the twentieth century. The third chapter interprets the current view on handling the challenge of innovation – the innovation system approach. At the beginning the term "system" is explained generally, in the next section the author explores different types of innovation systems on the national, sectoral, technological, but especially on the regional level which forms the essence of the chapter. The last chapter is focused on innovation policy in the way looking at innovation through regional innovation systems. The reading provides an overview of literature on modern models of innovation policy, experimentation in this area and an outline of regional innovation policy of the European Union.

Keywords: innovation, region, milieu, system, policy *JEL classification*: *O31*, *O38*, *R11*

1. Introduction

Joseph Alois Schumpeter considered as the father of innovation came with the first theory of innovation as a puller of the economic development and defined its five elementary forms. In definition he avails the term "creative destruction" according to which each innovation is implemented to economy after certain time, becomes part of conventions and later will be replaced by new innovations. The capitalist structure means also the evolution process. Evolutionary nature of the process depends on new consumer goods, new methods of production or transportation, new markets and new forms of industrial organisation (Schumpeter, 1950).

Although Schumpeter defined forms of innovation, innovation theory as a new school of economics began to develop in the following decades. Endogenous theories in the 1970s

switched the view from overall productivity and reallocation of production factors to spillovers, human capital and knowledge, and then arose the "new growth" models based on the whose focus instead tended to be on translating science, research and development (R&D), education and technology to new products and services (McCann and Ortega-Argilés, 2013). Innovation (Morgan, 2007) was subsequently perceived as interactive process between firms and the basic science infrastructure, between the different functions within the firm, between producers and users at the interfirm level and between firms and the wider institutional milieu.

Innovation has many definitions in today's world, however, one of the most frequently cited in professional as well as lay circles was introduced by the Organisation for Economic Co-operation and Development (OECD) in the document "Guidelines for Collecting and Interpreting Innovation Data" known also as the third edition of Oslo Manual issued in 2005. Accordign to that 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 inbusiness practices, workplace organisation or external relations (OSLO Manual, 2005). Interesting is also the definition of innovation from McCann and Ortega-Argilés (2013) as a process of converting ideas into new sales outcomes. Innovation is used generally to deal with issues such as transformation of heat into movement, forming materials in different ways and the formation of mixtures. The available information about the processes/activities do not provide solutions to emerging problems, but innovations change information to provide such solutions (Dosi, 1988).

The structure of the innovation scope can be explained by learning/technological regimes and their output. As far as back Schumpeter divided the industry using the models of innovation activities which was subsequently named as Schumpeter Mark I and Schumpeter Mark II industries in 1980s. Schumpeter Mark I is based on the "creative destruction" with technological ease of entry and fundamental role played by entrepreneurs and new firms in innovative activities. On the contrary, Schumpeter Mark II is characterised by "creative accumulation" with the prevalence of large established firms and the presence of relevant barriers to entry to new innovators (Breschi, Malerba and Orsenigo, 2000). Innovation base of the first approach allows to create a new competition for established business, while the second approach is specified with great force of several innovative companies via accumulation of resources.

Early stages of development after application of innovation are very variable until the main shortcomings of the new technology are solved. While the technology is new, it is affected particularly by people's interest and possibilities to its development (Nelson and Winter, 2002). Rosenberg (1982) also emphasizes the teoretical conclusion that companies expecting significant technological improvements in the near future may not incline to invest in processes associated with the current technology itself. When two or more increasing-return technologies compete then, for a market of potential adopters, insignificant events may by chance give one of them an initial advantage in adoptions. This technology may then improve more and may eventually corner the market of potential adopters (Arthur, 1989).

Subsequently, if a certain economy uses older technologies which have been forced out thanks to innovation, it can get into a trap called lock-in. This is in particular the case of old industrial regions of which institutional environments are strongly linked to their successful history. After a period of time industrial regions lose their innovative capacity for reasons such as saturation of their markets, tendency of market structures to become oligopolistic and

vertically integrated, hard adoption of new technologies and institutional and legislative sclerosis (Boschma and Lambooy, 1999).

Foxon (2002) distinguishes two types of lock-in barriers to sustainable innovation – technological and institutional lock-in. Technological lock-in refers to a specific company or industry and can be caused by high sunk costs incurred for the development of previous technologies, unexpected future evolution and linkage of company to specific networks (for example in the case of telecommunications). This type of lock-in occurs mainly in large technological systems such as energy or transport sectors. Institutional lock-in refers to the situation in which the institutional environment in a given area does not allow firm or industry to improve their capacity and to innovate. Institutions are defined as the imaginary limits governing political, economic and social relations. They consist of informal constraints such as traditions, customs and taboos and formal rules which include laws or proprietary rights (North, 1991). David (1994) called many of the formal institutions "Carriers of history" because each institution is the result of the improvement from the previous period. Therefore it does not relate to the current period but "history". As modern technological systems are deeply embedded in institutional structures, factors leading to institutional lock-in can interact with and reinforce the drivers of technological lock-in (Foxon, 2002).

Furthermore, David (2000) works with the idea that lock-in occurs when the regional system depends on the previous development and develops on the basis of the history. I tis based on the coordination equilibrium which provides us with the paradigmatic situation in which individuals are content to remain doing something, even though they would be happier doing something else if everybody would also do that other thing too. Some economies can get out of this situation only via the exogenous innovation. Thanks to lock-in, the company which is today a successful innovator may not be in the future. However, technological changes are cumulative at the level of companies, thus today's development of technologies depends on what the company has achieved in the past. It follows the tendency of dominant firms to continue dominance of technological progress (Nelson and Winter, 2002).

2. Regional view

At the breakthrough of centuries, various economists and economic geographers began to examine deeply the implications of innovation at the regional level due to their importance for proper localisation in space. An example might be the work of Paul Krugman who has tried to explain using a simple illustrative model why and when does manufacturing become concentrated in a few regions leaving others relatively undeveloped (Krugman, 1991).

Phillip Cooke explores the impact of ideas and knowledge in the perspective of regional development. He considered ideas and knowledge as public goods which increase the production, economic growth and development of the knowledge-based economy (Cooke, 2006). Some authors came also with the opinion that the traditional approaches and variables used to explain the dynamics of the regional area reached their limits for the application in the new development strategies. The innovation milieu approach opens a new field for modeling (Proulx, 1992).

Innovation milieu approach is based on the ideas of the economist Aydalot (1986) who argues that each company involved in the R&D and innovate is not isolated from the surrounding area, participates in collective behaviour and use its internal structures to create innovation. Local environment plays a role of innovation incubator which forms a face of the area.

The idea was further developed by the french group of experts called GREMI. The GREMI concept explains why the post-war period witnessed the clustering of vertically disintegrated firms specialised in a particular techno-industrial field in several regions in Europe (e.g. Third Italy) and the United States (e.g. Silicon Valley (Boschma and Lambooy, 1999). According to the authors of the concept, an innovative milieu consists of relationships which connect the local production system, a variety of players, officials and industrial culture. These elements form together the localized dynamic process of collective learning (Camagni, Capello, 2005).

In the innovation milieu is essential spatial proximity because it stimulates the collective learning process which reduces the transaction costs and encourages coordination between players. Boschma and Lambooy (1999) include among the factors of spatial proximity the mobility of human capital as the carrier of knowledge in these areas, the transfer and feedback of information via dense networks of local actors reinforced by the techno-industrial specialisation of the area, and a common local culture of trust, based on shared practices and rules. The authors also mention that the local accumulation of human capital, intangible knowledge, information linkages, network externalities (technological spillovers) and supportive institutions such as industry associations, local authorities, R&D-facilities, etc., lead to a comparative advantage which is hard to copy and dificult to transfer to other areas. However, though a learning process can be located in the techno-economic conditions, it may not be within view of the spatial conditions.

Gordon and McCann (2005) highlight a number of regions which experienced a huge boom in the last 25 years of twentieth century due to industrial collective learning clusters located there. These new industrial areas have formed the so-called mycelium for strong industrial innovation development. The authors include, similarly to GREMI experts, among the regions Silicon Valley, Southern California and its electrotechnical industrym, Emilia-Romagna region in Italy, Baden-Wurttemburg in Germany and the scientific cluster close to the Cambridge in UK.

On the contrary, Morgan (2007) tries to partly explain why some European regions are lagging economically behind others. His research is based on the fact that the potential for innovation is not ensured only by the R&D infrastructure which was in the past closely equated to innovation and evaluated as a supply phenomenon, but also depends on the degree of interaction between units of infrastructure which is the most apparent factor for local innovation. The interaction quality and the presence of local synergies become key elements. Therefore, the author considers the system approach as the best for understanding and supporting regional innovation based on the R&D.

3. Innovation systems

The current point of view focuses on the transition from general targeting of the best applied method to system approach which is based on the interconnection between all elements and their impact on the final result. Lundvall (1992) argues that system consists of several discrete elements which interact with each other in the creation, dissemination and use of economically beneficial knowledge, and the same author considers system in another article as the complex of activities characterised by co-evolution and self-organising (Lundvall, 2004).

The innovation system is analytical structure that forms empirical basis for the appropriate innovation policy. According to Cooke (2004), the concept of innovation systems is widely used in discourse and policies to stimulate economic development through upgrading firms

for enhanced competitiveness. In the concept, economic performance benefits significantly from incremental not only radical innovation, transmission of scientific research into firms by recruitment and knowledge transfer is key to growth, social interaction through research networks is key to innovation success, innovative customers play a crucial role in the innovative performance of firms and innovation is not a hierarchical, linear process but a consensus-seeking learning process.

To specify the idea of the regional innovation system, we must firstly begin from higher national level – the national innovation system (NIS). The NIS concept was defined by different experts during the 1980s, in particular by the group of economists focused on innovation, knowledge and economic dynamics of the Aalborg University in Denmark known as IKE Research Group which brought into the theory in-depth understanding of innovation processes and historical perspective. Various authors view on the NIS concept narrowly or broadly. From the narrow point of view, the NIS is understood as the systematic relationships between firms focusing on R&D, scientific and technological organisations including universities and public policy. The broader perspective defines innovation as a continuous cumulative process involving not only radical and incremental innovation but also the diffusion, absorption and use of innovation (Lundvall, 2004). In addition to R&D, in the NIS exist also other major sources of innovation.

Although the NIS is currently considered to be essential theoretical tool for the formation of innovation environment in which innovation-capable firms operate, some authors criticise that approach. Vertova (2014) argues that an explicit role of the State has been quite neglected, despite the fact that this theoretical tool has been widely used for policy considerations and suggestions. Her second remorse is that the financialization of the economy has been overlooked – the NIS approach incorporates finance only by looking at the best financial instruments for innovative firms.

The concept is supplemented by lower levels of system approach such as technological systems of Swedish economists around Bo Carlsson and sectoral systems of Franco Malerba. Technological system is defined as a dynamic network of agents who interact in a specific economic/industrial area under the appropriate institutional infrastructure, and who are involved in the creation, diffusion and use of technology (Carlsson and Stankiewicz, 1991). This system is characterised by the formation of clusters in source areas, specific institutional infrastructure and possibility to use and create new economic opportunities. By contrast, the sectoral perspective of Malerba deals with a set of products and a set of agents carrying out market and non-market interactions for the creation, production and sale of those products with a specific knowledge base, technologies, inputs and demand (Malerba, 2002).

Innovation systems are specified also for individual regions, i.e. administrative division of a country or any large, indefinite and continuous part of a surface or space (Cooke and Leydesdorff, 2005). Specifically, the concept of regional innovation system (RIS) began to appear more frequently in literature in the mid-1990s, mainly in the literature of authors such as Maskell, Malmberg, Wolfe, Isaksen or Cooke. The RIS can be defined as set of interacting private and public interests, formal institutions and other organizations that function according to organizational and institutional arrangements and relationships conducive to the generation, use and dissemination of knowledge (Doloreux, 2003). Another definition says that the RIS combines innovative focus on regions with the system perspective (Cooke and Leydesdorff, 2005).

There is a difference between clusters and RIS. Cluster is a central element of the subsystem of application and use of knowledge. RIS is a wider concept which contains a

variety of clusters and industries. Furthermore, institutions have better influence in RIS as in clusters (Tödtling and Trippl, 2005). Whereas regions differ among each other in creation of clusters, institutions and networks or in varied level of lock-in, there is no general framework of RIS. It also cannot be implemented on the basis of the general NIS. Cooke, Uranga and Etxebarria (1997) classify among the main RIS elements university research, research institutes, agencies focused on technology transfers, consultants, organisations developing knowledge, public and private funds and all-size firms and non-business organisations involved in innovation. Relationships between them can be specified in terms of flow of knowledge and information, investment funding, competence and also more informal mechanisms such as networks, clubs, forums and partnerships.

The regional division according to institutions can be seen in two perspectives. The first approach which can be merged with the national concept is based on the fact that people in the region share a common culture and language, although they do not form a separate country, e.g. Basque region in Spain or UK's Scotland. According to the second approach, regions are predestined and divided administratively with a certain level of their own political power which is affected by the result of government reforms, e.g. Flanders and Wallonia in Belgium (Cooke, Uranga and Etxebarria, 1997). Cooke and Leydesdorff (2005) bound the effect of the growth in importance of regional and other innovation systems. It is necessary to pervade the regional and other economies with scientific, synthetic and symbolic knowledge to a greater extent than ever before. The organization of pure and applied knowledge is institutionally produced and systematically controlled. Geographical proximity can be helpful for the incubation of new technologies. Lundvall (2004) argues that is necessary to envisage at this level with the development of industrial areas, clusters and learning regions in setting up a proper policy.

4. Regional systems and policy

Though the creation of innovation is stimulated by a set of scientific and technological policy tools and institutions at different levels, it must be also accompanied by efficient innovation policy. This has extended the traditional set of policy instruments with more attention to building linkages and strengthening the absorptive capacity of users (Lundvall, 2004). Therefore, innovation policy is broader than, and different from, science and technology policy, with which it tends to be merged, and requires action in many different policy areas—education, trade, investment, finance, and decentralization, among others (The World Bank, 2010). This implies that the potential types and sources of innovation come not only from R&D but from all areas of the economy.

A major impact on the innovation in the context of RIS have local and regional government policies. In that framework, the World Bank (2010) indicates that local and regional governments have more knowledge and better information about companies with higher potential, and can better measure the risk associated with the local and regional innovation as government at the national level. Fadairo and Massard (2009) consider regional level as adequate to exploit the diversity of local technological connections. Nevertheless, there is currently no ideal model of innovation policy for all regions. The problem arises mainly in significant differences of innovation activity between central, peripheral and old-industrial areas.

New models of regional innovation policy are mostly oriented on the technologically developed regions, clusters and knowledge spillovers. According to Tödtling and Trippl

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(2005), models focus on high-tech, knowledge based or creative industries, building up of research excellence, attraction of global companies and stimulation of spin-offs. The policy, however, has limited use in weak regions. Some authors such as McCann and Ortega-Argilés (2013) criticise modern approaches to innovation policy for their excessive aim at choosing races and placing bet and identifying the technological transitions best suited to the context. At the same time, however, they perceive the correct setting policies to reduce market and system failures and also raise the local institutions standard. This represents a fundamental shift of thinking over the last two decades – today the impacts of new technologies are understood to be very dependent on the local institutional and governance systems and on the nature of the engagement between different actors (McCann and Ortega-Argilés, 2013).

Regional innovation policy of the European Union focuses on the smart specialisation approach to foster strategic technological diversification around a region's core activities by encouraging processes of entrepreneurial discovery across local themes, activities or sectors in which the region has embedded linkages and scale, and also the potential to build strong knowledge linkages (Foray et al, 2011; McCann and Ortega-Argilés, 2013). Authors also emphasize that the concept of smart specialisation allows in many areas to experiment which is necessary for the development of innovations, whereas the nature of innovation itself determines that it arises from discovery and experimentation. Within the European Union, the Community policy of innovation involves a sharing of skills and gives to local industrial areas a possibility to remedy their poor absorbing capability (Fadairo and Massard, 2009).

As regards the direct settings of the European Union's policy, current discussion is based on the Europe 2020 strategy – a document of which purpose is to ensure smart, sustainable and inclusive growth by 2020. The Innovation Union iniciative of the Europe 2020 is based on a broad concept of innovation encompassing not only new or improved products and processes, but also services, new marketing, branding and design methods and new forms of business organisation and collaborative arrangements (European Commission, 2010). Regions fulfil the central role to be an institutional partner for key elements in the innovation process – universities, firms and other research institutions.

The present European cohesion policy is also affected by the report of former Italian Minister for territorial cohesion Dr. Fabricio Barca from 2009 created at the request of Danuta Hübner, European ex-commisioner for regional policy. The report considers innovation as a core priority of cohesion policy, while it is necessary to aim at developing a European Research Area by selecting in each region a limited number of sectors in which innovation can most readily occur and a knowledge base built up (Barca, 2009).

Conclusion

The topic of innovation and its application across regions have been settled for decades, therefore, our article tried to briefly sum up development of innovation in the literature. We began with definitions of innovation and auxiliary concepts and ideas. In addition, there are definitions of lock-in, innovation milieu approach as well as questions about various forms of innovation systems. In last chapter we looked at regional innovation policy in general and also in its concrete form used in the European Union. However, the second decade of the 21st century brings takeover of conditions. There are new innovative phenomena including social media, telecommunication devices such as smartphones and tablets, start-ups, smart cities and concepts Industry 4.0 and Internet of Things. We plan to go on in our research on the basis of these new elements.

References

ARTHUR, W. B. (1989). Competing technologies, increasing returns, and lock-in by historical events. The Economic Journal, 116-131.

AYDALOT, P. (1986). Milieux Innovateurs en Europe. GREMI, Paris.

BARCA, F. (2009). An Agenda for the Reformed Cohesion Policy. Report to the Commissioner for Regional Policy.

BOSCHMA, R. A. – LAMBOOY, J. G. (1999). Evolutionary economics and economic geography. Journal of evolutionary economics, 9(4), 411-429.

BRESCHI, S. – MALERBA, F. – ORSENIGO, L. (2000). Schumpeterian Patterns of Innovation and Technological Regimes. The Economic Journal, 110: 288–410.

CAMAGNI, R. – CAPELLO, R. (2012). Regional innovation patterns and the EU regional policy reform: towards smart innovation policies. Forthcoming on Growth and Change.

CAMAGNI, R. – CAPELLO, R. (2005). Urban milieux: from theory to empirical findings in: R. A. Boschma and R. C. Kloosterdam (eds) Learning from clusters: a critical assessment from an economic-geographical perspective. Dordrecht: Springer.

CARLSSON, B. – STANKIEWICZ, R. (1995). On the Nature, Function and Composition of Technological Systems, in Carlsson, B, (ed.) Technological systems and economic performance: the case of factory automation, Boston, Dordrecht and London, Kluwer Academic Publishers. Philip Cooke - Regional Innovation Systems - Public Goods (working paper).

COOKE, P. (2006). Regional Innovation Systems as Public Goods. United Nations Industrial Development Organization. Vienna.

COOKE, P. (2004). The role of research in regional innovation systems: new models meeting knowledge economy demands. Intl. J. Technology Management, Vol. 28, Nos. 3/4/5/6, pp.507–533.

COOKE P. – LEYDESDORFF, L. (2005). Regional Development in the Knowledge-Based Economy: The Construction of Advantage. Journal of Technology Transfer, 31: 5–15

COOKE, P. – URANGA, M. G. – ETXEBARRIA, G. (1997). Regional innovation systems Institutional and organisational dimensions. Research policy, 26(4).

DAVID, P. A. (2000). Path dependence, its critics and the quest for 'historical economics'. Evolution and Path Dependence in Economic Ideas: Past and Present.

DAVID, P. A. (1994). Why are the institutions The Carriers of History?: Path dependence and the evolution of conventions, organizations and institutions. Structural Change and Economic Dynamics, vol. 5, no. 2.

DOSI, G. (1988) Sources, Procedures, and Microeconomic Effects of Innovation. Journal of Economic Literature, Vol. XXVI, pp. 1120-1171.

European Commission (2010b). Regional Policy Contributing to Smart Growth in Europe, COM(2010)553, Brussels North – Institutions (1991).

FADAIRO, M. – MASSARD, N. (2009). The Geography of Innovation: challenge to technology policy within regions. hal-00377007.

FORAY, D., – GODDARD, J. – GOENAGA, X. – LANDABASO, M. et al. (2011). RIS3 Guide. Seville: European Commission/Joint Research Centre.

FOXON, T. J. (2002). Technological and institutional 'lock-in' as a barrier to sustainable innovation. ICCEPT Working Paper.

GORDON, I. – McCANN, P. (2005). Innovation, agglomeration, and regional development, Journal of Economic Geography, 5: 523–543, October.

KRUGMAN, P. (1991). Increasing Returns and Economic Geography. Journal of Political Economy, Vol. 99, 1991b, pp. 28 – 44.

LUNDVALL, B. Å. (2004) National Innovation Systems: analytical concept and development tool. Industry & Innovation, 14(1): 95–119.

LUNDVALL, B. Å. (1992). National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning. Pinter, London.

MALERBA, F. (2002). Sectoral systems of innovation and production. Research Policy, Vol. 31 (2002). pp. 247-264.

McCANN, P. – ORTEGA-ARGILÉS, R. (2013). Modern regional innovation policy. Cambridge Journal of Regions, Economy and Society, doi:10.1093/cjres/rst007

MORGAN, K. (2007). The Learning Region: Institutions, Innovation and Regional Renewal. Regional Studies, 41:S1, S147-S159, DOI: 10.1080/00343400701232322.

NELSON, R. R. – WINTER, S. G. (2002). Evolutionary theorizing in economics. Journal of Economic Perspectives, 23-46.

NORTH, D. C. (1991). Institutions. Journal of Economic Perspectives, 97-112.

Organisation for Economic Co-operation and Development (2005). Oslo Manual. Výskumná správa. OECD, 92 p.

PROULX, M. (1992). Innovative Milieus and Regional Development. Canadian Journal of Regional Science/Revue canadienne des sciences régionales, XV:2 (Summer/été 1992), 149-154.

ROSENBERG, N. (1982). Inside the Black Box: Technology and Economics. Cambridge: Cambridge University Press.

SCHUMPETER, J. A. (1950). Capitalism, Socialism and Democracy. Harper and Row, New York, 3rd edition, 1950.

TÖDTLING, F. – TRIPPL. M. (2005). One size fits all? Towards a differentiated regional innovation policy approach. Research Policy 34 (2005). pp. 1203–1219.

VERTOVA, G. (2014). The State and National Systems of Innovation: A Sympathetic Critique. Working Paper No. 823. Levy Economics Institute. ISSN 1547-366X.

World Bank (2010). Innovation Policy: A Guide for Developing Countries. Výskumná správa. 412 p. ISBN 978-0-8213-8269-1. eISBN 978-0-8213-8301-8.

The Principle of the Influence of Social Conditions on the Foundation and Development of Cooperatives

Adam Bartoš

University of Economics in Bratislava Faculty of Business Management, Department of Business Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: adam.bartos@euba.sk

Kristína Kováčiková

University of Economics in Bratislava Faculty of Business Management, Department of Business Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: kristina.kovacikova@euba.sk

Abstract

The society and its social conditions undergo a gradual development, which is influenced by political decisions, the current situation in society, expectations and targets of the particular society. Many events significantly influence the direction and development of the society. The foundation of first cooperatives founded the ground for cooperative society. It was influenced by the circumstances in the society and social and economic areas. In the time of the first cooperative foundation, Slovakia was the part of the Austro-Hungarian Empire and Slovaks were typically oriented on agriculture and breeding of domestic animals. Lifestyle and the situation of that society had considerable influence on the formation of associations, which later led to the establishment of the first cooperatives, which were almost identical with the current ones. The aim of this article is to investigate social and economic conditions that led to the first cooperatives.

JEL classification: M29, I25, G20, O150

Keywords: cooperatives, education, financial institution, poverty alleviation, Slovakia

1. Introduction

The idea of cooperatives, materialized in Rochdale, in 1844 as "Rochdale Society Equitable Pioneers" that was established by weavers in a similar way like we know the cooperatives in present time. They wanted to establish self-sufficient community build on common interests.¹

They focused mainly to establish operations that offered groceries and other consumer goods for better prices for its members. Later their activities included increasing of employment, housing issues and supporting the members working in crafts. Similarly, "Spolok gazdovský", the first cooperative in Slovakia, had among its main principles and

¹ ZEULI, K. A. – CROPP, R.: *Cooperatives: principles and practices in the 21st century*. [online]. [cit. 2016-01-24]. Available http://www.learningstore.uwex.edu/assets/pdfs/A1457.pdf>.

objectives to set the support of the members from economic and social point of view. It was founded as a response to social and political events. in Slovakia and it offered the solution how to increase the educational and social level of its members.

2. The ancestors of cooperatives, social conditions and the situation in the period of the foundation of the cooperative "Spolok gazdovský"

The main aim of cooperatives should not be making a profit, but the mutual help among its members. That effort can be already seen from the beginning of the first cooperatives, which were brotherhoods and guilds.

The role of brotherhoods was charity, spreading of the religion and helping to the poor people. At the beginning, it did not include the financial help, however, brotherhoods were opening treasuries. They paid contributions to their members or their families in the case of illness or death.

Guilds were a more developed form of brotherhoods, which not rarely worked according to elaborated rules so called "artikuly". They included the duties and rights of their members, the amounts of penalties, regulations of wages; prices of made goods or provided services. In central Europe, the guilds were established from the end of the 13th century, where the towns were established and also independent trades. ² A partial parallel with the cooperative we can see also in hierarchy within a guild. The head of the guild was a guild master, whose task was to promote the interests of the guild, to represent the association in public, the organizing of its activities and supervision of its members. Meetings of guilds, which decided on directions of their activities, are another similarity. Charity and social help among the members did not fall behind. The guilds were later established by squires and townsmen. They became the important part of social and economic life.

The significant part of the formation of the associations had a regulation called "Tereziársky urbár". At that time the subjects had to pay the tax only for the land they had at their disposal. The landowners forced to pay contributions individually, regardless the area of the land. The base of that reform was to introduce the contributions and duties against the landowner, depending on the area of the used land. There were two kinds of a land – internal part of the cadastral area "intravilán" and external one "extravilán". For example, the reform determined the number of days that a servile was obliged to work for landowners and his other duties. Four settlements together had a duty to ensure the landowner two days carting service. There was also an establishment of the first units of cadastral communities "urbár" with their own economic and organizational structure. They together had some common features with self-help and economic associations, such as they were voluntary with own regulations based on mutual help and equality. They were trying to make a progress economically and socially support their members. In the end, for a servile, that reform meant increasing of taxes he paid to the landowner.

For example, purchasing associations gradually emerged, which had an aim to ensure a more favourable purchase of materials for its members, who processed it. The purchasing association focused on crafting of troughs was based in Gemer area. Some of the members went to buy cane for better price for the money they collected from individual members. Thus they were able to procure the material for a better price. However, they sold their products individually. Instead of that activity, they focused on honourable life of its members. They

² NEMCOVÁ, L: (2002). *K historii a současnosti družstevního hnutí*. In Ekonomická revue. ISSN 1212-3951, 2002, vol. 5, Issue 1, p. 17.

organised the purchase of surplus products that could sell more profitably through the association.

The effort emerged from court to improve the level of agriculture. That necessity was also understood by Samuel Tešedík, the founder of the agricultural school, where he taught the farmers the new techniques, mainly in the field of fruit growing. He gained the knowledge not only from the study because he understood the necessity to educate our farmers, also from studying abroad. He understood the huge differences in comparison to western developed countries and unfavourable position in Slovakia. Moreover, he was significantly influenced by J.A.Comenius' opinion, who declared the need of education of the inhabitants. School provided theoretical and practical preparation to students and teachers. Then the graduates started to find various fruit-growing associations and organised exhibitions. The association also allowed them to access high-quality seedlings cheaper.

At that time, we could already see establishing of associations. Their main advantage was a better position in bargaining, such as the purchase of raw materials. The primary objective of the association was not to profit, but focus on the development and improvement of the situation of the individuals and its members.

At that time the level of industrial production in Slovakia increased. Slovakia still remained the most industrialized part of Austro-Hungarian Empire. Slovakia was focused on the production of raw iron and mining of minerals. Most of the glassworks, paper mills and developed leather industry was in that territory. Even in the area of agriculture, where Slovakia had a great benefit, in sugar industry and brewing. Despite this Slovakia fell behind in comparison with Czech Republic and Austria.

The industrial Revolution already began in England in the middle of 18th century. The invention on new types of machines, which replaced labour of workers, especially in textile industry, had preceded it. The invention of a steam engine and its gradual improvement was the important milestone. The Industrial Revolution also resulted in strengthening of the position of the bourgeoisie, especially the transfer of population from rural to industrial cities. At that time in Slovakia the industries of iron, textile, paper was modernized, which could be the result of the influence of the Industrial Revolution from Western countries.

Industrial Revolution has brought social and economic changes in the UK and other Western countries, which had little impact on the Hungarian Empire. The cause could be the primary focus of our agriculturally focused country. 10 steam engines were registered before the revolution in Hungarian Empire. However, they were only three in Slovakia. Insufficient rail infrastructure prevented from the development. Hungarian Empire had that time 242 km of railway, but in Slovakia there were 82 km. The development of business and industry was limited by the lack of capital, restrictions in the area of production guilds, duties, tolls, bad conditions of road infrastructure. Specialists also lacked in Slovakia.

Štúr and his peers were important figures of that period. During their studies in Hungarian Empire and mainly abroad in Halle, a German town they saw the differences between west part of Hungarian Empire and the position of Slovaks. They understood their not positive prospects for the future, if they would remain in that situation. As part of their studies, they acquired knowledge, which they wanted to use to growth the Slovak nation. The main aim for Štúr and his peers was to improve the economic situation of the Slovaks. For that reason, they started to teach ordinary people with great determination and from the basics. Teachers in villages, patriots and also priests have set up schools and various educational institutions, associations to support education. They supported free education of young people, craftsmen and even elderly people. Daniel Lichard started to promote his activities at that time, whose main activities were education and promotion of agriculture. After returning from Vienna he worked as an editor of the Slovak newspapers and spread the idea of the cooperatives. He published his own magazines and wrote more than 10,000 articles promoting and clarifying the need to spread the knowledge to uplift of the Slovak people. He significantly promoted garners and mutual help, represented by associations of landlords, craftsmen and other people who did not have enough property. They contributed each one or two weeks into common treasury of associations, from which they provided loans to its members. The big difference we can see in the following, the "Helper" provided money only for its members, the Penny bank provided money even for non-members. Establishment of credit cooperatives later provided the personalities like Ján Francisci-Rimavský, Rudolf Homola or Viliam Paulíny-Tóth. Štúrovci were aware of economic backwardness of their country compared with other countries in the area.

Štúr and his peers were well aware of the status of the peasant population, which was not maintainable and felt miserable. According to them, the main cause of that state was servitude and urban relations. At that time illiteracy was the cause of the threat of physical punishment that led to the despair of the population. Štúr, therefore repeatedly asked for elimination of serfdom and position of ordinary people against their rulers.

In the summer of 1845 our country was affected by great floods that destroyed almost all crops in the northern parts of the country. One of the main crop potatoes were hit by plague. Slovakia was strongly influenced by this floods. Due to lack of food people were forced to eat the crops which are not normally eaten. The consequences of that way of life were seen soon. A large part of people had epidemic fevers, which had negative impact on the population's ability to work. They were unable to farm the land, to care for livestock and grow its farmland, which could not ensure an adequate livelihood. In some regions two thirds of population became incapable to work. Many people were looking to solve their situation by begging and many people died.

3. The establishment of the first credit cooperatives

We can presume that above mentioned social, economic and political events led to the establishment and popularity of the first and other cooperatives and mutual helpers. They came from the main principles of cooperatives, named "Spolok Gazdovský", which was established by Samuel Jurkovič in Sobotište in Záhorie. Many educators worked in that area, such as teachers and priests, who led cultural and educational activities among the people, aimed mainly at young people. An evangelical priest, Ján Šulek, mainly developed those activities. After arrival, Jurkovič joined to educational activities, which he further developed. For instance, he cooperated with the evangelical priest and they established the reading community and the library. He devoted energy to education in the field of growing fruit, and he was active in organising theatre performances.

On the principles of self-help the credit cooperative was established. It was preceded by the preparation and approval of the statutes at the constituent meeting, which was attended by twelve members. At the beginning the cooperative had thirty members. Gradually, it became more popular thanks to the promotion activities of Jurkovič, their member numbers were increased to sixty. The main aim was to lead the association of members as well as the rest of the population to education and morality. It was constantly emphasized that the association was voluntary, established for the purpose of to increase the property, business and craft. He also pointed out the savings into common treasury and its benefits. While the initial focus of the cooperative was solely on material, thus provision of the accumulated funds to its members, however, over time that focus extended to the promotion and observance of morality, which was often controlled by the members among themselves. They disagreed with gambling and frequent drinking, alcohol has become for many in our region the only solution of very difficult situation. The association further expanded its activity to education of other residents and own members.

In regulations of the cooperative can be observed the signs of democracy, which should be one of the main principles of each cooperative. Every member had only one share, which meant that the member could have only one vote during elections. In the first cooperative of Samuel Jurkovič, we can observe those basic principles, on which the other cooperatives, mainly agricultural, were formed.

Firstly, it is a voluntary membership. This principle is further emphasized in the regulations that any member should not be forced to membership. This should be solely on the own judgement of each candidate.

Besides the basic amount, as they called the deposit, the members had to further contribute into the federal treasury by three Kreutzer. Thus collected funds were then used to lend money to its members, even the regulations did not determine whether the money could have been accessed even by non-members. Loans were provided at six percent interest rate.

Reciprocity, which was another principle, was reflected as mutual help among members. One member received a loan, then the other. A third party guarantee was not necessary, because the community worked only with funds of its members. Every cooperative board member and controller was liable with his full property according to rules in regulations.

The principle of a self-government was realised in practise. The board was voted from all members without outside influence. Currently, the number of members of the cooperative is not limited. In case of the first cooperative "Spolok Gazdovský", the number the members of the cooperatives were limited. The reasons were keeping the documentation in order, and in case of surplus, sharing with less members. At the beginning the cooperatives could have had only thirty members, later sixty.

The cooperatives were not aimed primarily on the provision of material aid. Besides promotional and educational activities, it devoted time to beautify their surroundings. A good example would be planting trees, cleaning of wells or pavements.

The effort of the associations to establish of Sunday school was not understood. They spread their educational activity via newspapers. Newspapers were specialized in economy, trade and crafts. The magazine was published by Daniel Lichard in Skalica.

Of course, such activity focused on material aid for people in the form of provision of loans was welcomed by everyone. Mainly, usurers and innkeepers had problem with such exchange of money, aid and advice and they made objections and complains on that type of cooperatives. The representatives did not care about it, maybe because the mayor of the village Sobotište himself was the member of associations and he was supported by regional and municipal representatives. A local representative, František Dohnány, was enthusiastic about the idea, so he signed his two sons to be members. One official from Skalica helped to officialise the cooperatives and helped it to resist unfriendly attacks.

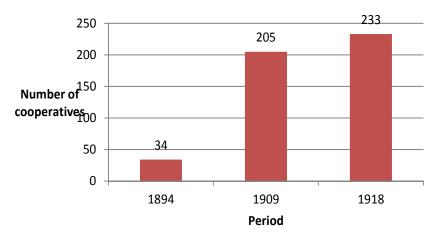
4. The development of credit cooperatives from 1894 to 1918

Based on the cooperative in Sobotište, the credit cooperatives were established in other towns, such as Blatnica, Važec, Brezno, Tisovec etc. The role of those cooperatives was

similar – the provision of short-term loans for small craftsmen and pheasants for more favourable conditions. The largest increase in that type of cooperatives was within the monitored period between 1894-1909.

Figure 1

Development of the number of credit cooperatives in 1894-1918



Source: Martuliak, P. et al. (1995). *Stopäťdesiat rokov slovenského družstevníctva*. Nitra: Agroinštitút Nitra, 1995. ISBN 80-7139-028-3.

Credit cooperatives were often merged into cooperative unions within Europe, which meant the accumulation of financial resources. The creation of such unions led to the establishment of the central register that later changed into banks.

Cooperatives developed greatly mainly after WWII when 997 new cooperatives joined the Headquarter cooperative. There were two types of cooperatives. The first type was deposit cooperative and the second type was peasant treasury. Both provided their members' loans under favourable conditions, however, in the principal of reciprocity and mutual control. While deposit cooperatives were established by members. Peasant treasuries were established first as a union of helpers and then individual peasant mutual treasuries.

New manufacturing processes began in Slovakia in the 1940s. Railway infrastructure and now factories began to spread slowly. New banks and financial institutions were formed but less intensively in comparison to the west. The economic view on the Hungarian Empire has changed. The ideas of elimination of feudal social order started to emerge.

Ludovít Štúr was the main promoter of that idea, who spoke at the Hungarian Congress. That speech was proceeded by the series of articles about the position of Slovakia. He gradually formed a national programme. And Slovaks asked to solve their issues at the Congress and asked for banning of serfdoms, feudal counties. They called for liberation the population from their lords, ensuring political rights and organizing of the administration of free royal towns on the principals of folk representatives.

However, Štúr continued in the formulation of other requirements and formed the Slovak revolution programme. They were devoted to national independence of Slovaks, to the empowerment of representation of Slovaks in political and social life and on extension of democratic rights and freedom of people. Even he suggested the voting right and freedom of the press. He devoted to abolition of serfdom. Štúr reacted on all areas of public and political life of Slovaks. These requests were sent to the government of the Hungarian Empire. The answer was the arrest of sever Štúr peers.

Samuel Jurkovič, the founder of the first credit cooperative "Spolok Gazdovský" was a father-in-law of Jozef Miloslav Hurban, who was a cofounder of the "Request of the Slovak Nation". Who became persecuted by authorities. This fact also affected Samuel Jurkovič, who had to run away before the Hungarian guards in Brezova pod Bradlom. Because of the worsening the situation, he had to leave for Prague. The cooperative continued, but it did not have a huge development as it was under the leadership of Samuel Jurkovič. After returning from Prague, he was actively involved in the management of the cooperative. The absence of Jurkovič and a difficult political situation had the impact on the end of the cooperative "Spolok Gazdovský" after six years of its existence. Its founder also stated that none of its member lost his deposit.

In following years after the establishment of the cooperative of Samuel Jurkovič, several other cooperatives were established, focused on credit activities.

On the principles of cooperatives associations from Sobotište, a new cooperative with similar name "Gazdovský spolok" was established. It was found by two founders, Ľudovít Šulek and Karol Sucháč. The association contributed to the development of the community, but also Sunday school along with a library. The aim of the cooperative was to provide material assistance in addition to the fulfilment of the objectives of moral life. It also ensured education, training, and improvement of the environment. "The speciality of the cooperative from Brezova pod Bradlom were the sections with different number of members."³ Every member had to have paid all deposits to be granted a loan. Only then it was possible to start to provide the loan. New applicants created new own sections and a condition to gain a financial help was the same. Totally, the cooperative comprised of four sections. They were separate units, which were liable to the cooperative management. Political events affected the cooperative deeply and one of the founder - Karol Sucháč left for the 1st Slovak voluntary union. As it was in every cooperative, they had to face the critics of usurious people. When Sucháč left, they misused the weakening of the association and began to intimidate the member to leave the unions. Even after returning of Suchač, the break-down of community was not possible to stop.

The new credit unions, based on the principle of the first community "Spolok Gazdovský" were created throughout all western Slovakia at that time. It happened thanks to credit, educational activities and more favourable political situation. However, since 1865, when the Viennese court was leaving more competences to Hungarian ruling class, it meant significant limitations and even the total abolition of their existing activities to the Slovak representatives of cultural, political and social life. This had an impact on the establishment and operation of cooperatives, when their work was limited to mutual assistance, educational and cultural activities, in support of moral raising of Slovaks. A good example is the effort to establish the association of beekeepers in northern part of Hungary. The aim of the association was to set up of bee houses, training activities in this specific area. The increasing oppression of minorities, could be possibly the reason why the Hungarian Ministry did not approve the articles of the association and then the officials could not officially work.

5. Cooperative theories and principals

The development of cooperatives brought various theoretical views on that form of business - the profitable and unprofitable theory.

According to the first theory, the cooperatives were only a helping economy, which aimed to help the individual business. By the end of the WWII this theory was maintained, that the

³ MARTULIAK, P. et al. (1995). *Stopäťdesiat rokov slovenského družstevníctva*. 1. vyd. Nitra: Agroinštitút Nitra, 1995. 231 p. ISBN 80-7139-028-3.

goal of a cooperative is not to reach profit, but to increase the incomes of the members. This kind of ideas were formed by Samuel Jurkovič, the founder of the first cooperative in Slovakia, Daniel Lichard or Samuel Ormis.

The second theory looks at cooperatives as a profitable form of business. It was developed in the middle of the 1940s. The proponents of that theory were convinced that the cooperative could be developed only under the condition, if the all members put the pressure to make a profit and gain additional sources for capital rising. For example, F. L. Smith, R. Henzler and the others were representatives of that opinion.

It is interesting that the members of the first cooperative in Rochdal did not have clearly set principles to follow, but only regulations. The principals, called, Rochdal's principles were as follows:

1. Democracy in the cooperative and the equality of the all members,

2. Unlimited number of the members,

3. Limited payments of the interests from capital

4. Sharing of profits among members, based on the part of economic results of the cooperative,

- 5. Sale of goods to members only in cash,
- 6. Quality and purity of goods,
- 7. Education of the members,
- 8. Tolerance of political and religious views (political and religious neutrality).

Gradually, those principles underwent the development and they were adjusted. The main requirement was to appoint special committee appeared during the International Congress of cooperatives in Rochdal 1930, and its main task was to check the applicable conditions of cooperatives in various countries and precise formulation of cooperative principles.

The principles of cooperatives and their values were approved and updated at the 31st Congress of International cooperatives as following:⁴

- Voluntary and open membership: cooperatives are open to everybody, who is able to use services and of the cooperative and agree with taking of the responsibility arising from the membership.
- Democratic control by members: cooperatives are organizations based on the principles of democracy. In primary organizations all members have the equal voting rights one member, one vote.
- Economic participation of members: Members via their activities contribute to the capital formation and democratically control as well.
- Autonomy and independence: cooperatives are self-helping, autonomous organizations that are controlled by members. In cooperation with other organizations or increasing the capital, they act in the way to ensure the democratic control of its members.
- Education, training and awareness: They provide to its members' the education, courses to help in continuous improvement and advancement of the cooperative.

⁴ *Cooperative identity, values & principles.* [online]. [accessed 2016-01-24]. Available on URL: http://ica.coop/en/whats-co-op/co-operative-identity-values-principles.

Their role included the spreading the basics and advantages of that form of business.

- Cooperation among cooperatives: cooperative movement is strengthened by cooperation of structures in local, national, regional and international levels.
- Responsibility for the community: It is a sustainable development of the community via specific procedures authorised by members.

Every cooperative ought to obey the above mentioned principles at decision making process.

6. Current branch structure of cooperatives in Slovakia in chosen period

Since the establishment of the first cooperatives more than 170 years passed. During that time the structure of cooperatives has changed significantly. Agriculture is the most frequent economic activity of cooperatives. *"Agricultural cooperatives in Slovakia fulfil the main goal – providing the production of groceries for the inhabitants*"⁵ Beside that they help to keep employment in rural areas. Agriculture is affected not only by market factors, as well as the regulation in the form of Common agricultural policy of the EU. Details are given in Tab. 1.

Table 1

Sector structure of cooperatives in the period 2012-2014 in Slovakia

Year	Agricultural cooperatives	Housing and real estate cooperatives	Consumer and commercial cooperatives	Production and craft cooperatives	Other cooperatives	Cooperativ es together
2012	720	255	238	108	221	1 542
2013	718	261	240	100	224	1 543
2014	712	240	238	97	259	1 546
Growth Index 2014/2012	98,89	94,12	100,00	89,81	117,19	100,26

Source: ŠÚBERTOVÁ, E. 2015. Characteristics of sector structure of Slovak cooperatives. *In Actual problems of business area*. Bratislava: Ekonóm, 2015. pp 704-710. ISBN 978-80-225-4077-3.

As it was mentioned above, the biggest representation in the sector structure of cooperatives have agricultural cooperatives. The reason is the long-term tradition of the sector in Slovakia. Their number is declining and they are replaced by other forms of capital societies, mostly by limited liability companies. "In the agriculture area the system of financial support of cooperatives realized within the principles of common agricultural politics. That means that mainly small businesses up to 28 hectares are privileged".⁶

⁵ ŠÚBERTOVÁ, E. 2014. Ekonomické a sociálne aspekty družstevného podnikania v SR. In *Marketing manažment, obchod a sociálne aspekty podnikania*. Bratislava: Ekonóm. 2014. ISBN 978-80-225-3982-1. s. 46

⁶ ŠÚBERTOVÁ, E. 2015. Charakteristika odvetvovej štruktúry slovenských družstiev. In *Aktuálne problémy podnikovej sféry*. Bratislava: Ekonóm, 2015. ISBN 978-80-225-4077-3, s. 705.

7. Conclusion

The cooperative, which was established by Samuel Jurkovič and as we know it at the moment was preceded by the establishment of brotherhoods and guilds. The guilds resembled more the business entity of cooperatives, because they already had specific rules, which had to be followed. For example, they determined the amount of sales prices or penalties.

Maria Theresa helped to develop the cooperatives with her "urbar" regulations, where the formed associations followed detailed and elaborated rules. Through the promotion of education, she enabled the establishment of cooperatives focused on this activity.

From economic point of view, the situation in Slovakia, just before the establishment of the first credit cooperative was not favourable. It was mainly focused on agricultural activity; educational level of people was poor or underdeveloped. The people led immoral life; inhabitants saw the solution of their situation in alcoholism and gambling. During the era of founding the cooperatives, the famine influenced the daily life of the inhabitants. Štúr and his peers and other educated patriots focused on the backwardness of the Slovak territory in comparison with the West, where they studied, mainly Germany. Jurkovič acted in the same way, and his efforts were to support moral and economic growth of Slovaks. The availability of credits, which would ensure the development of farming and crafts was low due to excessively high interest rate from local moneylenders. Jurkovič's cooperative provided the loans under favourable conditions, moreover, their activity also focused on education, cultural and further education. Prior to the establishment of the "Gazdovský Spolok" and also after it, new cooperatives started to grow with the main aim to educate inhabitants. We can assume that Štúr and his peers used is as a tool to awaken national awareness. A long tradition of associations and treasuries led to the establishment of the Jurkovič cooperative.

Throughout their existence, credit cooperatives faced the pressure from inhabitants, who had lent money before the establishment of cooperatives. Moneylenders were not happy with the purpose of the cooperative. Inter alia, the presentation of the "Request of Slovak Nation" by Štúr's peers triggered a political situation, which caused the escape of their representatives and supporters, like Jurkovič to Prague. The idea of cooperatives, however, remained and was used in later periods.

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References

CAMBEL, S. a kol.(1992). *Dejiny Slovenska III*. 1. vyd. Bratislava : VEDA, 1992. 829 p. ISBN 80-224-0078-5.

Cooperative identity, values & principles. [online]. [access. 2016-01-24]. Available at URL: http://ica.coop/en/whats-co-op/co-operative-identity-values-principles.

KLUSOŇ, V. (1995). Minulost a budoucnost spořitelních a úvěrních družstev. In *Národní hospodářství*. Vol. 48, Issue 10, 1995. pp. 1-9. ISSN 0862-7037.

HOLYOAKE, G. J. (2009). Self-help By the People – The History of the Rochdale Pioneers. 280 p. ISBN 978-1291636598.

MARTULIAK, P. et al. (1995). *Stopäťdesiat rokov slovenského družstevníctva*. 1st. ed. Nitra: Agroinštitút Nitra, 1995. 231 p. ISBN 80-7139-028-3.

NEMCOVÁ, L. (2002). K historii a současnosti družstevního hnutí. In *Ekonomická revue*. Vol. 5(2002), Issue 1. pp. 17-30. ISSN 1212-3951.

ŠÚBERTOVÁ, E. (2015). Charakteristika odvetvovej štruktúry slovenských družstiev. In *Aktuálne problémy podnikovej sféry*. Bratislava: Vydavateľstvo Ekonóm, 2015. pp. 704-710. ISBN 978-80-225-4077-3.

ŠÚBERTOVÁ, E. (2015). *Economic activities of the Slovak co-operatives in the years 2010 to 2014*. Pardubice: Universita Pardubice. In Scientific papers of the University of Pardubice. Issue 3, pp. 142-151. ISSN 1804-8048.

TIBENSKÝ, J. et al. (1978). *Slovensko – dejiny*. 2nd ed. Bratislava: Obzor, 1978. 1012 p. ISBN 65-071-78.

ZEULI, K. A. – CROPP, R. (2004). *Cooperatives: principles and practices in the 21st century*. [online]. [access. 2016-01-24]. Available at URL: http://www.learningstore.uwex.edu/assets/pdfs/A1457.pdf>.

Share of the European Union on the World Trade

Bianka Bittmannová

University of Economics in Bratislava Faculty of International Relations Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: bianka.bittmannova@euba.sk

Abstract

The European Union is nowadays still one of the most important actors in the world economy. This was reached more or less thanks to the tight integration and the creation of the Single European Market, which helped especially to strengthen the trading relation in the European Union. But the global economy and the world trade are changing rapidly and the position of the EU seems to be weakening. The article analyses the changing position of the EU in the world economy, focusing on the share of the EU on the world trade. As this share is declining rapidly in the last years, and the predictions to the future bring even worse prospects, the article is also describing the facts that are influencing these current developments.

Keywords: European Union, share of world trade, world trade trends *JEL classification*: F15, F19

1. Introduction

One of the most important reasons in the beginning of the integration in Europe, was except of the peacekeeping reason, the reason of creating better trading relations within the European countries, to boost their economies and to create the bigger single market, that would be able to face the competition of other big actors in the world economy. This aim was on the one hand fulfilled successfully and the European Union (EU) became the block producing the biggest GDP in the world, exporting second largest amount of goods and services after China and importing the second largest amount after USA. But on the other hand, the fact is, that the share of the Europeans Union's trade on the world trade is shrinking by the time, when it comes to intra-union trade as well as the extra-union trade. How serious is this decrease and what are the reasons of this decreasing position of the EU in the world will be analysed in the following article.

The aim of this article is to analyze the share of the European union's trade on the world trade. It will analyse the evolution of the intra- and extra-union trade as share of the world trade and it will define the factors influencing this share and the position of the EU in the world.

In the last years, the question of the shrinking share of the EU on the world trade is discussed very often in connection with the United Kingdom's exit from the EU. The argument about the declining position of the EU is used as the supportive reason of the Eurosceptic thoughts, why it wouldn't be so negative for the UK to leave the EU. What is more, the question of the further development and deepening of the Single European Market is a crucial concern of the future functioning of the European Union. Therefore, the question whether the tendency of further reduction of the EU's share on world trade can cause a threat to the functioning of the EU itself, should be considered as well.

2. Development of the European Union's share on the world trade

Back in the 1950s the European integration was build on the idea of elimination of the internal barriers to trade between the member states and creating the Single Market, that would boost the trade and thus also the economic situation of the member states through the free movement of goods, services, people and capital. As logical it might seem that the removal of barriers will lead to the development of the intra-union trade. Of course, in absolute terms, the trade between the EU member states began to grew strongly since the 60s, and later on since 1993 when the single market had been created. The EU become an important player on the world scene and the extra-union trade rose as well. But the global conditions have been changing significantly since the 1960s and as the EU became meanwhile the biggest exporting block in the world and the second largest importer. The latest development shows, that it is loosing its position. It has already dropped to the second place in the volume of exports.

Table 1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
GOODS	Share of intra-union	28	26	26	26	25	24	22	21	20	20	21
00005	Share of extra-union	13	13	12	12	12	12	12	12	12	12	12
SERVICES	Share of intra-union	28	27	27	27	27	26	25	25	23	24	n.a.
SERVICES	Share of extra-union	20	20	20	20	20	20	19	20	19	19	n.a.
TOTAL	Share of intra-union	28	26	26	26	25	25	23	22	20	21	-
IOTAL	Share of extra-union	14	14	13	14	13	14	13	13	13	14	-

Share of the intra- and extra-union exports on the world trade in %

Source: Authors calculations based on data from WTO. (2015): Statistics database. Available at: http://stat.wto.org/>

As we can see in the table 1, the share of the EU on the world trade is decreasing continuously in the last years. One could expect, that by creating the single market, the extraunion trade could suffer because of strengthening the intra-union trade. But the opposite is the truth and it is more concerning, that the intra-union trade is loosing its share on the world trade more rapidly as the extra-union trade. This fact is the truth for the trade with goods as well as the trade with services, which is since the crises often referred to as the leading force of the European economy.

But this was not always the case. When we would look back into the past, the first attempts of the integration in the Europe had been quite successful in this way. The share of the intra-union trade on the world trade had been increasing since 1985, when the European Commission's White paper about the completing of the internal market was published, listing the persistent barriers to free movement. The increasing share of the intra-union exports reached it's peak in 1992, and since then it started to decline. A short rising tendency had been recorded in the year 1998 and then 2004, which was of course influenced by the accession of 10 new Member States.¹

The current position of EU in other partial areas is as follows. EU as a whole has still got the biggest share on the global trade. It's GDP accounts for approximately 24 % of the worlds GDP^2 but is declining as well. EU is still the leader in the sector of services, in which it exports and also imports more than the other parts of the world economy. The same could be

¹ The shares are calculated by the author base on the data from: <http://stat.wto.org/>. [accessed 20. 02.2016].

² World Bank (2014). To compare with, the share of USA is 22 % and the share of China 13 %.

said about the level of foreign direct investments, where EU is the biggest receiver as well as the biggest provider of the foreign direct investments.³

3. Predictions for the future development

The future predictions of the world trade developments, estimated and calculated by numerous experts, are not very positive for the EU in this sense. All of them predicts quite a huge decline of the EU's share on the world trade. Some Member countries of the EU will lose their share of global trade faster than the others. For example, Italy and Germany will export more to emerging countries, than to other member states of the EU. Germany will export most of it's goods in 2020 to China. Today, the biggest trading partner of Germany is France. France will also higher its exports to China, but Germany will still remain it's biggest export partner.⁴

It is believed, that the current dominance of the triad (advanced economies in North America, European Union and Southeast Asia) in the world trade will be weakened in favor of developing countries, especially BRICS and the emerging counties in Asia. Quite important for the EU is the finding, that Europe could remain the weakest link in the relations with America and China, because of its concentration on the internal politics and internal liberalization.⁵ So Europe should probably start to reconsider it's global external policy, which could have impact on it's future position in the world.

What is more, these current not very favorable trends can lead to a slow moving away from the support of integration and the collapse of the EU. Maybe also because of the declining position of the EU and the rising strength of the developing world, the waves of euroscepticism are on the rise in Europe, and especially visible and audible in some counties. Not only the government of the United Kingdom, but also other expert groups initiated several studies on the topic of the importance of the EU for UK. As the British reliance on the trade with the EU is on it's historical minimum⁶ and UK is trading with the other member countries always less goods and services, most of the conclusions are in favor of the British exit, or at least do not exclude this possibility for Britain, as one that would be devastating for Britain.

Even the EU's share on the world's GDP is on the decline. While in 1980 it's share was 30 %, it is assumed that by 2025 it will make up only 15 %.⁷ Despite the fact that the EU has now a strong influence on the design and shaping of the entire global economy, with a degrading position could be this effect threatened, and together with it also the decision makink position of EU in various international organizations. Till 2050 EU's share on the world trade should be around $6 \%^8$, compared to the current 20 %.

³ European Commission. (2014). EU position in the world. Available at: http://ec.europa.eu/trade/policy/eu-position-in-world-trade/. [accessed 22. 02.2016].

⁴ O'Neill, J. and Terzi, A. (2014): Changing trade patterns, unchanging European and global governance. In: Bruegel. Available at: http://bruegel.org/wp-content/uploads/imported/publications/WP_2014_02.pdf>. [accessed 23. 02.2016].

⁵ The Economist (2014): Trading places: How China is affecting Europe's position. In: The Economist. Available at: http://www.economist.com/news/europe/21600166-how-china-affecting-europes-position-world-trading-places. [accessed 23. 02.2016].

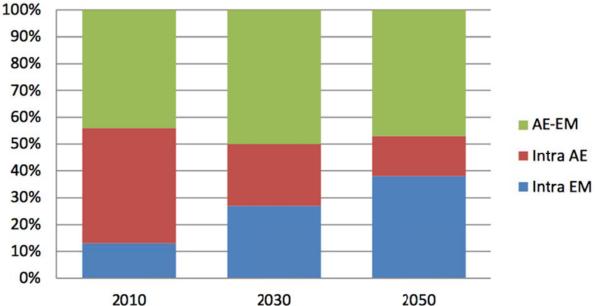
⁶ Spence, P. (2015): The EU's dwindling importance to UK trade in three charts. In: The Telegraph. Available at: http://www.telegraph.co.uk/finance/economics/11700443/The-EUs-dwindling-importance-to-UK-trade-in-three-charts.html. [accessed 24. 02.2016].

 ⁷ Dartmouth, W. (2013): Out of the EU, into the world. Available at: <
 http://www.williamdartmouth.com/docs/Out_Of_The_EU_and_into_the_world.pdf>. [accessed 24. 02.2016].
 ⁸ Buiter, W. and Rahbari, E. (2011): Trade Transformed: The Emerging New Corridors of Trade Power. In: Citi GPS Global Perspectives and Solutions. Available at:

The new tendencies will have impact also on the USA or for example Japan. USA's share will be decreasing (but slower than the EU's share) as well and Japan will trade more with the Emerging Asia. What is more, as the position of the currently leading actors of the world economy will be substantially reduced, their impact on the world can be influenced also in the negative way. Concerns are directed to the reorganization of the monetary system, the collapse of the Eurozone and the end of use of the euro currency.

As the following figure proves, the trade among the advanced economies will suffer the most, what is also the case of the EU, as all the Member States belong to advanced economies. The trade between the EU and USA will have the same development and will decrease more than the trade within these regions, despite the fact, that the absolute amount of the mutual transatlantic trade will rise thank to the expected TTIP agreement.

Figure 1



Share of the world trade in %

Source: Kader, R. and Stephan, R. (2011): The Changing Geography of World Trade: A Transatlantic Perspective, based on the data from: Buiter, W. and Rahbari, E. (2011): Trade Transformed: The Emerging New Corridors of Trade Power. In: Citi GPS Global Perspectives and Solutions.

According to the figure 2 we can see, that the share of the transatlantic trade will decline in comparison to other trading corridors in the future that much, that in 2030 it will have only a bit higher share on the world trade than 3 % and by 2050 USA – EU trade will no longer belong to the top 10 trading partners in the world. This conclusion had been proven by more different studies.

As evident from the figure 2, the biggest rise in the mutual trade will be recorded between emerging countries of Asia, which will more than double by 2050. Quite significant will be also the increase of trade between the emerging countries of Asia and the other parts of the world, especially the Middle East but also with the advanced countries in Asia (as Japan and South Korea). The share of the trade between the countries of the European Union will drop to one fourth of the current level till 2050. The trade share of the exchanges between western Europe and Emerging Asia should rise as well, but not nearly as much as trade between developing countries, which again confirms the declining role of the EU.

<https://ir.citi.com/do7jj%2FPaybZsaL6yDE%2BjZrrq0TNPH%2BJAFBLTWpE5EHduQJ04M6chpg%3D%3>. [accessed 27. 02.2016].

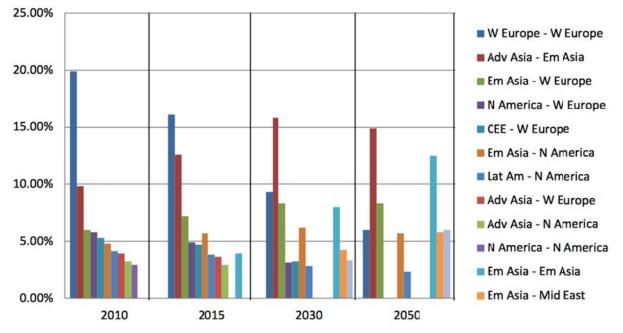
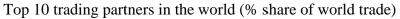


Figure 2



Source: Kader, R. and Stephan, R. (2011): The Changing Geography of World Trade: A Transatlantic Perspective, based on the data from: Buiter, W. and Rahbari, E. (2011): Trade Transformed: The Emerging New Corridors of Trade Power. In: Citi GPS Global Perspectives and Solutions.

Services will gain on importance and the share of trade in services on total trade will be rising. This will also be caused by the growth in economic performance in the emerging world, where rising living standards will create growing demand for services. In this area there is chance for the EU, which is currently the largest exporter of services and should focus its attention on this into the future, as it could get the most out of it positively, because the service sector is not yet fully developed in the developing countries.

4. Facts influencing the decreasing share of the EU on the World Trade

One of the main reasons of the declining share of EU on the world trade, as is clear from the above facts, is the rising position of the emerging countries and especially China. Some experts claim, that this development leads to a dynamic and multipolar world trading system.⁹ The economic rise of China and other emerging countries can be partly attributed to the increasing economic interconnectedness between countries.

A few researchers doubt, that the economic rise of China is sustainable and also in the light of the current economic slowdown in China they claim, that the trend witnessed in the beginning of the 21st century is not probably to continue. The opposite is more likely. China has already become the worlds biggest single trader and surpassed USA on this position. EU as a whole has still larger shares. But Bruegels predicts, that by 2020 China should catch up also the trading volumes of EU, consisting of 28 countries, and what is more, by this time

⁹ Kader, R. and Stephan, R. (2011): The Changing Geography of World Trade: A Transatlantic Perspective. Available at: http://transatlanticrelations.org/sites/default/files/World_trade_forecast.pdf>. [accessed 26. 02.2016].

China could reach the level of GDP higher that the EU.¹⁰ The CitiGroup experts predicts, that China will have a share of more than 18 % on the world trade in 2050, Asia will be the worlds largest trading region by 2025 and the emerging counties will increase their mutual trade to 38 % of world trade in 2050.¹¹ The EU should loose the biggest share at the expense of the Asia's growth.

India should also gain on importance. By 2050 it will overtake Germany and even USA and will became number 2.

There is even more measurable the impact of globalization and the regionalization of the supply chains. Regionalization has started to develop more significantly from 1960s and today most of the goods are exchanged in the borders of one region. European Union is currently the region, where the most goods are exchanged. But except of that, EU is a biggest trading partner of more than 80 countries in the world. Because of even stronger regionalism in the future, the Europe's influence can reduce to only its nearest neighbors, with which will EU have the strongest trading relations.

The other relevant factors, that could have influence on the diminishing share of the EU on the world trade are in our opinion the global crisis, which undermined the stability of the Europe, and the big drop in consumer demand, caused that the important trading partners were forced to look for other markets and new business partners. Another problem can be the not sufficient diversification of the industry in the EU, as we know that the intrasectoral trade is the most abundant trade in the EU, but when we look at the trading portfolio of the newer players on the world trade scene, we could identify many other different sectors, which are offered by them in the markets. Another very important fact is, that in many cases they can produce these items at much lower prices.

Other equally important factors which may in particular had an impact on the EU's share of world trade, and that the EU should focus on in the coming period are closely connected with the concept of Single Market. These factors are for example the remaining protectionist measures and barriers between the Member States and even outwards the EU or the very strict regulation in the EU, which can have effect mainly in the direction of imports into the EU. Of course the reason of these regulations is in many cases exactly the protection of the internal market, but in the terms of the trade relations as such, it can be negative. In the context of the functioning of the EU, one of the factors could also the failure to adopt the euro by all Member countries, which is also one of the barriers and it mainly affects the reduction of potentially possible level of the trade between Member States.

5. Conclusion

The shift and dramatic changes in the world trade patterns will be of a big challenge for the European Union. The EU will have to face the problem of weakening intra-union trade and the weakening position of EU in the world and it has to find solutions how to cope with this new situation. Only in two decades of the existence of the Single Market and the European Union as such has it's share in the world trade dropped almost by 10 %. The same is the truth for its share on the global GDP, which is falling as well. The European Union will

¹⁰ O'Neill, J. and Terzi, A. (2014): Changing trade patterns, unchanging European and global governance. In: Bruegel. Available at: http://bruegel.org/wp-content/uploads/imported/publications/WP_2014_02.pdf>. [accessed 23. 02.2016].

¹¹ Buiter, W. and Rahbari, E. (2011): Trade Transformed: The Emerging New Corridors of Trade Power. In: Citi GPS Global Perspectives and Solutions. Available at:

<https://ir.citi.com/do7jj%2FPaybZsaL6yDE%2BjZrrq0TNPH%2BJAFBLTWpE5EHduQJ04M6chpg%3D%3>. [accessed 27. 02.2016].

of course remain an important actor on the world scene, but it's impact will extend only to the nearer surroundings of Europe, Middle East and Northern Africa. The predictions for the future are very negative for the EU, when its share on the world trade is considered.

The main factors influencing the trend of diminishing Europe's share on the world trade are the globalization and regionalization, but unfortunately the force of regionalization in Asia and growing trade between developing countries in Asia, will squeeze out the EU's share. The growth of the China's and India's trade position will be the most significant. Other factors, that are more or less the problems of the EU's internal functioning are for example the reasons and consequences of the global crises, lack of diversification of industry in EU, remaining protectionist measures and barriers to trade, the very strict regulation of trade adopted by the EU and others.

References

European Commission. (2014). *EU position in the world*. [online]. Available at URL: <<u>http://ec.europa.eu/trade/policy/eu-position-in-world-trade/></u>. [accessed 24. 2. 2016].

O'NEILL, J. – TERZI, A. (2014). *Changing trade patterns, unchanging European and global governance*. In: Bruegel. [online]. Available at URL: http://bruegel.org/wp-content/uploads/imported/publications/WP_2014_02.pdf>. [accessed 23. 02.2016].

WTO. (2015). *Statistics Database*. [online]. Available at: http://stat.wto.org/>. [accessed 20.-25. 2. 2016].

KADER, R. – STEPHAN, R. (2011). *The Changing Geography of World Trade: A Transatlantic Perspective*. [online]. Available at URL: http://transatlanticrelations.org/sites/default/files/World_trade_forecast.pdf>. [accessed 26. 02.2016].

BUITER, W. – RAHBARI, E. (2011). *Trade Transformed: The Emerging New Corridors of Trade Power*. In: Citi GPS Global Perspectives and Solutions. [online]. Available at URL: https://ir.citi.com/do7jj%2FPaybZsaL6yDE%2BjZrrq0TNPH%2BJAFBLTWpE5EHduQJ04M6chpg%3D%3. [accessed 27. 02.2016].

The Economist. (2014). *Trading places: How China is affecting Europe's position*. In: The Economist. [online]. Available at URL: http://www.economist.com/news/europe/21600166-how-china-affecting-europes-position-world-trading-places. [accessed 23. 02.2016].

SPENCE, P. (2015). *The EU's dwindling importance to UK trade in three charts*. In: The Telegraph. [online]. Available at URL: http://www.telegraph.co.uk/finance/economics/11700443/The-EUs-dwindling-importance-to-UK-trade-in-three-charts.html>. [accessed 24. 02.2016].

DARTMOUTH, W. (2013). *Out of the EU, into the world*. [online]. Available at URL: <<u>http://www.williamdartmouth.com/docs/Out_Of_The_EU_and_into_the_world.pdf</u>>. [accessed 24. 02.2016].

World Bank. (2016). *Data*. [online]. Available at URL: http://data.worldbank.org/indicators. [accessed 20-25. 02.2016].

The Development of the Creditreform Solvency Index Of Construction Companies in the Period 2007-2015

Mária Braunová, Lucia Jantošová

University of Economics in Bratislava Faculty of Business Management, Department of Business Economics Dolnozemská 1 Bratislava, 852 35 Slovak Republic E-mail: mari.braunova@gmail.com, jantosova.lucia@gmail.com

Abstract

Construction industry as one of the key sectors of the Slovak economy has been badly hit by the global economic crisis, which has been fully apparent since 2009. The negative trend continued in construction until 2014, and thereafter there is the expected recovery of this sector (CEEC Research, 2015). This paper examines the situation in the construction companies between 2007 and 2015. The main aim of this paper is to determine whether there is significant correlation between the ability to overcome the crisis of a company and the selected characteristics. The ability to overcome the crisis of a company is recorded through the solvency index of the Creditreform, s.r.o.

Keywords: solvency index, construction companies, Creditreform, crisis period, selected characteristics *JEL classification*: L74, M21, M40, N60

1. Introduction

The construction sector is a key sector of economy, despite the impact of the global economic crisis is now trying to recover. Construction as one from the important sectors of economy creates products of long service life and thus it ensures that in addition to the specific production process even architectural and cultural benefits, which is an important part of mental performance and it has the last but not least significant aesthetic, ecological and social impacts (CEEC Research, 2014). It is among the major consumers of the different types of energy, mineral resources, materials and products. This sector produces an enormous amount of a construction waste, demolition materials and emissions.

After 1989, the construction industry has undergone extensive restructuring in Slovak republic. With a significant improvement in the level and quality of architectural structures in this sector there was also a change in legal form of business subjects, the change in the number and size of construction companies, but also the changes in the ownership structure. During the transformation of the Slovak economy, construction reflected the ability to adapt to modern market conditions. From 2005 to 2006 real growth rates of the volume of construction output exceeded the two-seater limit while were going beyond the growth rates of the volume of the Slovakia joined the EU in May 2004, construction gain a greater flow of foreign investment and participation in the European construction market and vice versa stronger competitive environment (CEEC Research, 2010).

In 2009 global financial and economic crisis began in construction industry, which significantly decreased construction production. In 2010, the gradual reduction in construction output decreased until the year 2012, when production has significantly reduced again (CEEC

Research, 2012). The negative trend in the construction industry has continued in year 2013 and 2014.

1.1 Data and Methodology

Solvency is defined as the company's ability to pay its obligations. It's a subject to a broader financial analysis and its calculation has settled form. This article is focused on comprehensive evaluation indicator – solvency index.

Calculation of comprehensive solvency index (SI) has settled in the form of literature. The empirical and theoretical literature offers several calculations, which the results can be selected depending on different variables, even contradictory. In German-speaking countries, in which economic subjects are Slovak and Czech businesses considerably bonded, has the calculation of SI stabilized according to the simplified discriminant function (Zalai et al., 2014):

$$SI = 1,5x_1 + 0,08x_2 + 10x_3 + 5x_4 + 0,3x_5 + 0,1x_6,$$
(1)

in which x_1 represents the ratio of cash flow / foreign capital, x_2 share capital / foreign capital, x_3 represents ration of profit before tax / share capital, x_4 profit before tax / total output, x_5 inventory / total assets and x_6 total output / share capital.

The equation shows that when the value of solvency index is higher, the current and projected financial-economic situation of examinee (company) is more positive. Zalai determines the following evaluation scale for the solvency of the company

Table 1

Evaluation scale of solvency index

Solvency index	Evaluation of the situation in the company
-3 < IB < -2	Extremely poor
-2 < IB < -1	Very poor
-1 < IB < 0	Poor
0 < IB < 1	Certain problems
1 < IB < 2	Good
2 < IB < 3	Very good
3 < IB	Extremely good

Source: ZALAI, K. et al. 2013. Finančno-ekonomická analýza podniku

Several companies have conducted a comprehensive assessment of solvency indexes through its partners internally or used some external companies for this analysis. Every company chooses its own variables, their weight in the model as well as the model itself, which adds even more empirical basis of data on company's solvency. The availability of data is limited. This article uses solvency index standardly developed of rating agency that evaluates mainly Czech and Slovak companies.

Detailed calculation of Creditreform SI is not present in this article since it is business secret. On an evaluation scale from 100 to 600 points, the standing of companies are located closer to the number 100, in restructuring the company reached a level of around 400 to 500 points, and companies around the level of 500 points is considered to be in bankruptcy or insolvent. SI of Creditreform is a hybrid-rating model, which brings together nine risk factors in the form of quantitative indicators (annual turnover, share capital) and qualitative indicators (payment behavior, company's development). Risk factors are weighted according to the degree of influence on the financial stability of the company based on the calibration and validation of the rating model.

Solvency index of Creditrefom, s.r.o. is expressed in a three-digit number. According to this value of solvency index could be a company assigned to one of eight quality categories, each class has different probability of bankruptcy.

Table 2

Class of credit score	Solvency index	The probability of default within 1-year horizon (%)		Solvency index	The probability of default within 1- year horizon (%)
1	100 - 149	0,1	5	301 - 350	3
2	150 - 200	0,25	6	351 - 499	10
3	201 - 250	0,6	7	500	Liquidation
4	251 - 300	1,25	8	600	Insolvency, bankruptcy

Classes of credit score

Source: Creditreform, s.r.o.; internal documents

Creditreform solvency index model is designed as the qualitative indicators (payment behavior, the issue of credit, company development, situation in orders, legal form) collectively have share 80% and in assessing the financial stability of the companies have greater ability as quantitative criteria (age of company, annual turnover of company, turnover / employees, share capital), whose share is 20% in the solvency index. Special attention is devoted to the monitoring of payment discipline of the rated entity. Due to the subjective nature of qualitative criteria the modeling of solvency index requires extensive rating analytical skills of experts, who have access to a large database of company information.

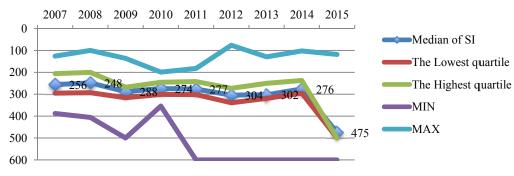
Creditrefom, s.r.o. provided to us the values of solvency index of construction companies operating in Slovakia during the analyzed period from 2007 to 2015.

2. Results of research

This paper deals with construction companies in the period 2007-2015. We investigated whether there is a significant correlation between the ability of companies in construction to overcome the crisis and selected characteristics of these companies. The ability to overcome the crisis is marked through the value of the solvency index. The following figure shows the development of this indicator in construction companies during the period 2007 to 2015.

Figure 1

The development of solvency index in period 2007-2015



Source: Own processing

The median of solvency index enters values from 256 to 475 in the monitored period. This value indicates the average change in our construction companies in a given year. The higher

value of the solvency index represents higher risk of bankruptcy, respectively falling company from crisis.

In 2007 there was number of 133 construction's company recorded by Creditreform, s.r.o. The average value of this indicator was in this year 256, which can be graded as class of average credit score. This year, construction companies in Slovakia showed on average a relatively stable financial situation. Within the payment discipline the companies occasionally exceeded the due dates of invoices, experienced constant company development and situation in orders of companies was satisfactory.

In 2008 Creditreform, s.r.o. evaluated the 115 construction's companies and the values of median solvency index was set at 248 points. When this value is compared with the previous year the slightly improvement can be seen, but not noticeably. Construction companies showed good credit standing on average this year. We can thus conclude that companies followed a similar trend as in 2007, with a slight improvement in the financial situation, payment discipline and situation in orders.

The year 2009 has been clouded by the global economic crisis in Slovakia that erupted in the United States. It had the large-scale effects of construction sector (CEEC Research, 2011). This year, the value of the solvency index was deteriorated as 288 points. In this year there were 114 companies rated during the reporting sector. Construction companies reported an average solvency index values which belong to the middle class of this index, similarly as it was in 2007. As the global financial crisis has fully arisen until the end of this year, the value of the solvency index showed the effects of the crisis in the coming period.

From 2010 to 2011 the solvency index was developed very similarly. In 2010 it reached the average value 274 and in the 2011 the average was 277. Companies were in the average of credit rating values. In 2010 there were 82 companies from the construction sector analyzed and in 2011 there were 102 companies.

Years 2012 and 2013 recorded worsened average values of solvency index in construction. In 2012, the median solvency index was set at 304 points and in 2013 to 302 points. In 2012, Creditreform, s.r.o. evaluated 441 and in 2013 evaluated 1.340 construction companies. These values are in class of weak solvency, when companies showed stagnating company development, impaired payment discipline and stagnating situation in orders.

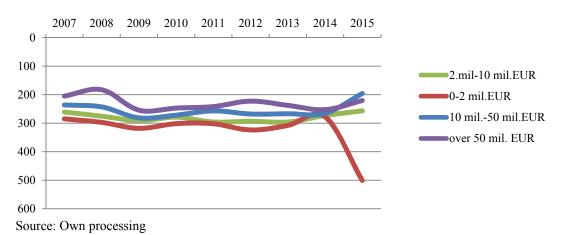
The average value of solvency index was set in 2014 to 276 points, on average solvency index recorded an improvement. This value belongs to the class of average credit score, so the situation in a given year in the construction industry improved. These years were analyzed 5.821 of construction companies by Creditreform, s.r.o.

Year 2015 recorded on average the worst value of the solvency index, with a value of 475 points. This year on average there was a very poor solvency in construction companies. From the number of 135 analyzed construction companies it has been a lot of restructuring or bankruptcy. Solvency index even pointed to a declining in company development, massive delays of due invoices – poor payment discipline even insolvency of companies.

The existence of significant dependence between the characteristics of the construction companies and abilities of the company to overcome the crisis is analyzed through the following figure. This paper is dealing with relations in sized of company's turnover, legal status, age of company, the number of company's employment and solvency index, which there were followed by the same sample of construction's companies from Creditreform, s.r.o.

Figure 2

The development of solvency index in the period 2007-2015 according to the turnover of construction companies

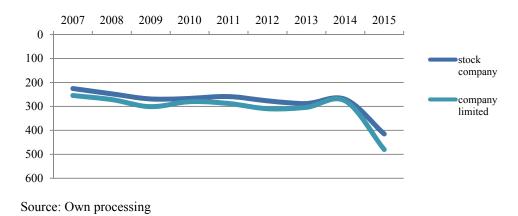


Solvency index in reported period according to the amount of the annual turnover of the company developed relatively evenly. The greatest value of solvency index recorded construction's companies with a turnover above 50 million EUR, whose value ranged from 205 to 255 (class of good credit score). On the contrary, the worst result of this indicator recorded turnover of construction companies with 0 to 2 million EUR, which the value of index deteriorated to 501 points. In 2015, the index reached the highest value of solvency for the period 196 (class of very good credit score) that was recorded in the group with a turnover of 10-50 million EUR, and also this indicator reached worst value during this year in the group with a turnover of 0-2 million EUR, 501 (class of bankruptcy).

The development of solvency index by legal form is shown in the following figure. It may be determined that construction companies taking the legal form as a joint stock company showed on average better values of this indicator as limited company. The greatest value of solvency index was recorded in 2007 with a value of 225 (class of good credit score) at the legal form as a joint stock company and the worst value was 480 points (very poor credit score) in 2015 at the legal form as limited company. Development of solvency index of these two legal forms was very similar.

Figure 3

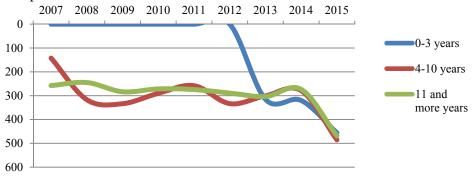
The development of solvency index in period 2007-2015 according to the legal form of construction companies



According to the age of company, the solvency index developed in the highest values at construction's companies operating in the market 11 or more years. In 2007, the indicator reached the highest value at companies operating in the market from 4 to 10 years, at 143 points (class of very good credit score). The worst result achieved just companies of this class at 486 points (class of very poor credit score) for 2015.

Figure 4

The development of solvency index in period 2007-2015 according to age of construction companies

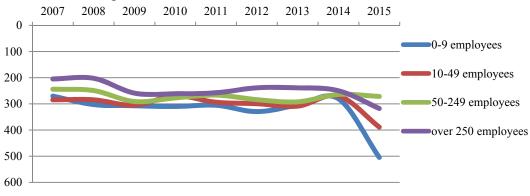


Source: Own processing

The following figure shows the development of the solvency index due to the number of employees of the construction's company. The highest value reached companies with more than 250 employees and vice versa the worst development was observed in companies with 0-9 employees. The year 2007 was a year with the highest value of solvency index at 205 points (class of good credit score), while 2015 was the year with the worst value of this ratio, at 505 points (class of bankruptcy). The figure with the number of employees follows the figure with the size of company's turnover, which had very similar values of index.

Figure 5

The development of solvency index in period 2007-2015 by number of employees of construction companies



Source: Own processing

3. Conclusions and policy implications

Construction industry as one of the key sectors of the Slovak economy passed through a deep crisis since 2009, induced by the impacts of the global economic and the financial crisis from the United States. The negative trend in the sector continued to be recorded in subsequent years until 2014. In 2015, many analysts pointed out the gradual recovery of the sector.

The paper aim is to determine whether there is a significant correlation between the ability to overcome the crisis of the company and selected company's characteristics. The ability to overcome the crisis is marked through the value of the solvency index. Paper examined the evolution of the Creditreform solvency index in the period from 2007 to 2015 on a sample of construction's companies, which the Creditreform, s.r.o. evaluated during the period. The higher value of the solvency index represents higher risk of bankruptcy, respectively falling company from crisis.

In 2007, construction companies showed a relatively stable financial situation on average, which means that within the payment discipline the companies occasionally exceeded the due dates of invoices, experienced constant company's development and situation in its orders was satisfactory. The year 2008 was occurred with the slightly improved financial situation, payment discipline and situation in orders. In 2009, the values of solvency index deteriorated slightly. The beginning of the financial crisis in the sector marked the situation. In 2010 and 2011, the value of the solvency index improved slightly compared with 2009. In 2012, the company's situation worsens, solvency of construction companies declined. Companies showed a stagnating development, impaired payment discipline and stagnating situation in orders (CEEC Research, 2013). In 2014, the situation in construction was improved in the contrary, evaluation of solvency index recorded a slight improvement. In 2015 the solvency index acquired the worst result for the period, pointing to the declining company's development, massive delays of due invoices - poor payment discipline and insolvent companies.

According to the annual turnover the construction companies developed relatively evenly during the period. In 2015, the solvency index reached the highest value during the period, and that was 196 points (companies with a turnover 10-50 million EUR) and also this indicator reached this year, the worst result, and that was 501 points (companies with a turnover 0-2 million EUR).

Development of solvency index by legal forms shows that construction's companies as join stock company showed, on average, better values of this indicator as limited companies. The highest value of solvency index was recorded in 2007 with a value of 225 (class of good credit score) for join stock companies and the worst value was 480 (class of very weak solvency) in 2015 on limited companies.

Depending on the age the solvency index of company reached in 2007 the highest value in companies operating in the market from 4 to 10 years, 143 points. The worst result achieved just as companies of this group in 2015, and that was 486 points. The highest value of solvency index according to the number of employees reached companies with more than 250 employees in 2007, and vice versa the worst development was observed in companies with 0-9 employees in 2015.

Based on the selected characteristics of construction's companies, the highest results were in 2007 and on the contrary, the worst year was 2015. This relationship can be observed on characteristics such as legal form, age and number of employees of constructing companies, and company's characteristics as the annual turnover shows the highest and worst values at the same year -2015.

Precisely the year 2015 should according to analysts represent the year of the recovery in the construction industry. Based on our findings, this year recorded the worst values of solvency index. The fact that many construction companies have not survived the crisis and were forced to restructure their business or go to bankruptcy, pointing precisely to impaired value of this indicator, which the company Creditreform, s.r.o. analyzed. Current status of construction sector has recorded although signs of recovery in terms of increasing

constructing production, but unfortunately in 2015 this survey does not show the positive development of this sector or fully company's recovery from the crisis.

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References

CEEC Research. (2010). *Kvartálna analýza stavu a vývoja slovenského stavebníctva 11/2010*. [online]. Available at URL: http://clanek-soubor 1291879445kvartalna_analyza_ slovenskeho_stavebnictva_11_2010.pdf>. [accessed 04.01.2016].

CEEC Research. (2011). *Kvartálna analýza slovenského stavebníctva 11/2011*. [online]. Available at URL: http://www.infoma.sk/plochy/galeria/ceec-research/kvartalna-analyza-slovenskeho-stavebnictva-11-2011.pdf>. [accessed 04.01.2016].

CEEC Research. (2012). *Kvartálna analýza slovenského stavebníctva Q4/2012*. [online]. Available at URL: http://www.infoma.sk/plochy/galeria/ceec-research/kvartalna-analyza-slovenskeho-stavebnictva-Q4-2012.pdf>. [accessed 04.01.2016].

CEEC Research. (2013). *Kvartálna analýza slovenského stavebníctva Q4/2013*. [online]. Available at URL: http://www.zipp.sk/databases/internet/_public/files.nsf/SearchView/CCBBDD4784031A08C1257C9A00325E70/\$File/Kvartalna.analyza.slovenskeho.stavebnictva.Q4.2013.pdf>. [accessed 04.01.2016].

CEEC Research. (2014). *Kvartálna analýza slovenského stavebníctva Q4/2014*. [online]. Available at URL: http://www.infoma.sk/plochy/galeria/ceec-research/kvartalna-analyza-slovenskeho-stavebnictva-Q4-2014.pdf>. [accessed 04.01.2016].

CEEC Research. (2015). *Kvartálna analýza slovenského stavebníctva Q4/2015*. [online]. Available at URL: https://www.psgroup.sk/sites/default/files/UPLOAD/kvartalna_analyza_slovenskeho_stavebnictva_q4_2015.pdf>. [accessed 04.01.2016].

Creditreform, s.r.o. [online]. Available at URL: http://www.creditreform.sk/index.html. [accessed 04.01.2016].

ZALAI, K. et al. (2013). *Finančno-ekonomická analýza podniku. 8. preprac. a rozšír. vyd.* Bratislava : Sprint 2, 2013. 453 p. ISBN 978-80-89393-80-0.

Strategic Development of Human Resources in Organisation

Milena Bugárová

University of Economics in Bratislava Faculty of National Economy, Department of Social Development and Labour Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: milena.bugarova@gmail.com

Abstract

In recent years, it is more and more discussed about the importance of human resources and their quality for organisation. Also, we often experience the fact that a number of organisations advertise the care about the people and their working conditions, motivation and education. The question is whether there is in reality to achieve of objectives and how the way comes to increase the quality of human resources.

Keywords: development of human resources, strategic learning and development, human capital, human resources, organization *JEL classification: J21, J24*

1. Introduction

Despite the necessity of the existence of tangible and intangible assets is the quality of human resources, a key factor in the successful operation of each organization. Organization cannot efficiently to reach its objectives without a quality and competent workforce.

Human resources are a fundamental pillar of any organization, because these are the people, who design and produce goods, provide services, shall verify the performance and activities, ensure the presentation and promotion of products on the market, allocate funds to areas, where they are used most effectively and to set global corporate strategy.

Employees who hold the special human capital presented for organizations in generally sense the most valuable source of capital, because they decide on overall performance, competitiveness and prosperity of the company. This implies the need for effective management and development of human resources, who are the heart of the entire business management.

1.1. Human Resources and Human Capital

All factors that determine the competitive capacity of organizations (technological level, the accurate information, quality and productivity) have a common denominator and thus as human resources with their work, knowledge, skills, experience and creativity. Human resources and finance convert the material to the desired product or service and brings to the company other material and financial resources. Of course, not every labor force will ensure a competitive advantage for company. (Kachaňáková, Nachtmanová, 2007)

The quality of human resources depends on eight factors: the potential, knowledge, skills, understanding their role in the organization, environment, rewards healthy lifestyles and ambitions. All these factors are the quality of human resources. It is noted that the quality of the HR dependent on the development of all factors. Just that one of these factors is lagging behind, it will be reflected at the level of human capital.

The higher the quality of human resources, the greater is also their performance towards achieving organizational goals. Any decision in relation to human resources is of strategic importance for the future direction of the organization. Human resources are the carriers of human capital. Human capital is the most valuable company generally capital, because decisions on overall performance, competitiveness and prosperity of the company.

Economic theory generally defines human capital as the sum of innate and acquired abilities, skills and knowledge that people have. A. Smith representative of classical economics saw the main source of wealth and economic development in developing competences of workers. A. Marshall emphasized the need for long-term investment in human capital. Another theoretical approach to human capital was the neoclassical theory of economic growth and factor markets. The basic idea of this approach was that there Functional relationship between the factors of production (labor and capital) and volume of production. But later it confirmed that more and more important in the dynamics of economic growth plays a production factor work that the bearer is a person who has certain skills. (Martincová, 2005)

Among other theoretical approaches mention modern monetarist theory, whose main representative was Milton Friedman who understands human capital as the sum of the qualities of the workforce, are the knowledge, habits, skill of man that determines the size of its workforce. Increasing the knowledge and skills it is associated with certain costs, so an investment in people. Friedman further distinguishes human and no human capital, acting in its natural-material form and Friedman sees it as a store of wealth. This capital is a source of interest. At the turn of the fifties and sixties of the last century, he first discovered the concept of human capital (human capital). Within this theoretical concept economists analyze the motives of individuals to invest in human capital and try to determine its impact on the various aspects of society in particular economic growth. The theory of human capital is one of the latest economic theories. Its basis can be found in the theories of growth. This theory under the Chicago school mainly elaborated G. S. Becker and T. W. Schultz, who focused their attention on clarifying the impact of investments in human capital. Empirical research investment in human capital, he also J. Mincer. According to Mincer everyone with increasing duration of employment accumulated human capital in the form of greater skills and abilities. (Martincová, 2005)

1.2. Identification of Differences between the Education, Development and Learning

Education is a process during which people acquire, improve and accumulate the necessary knowledge and skills. Armstrong characterizes him as "*a continuous process, which not only improves existing capabilities, but also leads to the development of skills, knowledge and attitudes that prepare people for future broader, more demanding and in terms of the level of the above tasks.*" (Armstrong, 2007, p. 461 - 462)

Vetráková defines education as follows: "The basic aim of education is to help the organization achieve its objectives of management use and development of employee skills. This implies the training of managers designed as a continuous and systematic activity. "(Vetráková, 2006, p. 13)

Development and education go hand in hand. Human resource development is not possible without learning. It is a process in which people further develop their skills and abilities, which use to perform their jobs. Armstrong defines development as "development process that allows making progress on our present knowledge and skills to future status, which required a higher level of skills, knowledge and abilities. Takes on the form of

educational activity which prepares people for a broader, more responsible and more demanding workloads. "(Armstrong, 2007, p. 472)

Koubek development is characterized as follows: "Development is focused more on the career of an employee than it currently works performed. It changes rather its potential working skills, and creating the individual adaptable labor supply. Last but not least, shaping personality of the individual in order to better contribute to the objectives of the organization and to improve human relations in the organization. "(Koubek, 2007, p. 257)

Vetráková in his work explains the difference between development and vocational training: "According to her training helps employees mainly in the performance of their current profession, even if the benefits from that education helps in career employees and in their future careers. On the other hand, the development staff to help deal with their future obligations regardless of the current job. The development of a professional orientation of the future and is associated with the formation of professional competence and personal characteristics with the development of their careers. (Vetráková, 2006)

Armstrong stated the differences between teaching, learning and development. According to him, learning is permanent change in behavior that can occur as a result of experience or gaining new experiences. Education is the development of knowledge that is required in various areas of life and which do not necessarily relate to specific areas of work. Development, according to Armstrong growth of personal skills and potential through education and practice. Vocational training is planned and systematic shaping behavior. (Armstrong, 2002)

Hroník states very interesting insight into the process of learning, training and development. According to him teachings is a process of change involving new procedure. It organized but also spontaneous. Learning involves more than just development and education. The development is to achieve the desired changes by learning. Education is organized and institutionalized way of learning. Educational activities have a beginning and an end. We learn throughout life. (Hroník, 2007)

According Hroník learning is a broader concept than development and education, because people learn throughout their lives. Throughout life, we are constantly learning, acquiring new knowledge. Not all lessons learned and really use, some can be used in the future others will not use at all. Education, however, is the narrowest of these terms, it is clear that development includes not only education but the development requires also other activities. Hroník states *"it is clear that we are learning, albeit in education. It is also clear that we learn the undesirable things (e.g. smoking, [...]), but this hardly can be considered as developing. The development plan includes all activities that lead to the desired changes and not just about education."* (Hroník, 2007, p. 31)

1.3. Learning and Development Strategies

"Learning and development strategies are the active components of an overall approach to strategic L&D. They express the organization's intentions on how L&D activities will take place and provide guidance on how these activities should be planned and implemented. The strategies ensure that an L&D philosophy as set out above is acted upon. They are concerned with developing a learning culture, promoting organizational learning and providing for individual learning". (Armstrong, Taylor, 2014, p. 286)

Strategy for creating a learning culture

"A learning culture is one in which learning is recognized by top management, line managers and employees generally as an essential organizational process to which they are committed and in which they engage continuously. The characteristics of a learning culture are self-managed learning not instruction, long-term capacity building not shortterm fixes, and empowerment not supervision. Reynolds (2004: 9) described a learning culture as a 'growth medium', in which 'employees will commit to a range of positive discretionary behaviors, including learning'. He suggested that to create a learning culture it is necessary to develop organizational practices that 'give employees a sense of purpose in the workplace, grant employees opportunities to act upon their commitment, and offer practical support to learning'. The steps required to create a learning culture as proposed by Reynolds (2004) are:" (Reynolds, In: Armstrong, Taylor, 2014, p. 287)

- Develop and share the vision belief in a desired and emerging future.
- Empower employees provide 'supported autonomy'; freedom for employees to manage their work within certain boundaries (policies and expected behaviors) but with support available as required. Adopt a facilitative style of management in which responsibility for decision-making is ceded as far as possible to employees.
- Provide employees with a supportive learning environment where learning capabilities can be discovered and applied, e.g. peer networks, supportive policies and systems, and protected time for learning.
- Use coaching techniques to draw out the talents of others by encouraging employees to identify options and seek their own solutions to problems.
- Guide employees through their work challenges and provide them with time, resources and, crucially, feedback.
- Recognize the importance of managers acting as role models.
- Encourage networks communities of practice.
- Align systems to vision get rid of bureaucratic systems that produce problems rather than facilitate work.

Organizational learning strategy

"Organizational learning strategies aim to improve organizational effectiveness through the acquisition and development of knowledge, understanding, insights, techniques and practices. This is in accordance with one of the basic principles of HRM, namely that it is necessary to invest in people in order to develop the human capital required by the organization and to increase its stock of knowledge and skills. As stated by Ehrenberg and Smith (1994: 279–80), human capital theory indicates that: 'The knowledge and skills a worker has – which comes from education and training, including the training that experience brings – generate productive capital." (Ehrenberg, Smith, In: Armstrong, Taylor, 2014, p. 287)

Individual learning strategy

Individual learning includes processes and programs to increase the ability of individual employees. Strategy for individual learning is based on the requirements on the quality of human resources, expressed their skills, abilities and behaviors necessary to achieve organizational goals. The strategy should include: (Armstrong, Taylor, 2014)

- how learning needs will be identified;
- the role of self-managed learning;
- the facilitation of workplace learning;

• the support that should be provided for individual learning in the form of guidance, coaching, mentoring, learning resource centers, e-learning and internal or external training programs and courses;

Figure 1

Learning and development strategies

Learning and development Learning and development is the process of acquiring and developing knowledge, skills	L&D activities will take place in the organization and provide guidance on how these activities should be planned and implemented.		
capabilities, behaviours and attitudes through learning or developmental experiences.	Learning culture		
Strategic L&D Strategic L&D is an approach to helping people to learn and develop that is concerned with how the organization's goals will be achieved through its	A learning culture is one in which learning is recognized by top management, line managers and employees generally as an essential organizational process to which they are committed and in which they engage continuously.		
human resources by means of integrated L&D strategies, policies and practices. Strategic L&D	Organizational learning strategies		
aims to produce a coherent and comprehensive framework for developing people through the creation of a learning culture and the formulation of	Organizational learning strategies aim to develop a firm's resource-based capability.		
organizational and individual learning strategies.	Individual learning strategies		
Learning and development strategies	The individual learning strategies of an organization are driven by its human resource requirements, the		
Learning and development strategies are the active components of an overall approach to strategic L&D. They express the organization's intentions on how	latter being expressed in terms of the sort of skills and behaviours that will be required to achieve business goals.		

Resource: M. Armstrong - S. Taylor, Human Resources Management Practice, 2014, p. 288.

2. Strategic Development of Human Resources

Strategic development of human resources is based on business and personnel strategy. Personnel strategy defines "*focus of organization relating to the direction in which it intends to organizational procedures in creating and implementing personnel policies and procedures.*" (Armstrong, 2007, p. 149) Personnel strategy is an important part of a business strategy, since human resources are considered one of the most enterprise resource.

HR strategy defined by many authors. Armstrong stated that "the fundamental objective of the strategic development of human resources is to increase the capacity of human resources in line with the belief that the human capital of the organization is a major source of competitive advantage." (Armstrong, 2007, p. 443)

Armstrong further in his work provides a definition of D. T. Hall, which defines the strategic development of human resources as "*identification of necessary skills and active management of teaching and learning for long-term purposes, related to the explicitly formulated corporate and business strategy.*" (Hall, In: Armstrong 2007, p. 443)

Another possible definition that Armstrong states in his work is the definition of J. Walton: "Strategic development of human resources also means deployment,

decommissioning, modifying, managing and directing processes that all individuals and teams equips skills, knowledge and abilities that need to be able to meet current and future tasks required by the organization. " (Walton, In: Armstrong, 2007, p. 443)

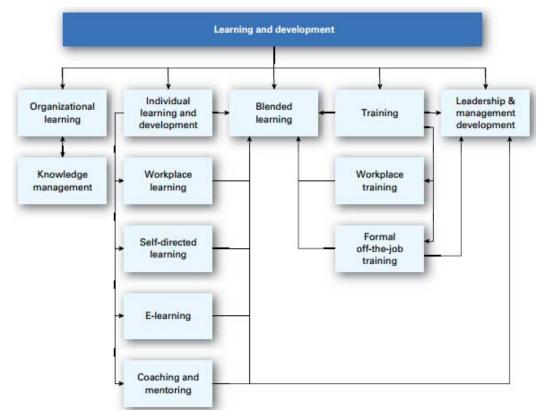
Armstrong goes on the definition of R. Harrison that strategic development of human resource is considered as "development resulting from a clear vision of the capabilities and potential of people that takes place in line with the overall strategic framework of the undertaking." (Harrison, In: Armstrong, 2007, p. 443)

These definitions are based on the business strategy as the roles and responsibilities of employees must be in line with business objectives.

HR strategy graphically shown in the following figure. The development of human resources is essential to permanent ongoing learning at the level of the organization as a "learning organization" that controls and directs the skills of their employees. But equally important is learning at the individual level, which further includes self-directed learning, e-learning, coaching and mentoring. To be effective education is very important administrative structure of education in the company. These may be both internal and external training. Developing managerial skills managers but also other employees is via vocational education / training, coaching and mentoring within the organization and beyond.

Figure 2

Strategic development of human resources



Resource: M. Armstrong - S. Taylor, Human Resources Management Practice, 2014, p. 285.

3. Conclusion

The effect of globalization most companies has expanded its business activities outside the domestic market. Increased competition has caused significant changes in the business environment. Response to global competition is select the correct strategy of management and development of human resource with aim to increase productivity and business efficiency.

The requirements for quality workforce is permanent increasing due to the onset of the knowledge society. Knowledge and creative potential of people to represent a significant source of capital. Globalization in the social and economic context of the increasing importance of human resources and take a lead knowledge and skills of people. Production factors such as land, labor and other capital are pushed into the background. Human capital cannot be separated from human, it is not consumed in the production process and represents not only add value, but also a competitive advantage for the company. However, only the effective management of human resources can brings real results. When people improperly use their strengths, they have not opportunities for professional development are not properly motivated, so they cannot be a significant added value or competitive advantage for organization.

In practice, often we faced with the fact that human resources are devoted insufficient attention. In the absence of funds in organizations it saves in the wrong place - the development of human resources. The quality of human resources is essential to the success and further development of the organization. Permanent development of human resources is essential for both the macro as well as the microenvironment. It should not reduce investments in development of human resource, as these investments return into organization than high-quality workforce.

References

ARMSTRONG, M. – TAYLOR, S. (2014). *Human Resource Management Practice*. [online]. Availabe at URL: http://otgo.tehran.ir/Portals/0/pdf/Armstrong's%20Handbook%20of%20Human%20Resource%20Management%20Practice_1.pdf>. [accessed 12.02.2016].

ARMSTRONG, M. (2002). *Řízení lidských zdrojů*. Praha: Grada Publishing, 2002. 856 p. ISBN 80-247-0469-2.

ARMSTRONG, M. (2007). *Řízení lidských zdrojů*. Praha: Grada Publishing, 2007. 800 p. ISBN 978-80-247-1407-3.

HRONÍK, F. (2005). Poznejte své zaměstnance. Brno: ERA, 2005. 370 p. ISBN-80-7366-020-2.

HRONÍK, F. (2007). *Rozvoj a vzdělávání pracovníků*. Praha: Grada Publishing, 2007. 240 p. ISBN 978-80-247-1457-8.

KACHAŇÁKOVÁ, A. – NACHTMANNOVÁ, O. (2007). *Budúcnosť riadenia ľudských zdrojov*. [online]. Availabe at URL: http://frcatel.fri.uniza.sk/hrme/files/2007/2007_2_04. pdf>. [accessed 12.02.2016].

KOUBEK, J. (2004). *Řízení pracovního výkonu*. Praha: Management Press, 2004. 209 p. ISBN 80-7261-116-X.

KOUBEK, J. (2007). *Řízení lidských zdrojů*. Praha: Management Press, 2007. 359 p. ISBN 978-80-7261-168-3.

MARTINCOVÁ, M. (2005). *Nezamestnanosť ako makroekonomický problém*. Bratislava: Edícia Ekonómia, 2005. 127 p. ISBN 80-8078-038-2.

VETRÁKOVÁ, M. et al. (2006). *Ľudské zdroje v organizácii*. Banská Bystrica: Univerzita Mateja Bela, 2006. 230 p. ISBN 978-80-8083-193-9.

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A Case for a Paradigm Shift in Economics

Marcel Čas

University of Economics in Bratislava Faculty of International Relations, Department of International Economic Relations and Economic Diplomacy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: marcel.cas@euba.sk

Abstract

This paper focuses on the application of the model of scientific inquiry by Thomas Kuhn in economics. Thomas Kuhn introduced the notion of a paradigm shift in scientific discourse. The aim of this paper is to argue that economics should undergo such a paradigm shift as well. We will use a model scenario of an entrepreneur starting and running a business to try to prove that neoclassical economics cannot adequately explain such a scenario without dropping three fundamental assumptions of neoclassical economic theory. These are the assumptions of Say's law, optimising agents and equilibrium. In this we will pursue the tradition of the heterodox postkeynesian school of economic thought. The resulting implications should provide a case for a paradigm shift in economics.

Keywords: paradigm shift, heterodox economics, fundamental assumptions *JEL classification:* B40, B50, A12

1. Introduction

Thomas Kuhn was one of the most influential methodologists of science in the 20th century (Kuhn, 1962). His principal contribution to the methodology of science was that he challenged the traditional positivist view that scientific progress occurs linearly (Nickles, 2013). According to this traditional view the sciences gradually gather knowledge over time. They accumulate a set of justified beliefs which expands and adds to older sets of justified beliefs.

Kuhn challenged this view in lieu of the history of the sciences. His approach was to look at the historical practice of the sciences and simply observe that this was not the case. Scientific progress did not progress linearly. Real scientific progress proceeds in a cyclical manner, where in a period of *normal science*, scientific practice is increasingly questioned because of newly found flaws in the old sets of beliefs, and is ultimately overturned in a period of *revolutionary science* where a new set of beliefs is formed. In time this period of revolutionary science, simply by scientific tradition and custom, becomes normal scientific practice. Then new flaws start to emerge and if the flaws are amassed and are convincing enough for the practicing scientists, then this new set of beliefs is overturned again. Such an overturning of an established set of beliefs by a new set of beliefs is called a *paradigm shift*. Such paradigm shifts occurred in physics at least twice. The first shift was from the Aristotle/Ptolemy physics of nature and of the heavenly bodies to the scientific revolution of Copernicus, Galileo, Kepler and ultimately Newton. The second shift was from the classical mechanics of Newton to the general theory of relativity of Einstein and to the quantum physics revolution.

The more interesting fact for us is whether such paradigm shifts occurred in economics. Arguably, such a paradigm shift was the shift from classical economics to neoclassical economics in the late 19th century during the marginalist revolution (Medema &

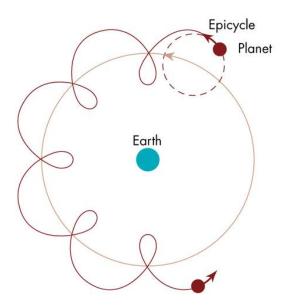
Samuels, 2003). Some could point to the birth of keynesianism as another paradigm shift. We do not think that this would be a good enough example. We hold this view because keynesianism was later made compatible with neoclassical economics in the so called neoclassical synthesis and was later even more reintegrated into the neoclassical paradigm in the rational expectations and microfoundations revolutions (Snowdon & Vane, 2005).

Later in the paper we will try to argue that neoclassical (or textbook) economics is due for a paradigm shift. However, to be able to evaluate such a proposition, we will first describe an example of a paradigm shift used by Kuhn himself. This example comes from physics and not from economics. We feel that this non-economics example is of some merit, because it enables us to grasp the essentials of a paradigm shift without trying to defend or to attack a particular position in economics that one could hold.

Let us take the model that was used to explain the movements of the heavenly bodies from antiquity until the late middle ages (Rabin, 2015). This model was based on the physics of Ptolemy and Aristotle. In this model the earth was the center of the universe and the heavenly bodies which, were perfect spheres made of the fifth element called ether were rotating around the earth. We now know that this model is false. But it would be untrue to say that this model was unsophisticated. This model was being worked on for some centuries by intelligent minds and was therefore very developed. Both at a technical level and at the level of mathematics. It is true that this basic model could not be used to explain all observed phenomena. Sometimes the heavenly bodies would move in a way this basic model could not predict. However this was known for a long time and quite intelligently dealt with. It was dealt with using the concept of epicycles. A geocentric model of the universe made up of the earth and one planet orbiting the earth via epicycles can be seen in the Figure 1.

Figure 1

The geocentric model of the universe



Source: Mayank, 2013.

It is now understood that one could build a model under the geocentric assumption that could explain or predict every possible movement of the heavenly bodies. Just by postulating appropriate epicycles (one could even build models with epicycles on epicycles). Therefore every possible combination of empirical facts or data could be explained, or retroactively derived from a geocentric model.

However the geocentric model is and was nevertheless false. It is false by virtue of postulating assumptions which are simply false. It is not the case that the earth is the center of the universe (here we do not need to consider the implications of the discovery of the uniformly expanding universe by Hubble). Likewise it is not the case that heavenly bodies are perfect (as was proved by craters observed using primitive telescopes). To come closer to the truth the scientific community was forced to undergo a paradigm shift. A process by which an old set of beliefs was interchanged with a new set of beliefs. Some fundamental assumptions of the old paradigm were needed to be dropped. Like the assumptions of the earth as a center of the universe and the perfectness of heavenly bodies.

In the next part of the paper we will describe a simple model scenario of a small-scale economic process. This economic process will be imagined using only natural language. It is essentially a story about an entrepreneur. Following this model scenario, we will argue that strictly speaking this scenario cannot be explained using neoclassical economic theory. We will try to argue that to be able to fully explain this imagined scenario we would need to drop several key assumptions of neoclassical economics. This in effect means, that we would need to undergo a paradigm shift. The model scenario is purposefully easy and basic. Using only this basic scenario will enable us to argue, that neoclassical economics is unsuitable in explaining more complex economic phenomena. It cannot explain more complex phenomena because it fails in explaining even basic phenomena.

2. The model scenario

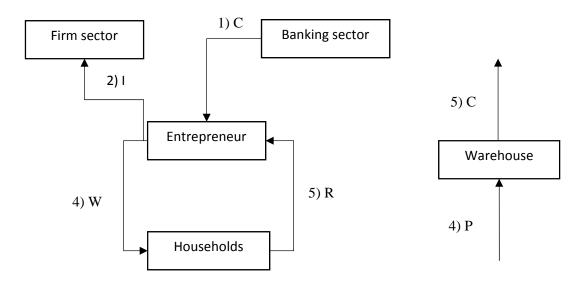
Let us imagine an entrepreneur. This entrepreneur has a great business plan. However he needs the necessary financing for this business plan. He does not have enough money saved, to be able to realize it. He will therefore go to a commercial bank. This commercial bank will try to evaluate the business plan and the solvency of the entrepreneur. Let us say that the commercial bank is satisfied with the business plan and with the prospects of the due repayment of the business loan. The commercial bank will then grant a line of credit to the entrepreneur. This entrepreneur will then go and buy the investment goods he needs to be able to produce his product. He will build a factory. He will then try to make an educated guess about the level of output he will be able to sell in the future on the market at given prices. Given that he planned a level of output he will hire as many workers as he can at given prices to be able to produce the planned level of output. The production process will take some time during which the entrepreneur cannot sell any products, because he did not produce any yet and therefore the process will be financed using the line of credit given by the commercial bank. The production process will end and the entrepreneur will have some quantity of a stock of output at his disposal. He will enter the market and try to sell all of this stock.

However he will likely not succeed. This is something he foresaw and that is why he build a warehouse where he can keep some of his unsold stock of output in the short-term. He will naturally try to sell this output at a later date. Given this market outcome the entrepreneur will have information about the present level of output he was able to sell on the market. He will therefore have more information on which he can base his future decisions. He will base his future expectations of revenue on the current and past levels of revenue. If the current revenue is high, the warehouse is emptying and the factory cannot produce any faster, then the entrepreneur will hire additional workers to speed up the production process. If the current revenue is low, the warehouse is nearly full and the factory cannot reasonably produce any slower the entrepreneur will lay some workers off. This process will, for the duration of the existence of the business enterprise, not stop. The levels of production (or output) and revenue will continually change given the market desirability of the products produced. Given that market preferences and other conditions can and do change continuously there is no reason for the entrepreneur to assume that he will someday discover a level of output and revenue that could be held constant. He will simply continuously change his level of planned output and get some level of revenue out of that production as market conditions change. This should be evaluated as a positive of the system. The system excels at flexible changes of the production process given changes in market conditions.

This scenario could be put in a simplified algorithm form out of which we could construct a schema of this scenario. Such a schema can be seen in the Figure 2.

Figure 2

The model scenario schema



Source: Authors construction

The simplified algorithm would then have the following form:

- 1) Construct a business plan and ask for a line of credit
- 2) Buy the needed investment goods (build a factory)
 - a) Construct an educated guess about the future level of sold output
- 3) Hire the appropriate number of workers
- 4) Start the production process
- 5) Sell some level of the output produced
 - b) Change your estimation of the future level of sold output given new market conditions
- 6) Repeat steps (3) 5) as long as the entrepreneur wants or can stay in business

This is a simplified algorithm of the production process and of the market mechanism. This scenario is imagined only with one entrepreneur, but this simplifying assumption could be dropped and the same scenario could be imagined on the assumption of an aggregated business sector. Now let us turn to the main aim of this paper. In the next part of the paper, we will show that this scenario cannot be fully explained on fundamental assumptions of neoclassical economic theory and that to be able to explain this scenario we would have to undergo a paradigm shift.

3. The postkeynesian critique

We will base our critique on the postkeynesian school of economic thought. The postkeynesian school is a heterodox school and is therefore in some aspects underdeveloped. However we feel that this school provides the best alternative to neoclassical economics in that this school has dropped some of the fundamental assumptions that need to be dropped to explain our model scenario.

We use the term "neoclassical school" to refer to the practice of the majority of modern economists to build models of the economy using sets of algebraic equations on the assumptions of rational expectations, utility and profit maximizing agents and of marker clearing. Sometimes this is referred to simply as "textbook economics". The postkeynesian school tries do drop these assumption, favoring models that are more descriptively realistic. If one wants to get acquainted with the postkeynesian school we can recommend books by John Edward King (King, 2004), Marc Lavoie (Lavoie, 2014) and Steve Keen (Keen, 2011).

The fist assumption that needs to be dropped is the assumption of says law (1). Says law states that aggregate demand is at all times as high as is needed for real aggregate output to be equal to potential output. This was originally justified by Say by stipulating that firms do not sell to get money, but sell to get money which they will immediately use and buy something –therefore creating demand (King, 2003). That is why this law is sometimes abbreviated into: "supply creates its own demand". Now, forgetting the obvious objection that this is clearly untrue because firms do retain some profit and shareholders do retain some money they gained in dividends, let us turn to one important implication of says law. That implication is that the economic system employs at all times all factors of production. If money immediately changes hands, than the only real obstacle in creating even more aggregate output is potential output. What does this entail for our model scenario? Says law dictates that the model scenario is not possible. Our entrepreneur employed in step 2) factors of production which were idle before he entered the market. In step 3) he employed some workers which were idle as well. This however is according to says law impossible. There are no idle resources.

It is true that most economists, which are sometimes called "keynesian" do know this absurd conclusion and address it in such a way as to say that says law does not hold in the short run, but does hold in the long run (Mankiw, 2009). This is the economic equivalent to epicycles by proto-scientific astronomers.

Is it not true that in a real dynamic economic system, new firms are being created and old firms are going bankrupt all the time? Are we really justified in thinking that says law holds in some unspecified long run? It seems obvious that most of the time, even on the scale of decades (the long run) there are idle resources and monetary savings and there would have to be or else no new firm could be established, barring equal and opposite deconstruction of some competing firm (which is a patently absurd assumption). Therefore it should be obvious that one is forced to undergo a paradigm shift and simply grant that says law is just a theoretical construction, like epicycles, that was constructed and is being kept alive for intratheoretical reasons, not for extra-theoretical reasons (we need says law for the marginalist economic methodology to function, but we do not need it to explain real economic phenomena – indeed to be able to explain real and dynamic economic phenomena says law has to be dropped). To be able to fully explain our model scenario one is forced to abandon says law in the short-run and to be able to fully explain the dynamic version of our model scenario one is forced to abandon says law in the long run as well. It serves no purpose beyond its necessity for the marginalist economic theory to work.

The second assumption that needs to be dropped is the assumption of optimizing agents (2). Neoclassical economics has it that economic agents optimize. This is summed up in the dogma of homo oeconomicus. The representative households maximizes its utility function subject to a budget constraint and then maximizes the production function of the economy (Romer, 2012). This is a theoretical construction. So much is understood even by neoclassical economists (Friedman, 1953). However postkeynesians are of the opinion that this approach has to be changed not simply because of the simplifying nature of this construction but because of the fundamental uncertainty which is essential in economic processes. Our entrepreneur in the model scenario was in steps 2) a) and 5) a) deliberating the level of expected future output that he will be able to sell. He forms some expectation based on some more or less educated guess. Note that it is impossible for him to know in advance the exact level of output he will be able to sell. However he has to fix his level of costs (number of hired workers for example) in advance. The production process takes some time and the level of total costs has to be decided and set before the production process starts. Only after the production process ends and the entrepreneur enters the market to sell his output will he know what level of revenue will be generated. So costs are determined at time to and revenue is determined at time t_1 . This is a typical situation for market processes. Economic agents face decisions which are dependent on levels of variables which are unknown, because they are concerned with future values. How can our entrepreneur maximize something he does not know? How can he decide upon the optimal choice if he does not have and cannot have all the necessary information? He simply cannot. We are forced to abandon the assumption of optimizing agents.

It is again true that most economists know this absurd implication and are subsequently trying to tinker with the basic optimizing agents model to reintroduce some kind of uncertainty into the economic model. This can be done via stochastic shocks, via adaptive or rational expectations, or via reducing uncertainty into calculable risk (Keen, 2011). These attempts are again analogous to the construction of appropriate epicycles in the geocentric model. In our view the more fruitful way would be to undergo a paradigm shift and simply accept that real economic agents cannot and do not optimize. This does not mean that economic agents are irrational. They would be if they were trying something that simply cannot be done. We can accept that they are fully rational in that they are trying the best they can to solve the given problems by available means i.e. our entrepreneur is not optimizing but is continually constructing educated guesses about future market conditions based on current market conditions (Lavoie, 2014). Therefore, to be able to fully explain our model scenario in steps 2) a) and 5) a) we have to abandon the assumption of optimizing agents.

The third assumption that needs to be dropped is the assumption of equilibrium (3). Neoclassical economic theory has it, that economic processes settle in equilibrium states. It is of course known that these equilibrium states do not hold through time, because they are disturbed from equilibrium by exogenous shocks, which force the system to search for another equilibrium state (note that this modelling strategy is valid only for sets of algebraic equations, it is not valid for sets of differential equations, where the system does not need to be pushed by exogenous shocks to be in disequilibrium through time) (Shone, 2003).

The main point which can be debated in the context of neoclassical theory is whether the search for a new equilibrium state takes time (which would roughly represent a "keynesian view") or is instantaneous (which would roughly represent a "classical view") (Snowdon & Vane, 1997). The question would boil down to the question whether prices are "sticky" (Romer, 2012).

Let us return from this highly idealized economic theory to our more grounded model scenario. Does the entrepreneur reach equilibrium? And if so, are the disturbances resolved instantaneously or take time?

There is simply no meaningful way for our entrepreneur to reach some kind of equilibrium, some kind of resting place of the economic process. Consider his decisions following step 6). At any discrete time period or continuously through time there will nearly never be a moment, when he does not need to change prices (if we assume that he is not a price taker), change the level of employed workers, change the level of production or change his expectations about the future (for a random short lived equilibrium outcome to occur our entrepreneur would need to correctly guess the level of all future relevant economic values – which again is a patently absurd assumption). The firm of our entrepreneur will never find a resting place, where there is no need to change any values anymore. This has nothing to do with the intensity of "stickiness" of prices or with exogenous shocks. This has to do with the essential dynamism of the demand-led economic process. Note that this is not a malfunction of the real economic system, it is a feature of the real economic system. It is a feature because it enables economic agents to change their decisions to suit continuously changing market conditions.

Such problems are of course recognized and to an extent understood. In neoclassical economic theory they can be dealt with using models in discrete time with sticky prices, models with exogenous stochastic shocks and by solving for uniqueness and/or stability of the given equilibria (Keen, 2011). These are again economic equivalents to proto-scientific epicycles. There is no meaningful way in which our entrepreneur faces problems of uniqueness or stability of his equilibria. He faces problems of changing market conditions which change his expectations and therefore his decisions and outcomes. This is the essence of managing an enterprise. To be able to flexibly alter ones business to suit market changes. We therefore conclude, that to be able to fully explain our model scenario we have to undergo a paradigm shift and abandon the assumption of equilibrium.

4. Conclusion

In this paper we tried to show that neoclassical economics is in need of a paradigm shift. We argued this point using a model scenario of an entrepreneur starting and running a business. We believe that this scenario cannot be adequately explained by neoclassical economics, because it rests on assumptions which are untenable. These are the assumptions of says law, optimizing agents and equilibrium. These assumption can be, and frequently are, augmented in neoclassical economic theory. We believe that this augmenting is akin to the practice of proto-scientific astronomers which were introducing epicycles into the base model of the movement of heavenly bodies because of irregularities in observed phenomena. We think that the more scientifically prudent course would be to undergo a paradigm shift and accept that these assumptions need to be dropped.

This is of course a heavy burden to bear. One would have to drop not only the assumptions but all models which were build using these assumptions. This is nearly impossible given the institutional and academic realities of modern economics. However,

even if neoclassical models will not be dropped easily or rapidly, we think that it is worthwhile to start thinking about possible alternatives. Even if the only tenable academic outcome would be a strengthening of the humility of economists.

References

FRIEDMAN, M. (1953). The methodology of Positive Economics. *Essays in Positive Economics*. The University of Chicago Press, 1953. ISBN 0-226-26403-3.

KEEN, S. (2011). *Debunking Economics: The Naked Emperor Dethroned*. Zed Books, 2nd edition. 2011. ISBN 1848139926.

KING, J. E. (2003). *The Elgar Companion to Post Keynesian Economics*. Edward Elgar Publishing, 2003. ISBN 184064 630 6.

KUHN, T. (1962). *The Structure of Scientific Revolutions*. University of Chicago Press, 3rd edition, 1996. ISBN 0226458083.

LAVOIE, M. (2014). *Post-Keynesian Economics*: New foundations. Edward Elgar Publishing. 2014. ISBN 978-1-847204837.

MANKIW, G. N. (2009). Macroeconomics. Worth Publishers. 2009. ISBN 1-4292-1887-8.

MAYANK. (2013). The Earth goes around the Sun. In: *Introduction to Science*. [online]. Available at URL: ">http://www.mayankacademy.com/sci101/earth_goes_around_the_sun/>. [Accessed 25. 2. 2016].

MEDEMA, S. G. – SAMUELS, W. J. (2003). *The History of Economic Thought*: A reader. Routledge, 2003. ISBN 0415205514.

NICKLES, T. (2013). Scientific Revolutions. In: *The Stanford Encyclopedia of Philosophy*. [online]. Available at URL: http://plato.stanford.edu/archives/sum2014/entries/scientific-revolutions/. [Accesed 25. 2. 2016].

RABIN, S. (2015). Nicolaus Copernicus. In: *The Stanford Encyclopedia of Philosophy*. [online]. Available at URL: http://plato.stanford.edu/archives/fall2015/entries/copernicus/. [Accesed 25. 2. 2016].

ROMER, D. (2012). Advanced Macroeconomics. McGraw-Hill, 2012. ISBN 978-0-07-351137-5.

SHONE, R. (2003). *Economic Dynamics: Phase Diagrams and their Economic Application*. Cambridge University Press, 2nd edition, 2003. ISBN 9780521017039.

SNOWDON, B. – VANE H. R. (1997). A Macroeconomics Reader. London: Routledge, 1997. ISBN 0-415-15716-1.

SNOWDON, B. – VANE H. R. (2005). *Modern Macroeconomics*. Cheltenhaum: Edward Elgar Publishing, 2005. ISBN 1-84542-208-2.

The Potential of Migrants' Integration in the Federal Republic of Germany and the Kingdom of Sweden

Ivana Dancáková, Nina Galanská, Zuzana Krkošková

University of Economics in Bratislava Faculty of International Relations, Department of International Economic Relations and Economic Diplomacy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: ivana.dancakova@euba.sk, nina.galanska@euba.sk, zuzana.krkoskova@euba.sk

Abstract

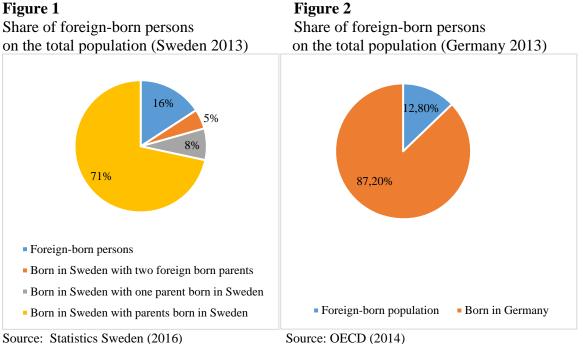
The aim of the paper is to assess the potential of the integration of migrants into the society of the Federal Republic of Germany and the Kingdom of Sweden. The comparison of the integration potential of the Federal Republic of Germany and the Kingdom of Sweden is based on the analysis of multiculturalist approach and the multiculturalism policy index, integration and segregation.

Keywords: integration, migrants, multiculturalism, marginalization, segregation JEL classification: Z10, Z18

1. Introduction

Europe is one of the regions with intense degree of immigration. Large number of immigrants choose Europe as politically, economically and socially stable place (OECD, 2003). In this paper, we focus on the examination of two largely preferred target countries of immigration - the Federal Republic of Germany (Germany) and the Kingdom of Sweden (Sweden) by using comparative analysis of different immigrant integration processes. Current statistics of Germany and Sweden shows the potential similarity in percentual share of foreign-born population of the countries.

Figure 1





In order to be able to assess the success of immigration processes, multiculturalism index is being analysed and evaluated.

2. Integration, marginalization and segregation

Integration is a process of immigrant's acceptation into society respecting the number of particular requirements for acceptance that vary greatly from country to country. (Penninx, 2003) According to the European Commission (2004), "integration is a dynamic, two-way process of mutual accommodation by all immigrants and residents of Member States". Heckmann (2006) sees the integration as the inclusion of individual migrants into existing structures of receiving society, with structural, cultural and interactive integration.

Apart from integration¹ and assimilation², there are two other acculturation strategies – marginalization (which is considered to be equal to exclusion)³ and separation (which is considered to be equal to segregation)⁴, with marginalization being, to a certain extent, more modest version of an unsuccessful acculturation strategy than segregation (Zagefka - Brown, 2002). At the same time, it is important to note that marginalization not always has less severe consequences affecting the society as a whole than segregation. Main reason for our assumption is that there is a very high probability that marginalization of immigrants could eventually lead to their separation (segregation) from the major society. This means that marginalization could cause the inability of immigrants to become an integrated part of the society (Galabuzi, 2001). Therefore we will now attempt to explain the reason behind the importance of addressing the issue of marginalization and segregation by emphasizing possible consequences of these two unsuccessful acculturation strategies.

Based on Zagefka and Brown (2002), both marginalization and separation (segregation) lead to reducing the contact between the immigrant group and major society to a minimum. Rudiger and Spencer (2003) state that marginalization of immigrants often makes them suffer economic and social disadvantages and excludes them from civic and political participation. Therefore, we could claim that there is high probability that marginalization can eventually lead to segregation. Moreover, it can also result in discrimination, racism or even xenophobia. Xenophobia, as it can be defined as "dislike of, or prejudice against people from other countries" (OED Online, 2016) is, as we assume, only one step from leading to segregation, which eventually only worsens the socio-economic situation of immigrants, hinders their civic and political engagement, basically averts building relationships between the members of the major society and immigrants and contributes to bad state-immigrants relations.

Zagefka and Brown (2002) provide in this context a very good explanation of the immigrants' acculturation strategies. They stress, that "if immigrants want to maintain their original identity but do not want to participate in or engage with members of the host society, [most likely] a strategy of separation [or to be more specific, segregation] results. Immigrants aim at assimilation if they abolish their original cultural identity and, at the same time, seek contact with members of the host community. Finally, if immigrants reject both their original culture and show no interest in having relations with members of the host community,

¹ Integration as an acculturation strategy applies when the immigrants interact with the major society but maintain their original identity. In: Zagefka – Brown, 2002

 $^{^{2}}$ The major difference between integration and assimilation is that when the immigrants want to assimilate, they do not maintain their original identity, but they decide to abolish it. In: Zagefka – Brown, 2002

³ Marginalization results when the immigrants refuse their own cultural identity and at the same time do not interact with/do not participate in the major society. In: Zagefka – Brown, 2002

⁴ The case when immigrants want to keep their original identity and do not want to engage with the host society. In: Zagefka – Brown, 2002

marginalization results." The attitudes of the majority towards immigrants and their integration, as already mentioned, can likewise differ.

The final result – the final acculturation strategy then depends on the combination (compatibility or incompatibility, consistencies and clashes) of these attitudes. This means that the "integration may lead to the best acculturative results⁵ [or], in contrast, marginalisation with its negative orientations on both the culture maintenance and contact dimensions is likely to produce the worst acculturative results" (Berry, 1997 in Zagefka and Brown, 2002). Segregation, the residential segregation in particular, is associated with marginalisation and social exclusion and the causality is often blurred (Shinn, 2010). Eventually, when the socio-economic and spatial isolation of a particular group persists for a longer period of time, the frustration of social exclusion, job market limitations and discrimination might lead to unrests.

3. From integration through multiculturalism to civic integration in the Federal Republic of Germany and the Kingdom of Sweden

Germany is considered to belong to countries with a differentialist approach (similar to Austria and Luxembourg), applying ethnically exclusionary policies with focus on individuals (Martiniello and Rath, 2014). Conversely, Sweden put a multiculturalist policy in practise, with focus on inclusion and no ethnic preferences. According Koopmans (2010), Sweden is a social-democratic type of country and Germany a conservative one.

In Germany, there has been immigration in three flows after the Second World War. The first flow mostly encompassed the *Aussiedler* (German descendants) population. These people immigrated within the initial ten years after the war. The second flow, which lasted until early 70's, meant in particular immigration of *Gasterbeiters* (guestworkers) and later of their family members too. Over the last fifty years are the immigration flows, characterized by *asylum seekers* due to relatively more liberal asylum laws than in the rest of the European countries. Typical for the integration process of German descendants was that they were given equal rights and opportunities as rest of the population and they were treated rather as part of the autochthonous population than as immigrants. This approach and process to integration is called assimilation. (Seifert, 1997)

However, the two other groups (guestworkers and asylum seekers) were considered to be a temporary labour force and therefore, on one hand, they had the right to live and to work in the country but on the other hand they had neither a chance to obtain German citizenship, nor had they rights for political participation in the country. They were only a part of certain areas of society and excluded from the others, therefore this integration model is called differential / exclusionary (OECD, 2003). Obvious lack of integration programs for the group of immigrants which consisted of guestworkers and asylum seekers together with their increasing numbers due to successful family reunification programs began to create problems.

In comparison, Sweden has established a coherent integration policy framework with precisely defined policy objectives. Sweden has declared that the integration policy is an indispensable part of immigration policy. Moreover, the objective of the Swedish integration policy has been shaped by holistic approach, which emphasizes the interconnectedness of all dimensions concerning integration, namely legal, economic, social, and cultural dimension. The most significant migration flow to Sweden within the first twenty years after the Second

⁵ "Because immigrants share a common identity with the host majority and yet are still able to distinguish themselves from the majority in a positive way (Gaertner & Dovidio, 2000; Hewstone & Brown, 1986)." In: Zagefka and Brown, 2002

World War was characterized by the labour immigration. Sweden adopted the assimilationist model. In spite of the assimilationist approach imposed on immigrants to abandon their origins, it provided more or less equal conditions on legal and economic terms for immigrants. Taking into account the fact that no exclusionist policies were ever developed in Sweden, the convergence to multiculturalism was relatively smooth. The main principle of the multiculturalism model assumes the goal of integration process to be promoting civic unity while protecting ethnic diversity in the society. (Seiffert, 1997)

Based on the above comparison we observe various patterns of change in diversity policies and integration policies in both Germany and Sweden. Therefore, we consider it necessary to note, that the usage of the term diversity policy is currently among politicians being preferred over the term multiculturalism policies (Banting, Kymlicka, 2012). The reason for us to mention this fact is a number of ongoing debates about the failure of multiculturalism.

To compare the multicultural approach of both selected countries – Germany and Sweden, we use the Multiculturalism Policy Index (MCP Index) which allows us to measure strength of multicultural policies applied in countries within years 1980-2010.

The MCP Index is based on a range of public policies and distinguish the eight following indicators: "constitutional, legislative or parliamentary affirmation of multiculturalism, at the central and/or regional and municipal levels; the adoption of multiculturalism in school curriculum; the inclusion of ethnic representation/sensitivity in the mandate of public media or media licensing; exemptions from dress-codes, either by statute or by court cases; allowing of dual citizenship; the funding of ethnic group organizations to support cultural activities; the funding of bilingual education or mother-tongue instruction; affirmative action for disadvantaged immigrant groups." (Banting, Kymlicka, 2012)

To assess the strength and evolution of multiculturalism in Germany, we have used the above mentioned MCP Index. According to the data provided by the assessment of MCP Index, Germany scored weakly. This means that there is only weak influence of applied multicultural policies on integration. (Tolley, 2016) Although Germany has not positioned itself as an immigration country, the immigration to Germany has always been a highly politicized issue. In 2004, the Residence Act presented the integration as a joint responsibility of an immigrant and the state. This practically means that the foreigners have to learn about the German way of life without the states' assistance. Despite of that, a basic package of integration courses has been offered, in order to facilitate the process of the immigrants' integration. The act at the same time required that the government should develop an integration plan. As a result of that, National Integration Plan was released in 2007. Some of commitments included in this plan appear to be derived from multicultural principles but, again, multiculturalism is not mentioned explicitly. (Bundesregierung, 2007 in Tolley, 2016) Despite of the fact that education is considered to be the states' responsibility, intercultural education is neither a part of the school curriculum, nor has the state introduced educational programmes targeting ethnic minority groups. We see this as an important issue, since children, especially with migrant background, have lower educational attainment. (Miera, 2008 in Tolley, 2016) There is an observable effort of a great amount of media that try to promote integration through radio channel broadcasting in foreign languages. Some public broadcasters also produce several programs targeting ethnic minorities. There is a certain tolerance of cultural differences and specifics, especially regarding dress/code and statute. Muslim girls for example have the permission to wear their hijab and at the same time are allowed to abstain from swimming or physical education lessons which involve boys. There are also some other examples, such as that Muslim and Jewish students are permitted to remain at home on religious holidays, or that most schools offer pork-free lunches. (Leise, 2007 in Tolley, 2016) We consider it important to note, that German citizenship can not only be obtained by descent but is also granted at birth. Nonetheless, the requirements for naturalization became much more stringent (language test, knowledge of the country's values and norms, respect of law). At the same time, the already naturalized citizens are required to denounce their prior citizenships. The impact of Immigrant associations (that are quite common in Germany) on the immigration policies development and their delivery, is recognizable. In terms of language ability, the level of the immigrant students' German is taken into account. For non-German speaking students, teaching in separate classes by migrant teachers, who are using their mother tongue is mostly ensured. Last but not least, the German General Equal Treatment Act (2006) prohibits discrimination and at the same time allows the adoption of affirmative action programs. (Bundesregierung, 2007 in Tolley, 2016)

For the last thirty years, Sweden has sought to develop an immigration policy based on integration principles (adopted in 1997) and subsequently also on multiculturalism principles. According to the data obtained from the evaluation of MCP Index, Sweden, on the contrary to Germany was among the countries that scored well. This means, that the immigrants are able to achieve the same standard of living as the native-born. There is an opportunity for all inhabitants, widely promoted by the Swedish public institutions, to attain both participation and equality in society. (Soininen, 1999 in Tolley, 2016) The main goal of the integration policy of Sweden is to ensure equal rights, duties and opportunities for all, regardless of their ethnic and cultural background. Consequently, multicultural principles have been integrated into the school and schooling environment in accordance with the democratic principles. The focus has mainly been laid on interculturalism and the learning of languages. (National Agency for Education, 2006 in Tolley, 2016) In 1996, The Radio and Television Act reflected the fundamental concepts of a democratic society, particularly the principle that all persons are of equal value and the freedom and dignity of an individual. (Yoshiko, 2009 in Tolley, 2016) As regards dual citizenship, on the contrary to Germany, it was permitted when the Act on Swedish Citizenship came into force in 2001. In 2006, the government allowed Swedish police officers to wear turbans, headscarves and Jewish skullcaps (kippah) instead of the standard-issued cap. (Ministry of Integration and Gender Equality, 2010 in Tolley, 2016) The government has also provided grants to immigrant and ethnic minority organizations. These have mostly included subsidies to the ethnic press, to ethnic organizations, and to organizations dealing with integration issues. A new language law was introduced in 2009. People with mother tongue different from Swedish are, based on this law, given the opportunity to maintain and use their first language. In addition to combating discrimination on the basis of gender, ethnic origin, religion or belief, disability and sexual orientation, the new Anti-Discrimination Act (2008) adds two other criteria - transgender identity and age. The act applies to the sphere of education, social services, housing, health care and consumer goods. It also extends to the protection of public, military and civil service areas that were not previously covered. Nevertheless, multiculturalism in Sweden, considering the currently ever increasing number of newcomers' population, is under a strong criticism for its inefficacy in the immigrants' social inclusion. (Camauër, 2003 in Tolley, 2016)

Overall, Sweden, in the area of establishing a coherent integration policy, stands out as more successful in comparison to Germany. This claim is based on Sweden's utilization of a particular theoretical model. The empirical data show that Sweden has already developed a coherent policy framework in which the problems are well defined and policy objectives are set out clearly. The systematic policy implementation process has already started (almost thirty years ago). On the other hand, Germany has developed certain policies which could enhance the integration process, but has not yet succeeded to establish a consistent framework with clear objectives. (Tolley, 2016)

Since multiculturalism supports and strengthens diversity, there is a strong conviction nowadays that it has failed. Governments of the countries are therefore turning away from multicultural approach and start to prefer an alternative approach adapting diversity – civic integration. There are many reasons why multiculturalism is blamed for its failure. Banting and Kymlicka (2012) mention the most important ones, such as "residential ghettoization and social isolation of immigrants; poor economic integration of immigrants; poor educational outcomes of their children; high dependence on welfare; illiberal practices perpetuation amongst immigrant groups, often involving restriction of girls' and women rights and liberties; political radicalism, especially among Muslim youth and so on." Another approach is currently implemented in various countries with initial multiculturalist approach, namely the civic integration. Civic integration is mostly based on active immigrant integration into the economic, social and political sphere, defence of liberal democratic principles, insistence to learn the language, history, norms and institutions of the host country, and on the introduction of written citizenship tests and loyalty oaths (Joppke, 2007). Possible solution lays probably somewhere between multiculturalism and civic integration. According to Kymlicka (2001), this depends on two factors: "the level of pressure brought to bear on immigrants; and the openness of the national identity of the country to diversity."

Germany has adopted forms of integration that are mostly compulsory and assimilationist. But since this is country that never embraced multiculturalism in the first place, the new policy cannot be considered as a retreat from multiculturalism. (Kraus, Schönwälder, 2006) By contrast, Sweden with long-standing multiculturalism policy, has adopted forms of civic integration policy that are more voluntary and pluralistic.

4. How segregated are we? Examples from the Kingdom of Sweden and the Federal Republic of Germany

European segregation of non-citizens does not necessarily mean neighbourhoods with one ethnic group being prevalent. Much more it is the residential segregation between the autochthonous group and mix of minority groups (Aldén, Hammarstedt and Neuman, 2015). According to Massey and Denton (1988), segregation is not measurable with one index because of its multidimensionality. They suggest 5 dimensions of segregation, evenness, exposure, concentration, centralization, and clustering, each of them measured by a group of indices. Methodology suggested by them is widely used, either by selecting one, more or all dimensions in order to evaluate the segregation rate in particular areas.

The rise of income inequality in Malmö from 1991 until 2010 was influenced mostly by the inequality of distribution of labour market earnings, pensions and capital incomes. When comparing neighbourhoods within the Malmö city area in 1991 and 2010, the household inequality gap among the neighbourhoods present in 1991 was further widened in 2010, which was to a high extent the result of the overall household income inequality increase, the changing composition of the neighbourhoods including higher share of minorities was only one of the less influencing factors (Scarpa, 2014). Income inequality is thus not only the outcome and impact of neighbourhood segregation, but it might be the trigger for the neighbourhood segregation, leading to creation of neighbourhoods with similar income ratios. This confirms partially also the study by Sager (2012) in Germany, where the similarity of neighbourhood's socioeconomic characteristics follows the same pattern for members of majority as well as minority, leading to residential sorting followed by segregation based on socioeconomic factors. On the other hand, this does not exclude the social barriers as one of the important factors by assessing the intergroup interactions.

In Germany, the case of Frankfurt reveals decrease in history in ethnic segregation measured by the index of segregation (measuring the evenness as dimension, refers to the distribution of foreign population relative to the native population across neighbourhoods). Between 1988 and 2000 the index decreased by 4 points (where 0 refers to no segregation and 100 to absolute segregation) (EFILWC, 2009). In Sweden, the case of Stockholm shows the historical development of the index of dissimilarity increasing from 17 points in 1960 to 38,8 points in 1995 together with housing segmentation increase by almost 13 points from 1970 to 1990 (Murdie, Borgegard, 1998).

Perceived feeling of residential segregation might be also obtained from the responses of citizens, evaluating their immediate neighbourhood. Although the neighbourhood is ethnically mixed, it might show the potential segregation due to the absence of the majority in the area. The development of segregation and the comparison of Germany and Sweden shows Table 1.

Table 1

People of minority race/ethnic group in	Germany	Germany	Sweden	Sweden
current living area/ Country	2002	2014	2002	2014
Almost nobody minority race/ethnic group	12,6	18,3	44,2	33,5
Some minority race/ethnic group	57,3	51,9	37	45,9
Many minority race/ethnic group	30,1	29,8	18,8	20,6
Total	100	100	100	100
N=	245,4	337,1	208	233

Perceived neighbourhood ethnic composition of non-citizens

Source: European Social Survey 2002 and European Social Survey 2014

Notes: Design weight applied. Data include only respondents who answered negatively the question if they were born in the country of their residence.

Table 1 allows two possible comparisons, of countries and of years. Interesting facts appear when assessing the increase in the first category in Germany and decline in Sweden. Category represents the neighbourhood with prevalence of autochthonous inhabitants. The state from the 2002, where most of the immigrants perceived their living surroundings as inhabited by majority members shifted towards more diverse environment with the observable presence of various ethnic groups. But in both countries is the rate of migrants living in surroundings consisting mostly of minorities' members vary between one fifth and almost one third, leading to the conclusion, that self-perceived residential segregation does take place in both of the countries, whereas in Germany the trend is decline and in Sweden the trend is the growth of such neighbourhoods.

The self-perception of segregated neighbourhoods is also underlined by the data describing risk of poverty or social exclusion, whereas a drop is obvious in percentage of third-country nationals in Germany between 2006 and 2014 (Table 2).

Table 2

People at risk of poverty or social exclusion by broad group of country of birth (in %)

	Germany	Germany	Sweden	Sweden	
Country of birth/ Country of residence	2006	2014	2006	2014	
EU-27/28-countries except reporting					
country	14,5	17,4	20,7	24,1	
Non EU27-countries nor reporting country	33,9	26,7	39,7	38,0	
Reporting country	19,9	20,7	13,0	14,2	
Source: FUROSTAT		•			

Source: EUROSTAT.

In conclusion, the data, figures and information show trend of increased risk of social exclusion and segregation in Sweden in the past decades. On the other hand, Germany manages to maintain or even decrease the level of existing or perceived exclusion, marginalisation and segregation.

5. Conclusions and Implications

In the paper we focused on the analysis of the integration potential of Sweden and Germany. Our aim was to compare the Kingdom of Sweden and Federal Republic of Germany. The comparative analysis of the countries shows the differences in the models and approaches of the countries, derived also from the nature and history of the immigration to the countries. Sweden as a socio-democratic type of a state adopted multiculturalist policies, later gradually shifting to civic integration. Germany as a conservative type of state based on ethnic preferences adopted differentialist or exclusionary policies, but adopted those to new circumstances and inclusion of different generations of migrants living in Germany. Segregation in both of the countries is an issue not only on the level of self-perception of foreign-born citizens but also in practice on local levels concerning municipalities. In combination with the information on risk of poverty and social exclusion, perceived neighbourhood composition and case studies from municipalities we can conclude that Germany shifts towards a better management of segregation and exclusion, although this might be also due to the possibly unfavourable conditions set at the beginning and in the history (the exclusivist policies based on ethnic preferences). On the other hand, Sweden with rather open and inclusive policies offering quite lot of benefits for all types and kinds of migrants and refugees tends to shift towards a higher risk of segregation whether on local level or national level, be it self-perceived segregation derived from the perception of composition of the neighbourhoods where migrants live or the risk of poverty and social exclusion of the third-country nationals. Further research is needed in order to find the causal relations as well as comparable results on national level reflecting current situation in terms of segregation index, index of marginalisation as well as the multiculturalism policy index. This could contribute to the identification of flaws and weak spots in practical application of policy concepts.

References

ALDÉN, L. – HAMMARSTEDT, M. – NEUMAN, E. (2015). Ethnic Segregation, Tipping Behavior, and Native Residential Mobility. In *International Migration Review*. Vol. 49, No. 1. pp. 36–69.

BANTING, K. – KYMLICKA, W. (2012). Is There Really a Backlash Against Multiculturalism Policies? New Evidence from the Multiculturalism Policy Index. GRITIM Working Paper Series n. 14. Available at URL: https://www.upf.edu/gritim/ _pdf/14_wp_banting_kymlicka.pdf>. [accessed 16.02.2016].

European Commission (2004). *EU actions to make integration work*. [online]. Available at URL: https://ec.europa.eu/migrant-integration/the-eu-and-integration/eu-actions-to-make-integration-work>. [accessed 16.02.2016].

European Foundation for the Improvement of Living and Working Conditions (EFILWC) (2009). *Housing and segregation of migrants. Case study: Frankfurt, Germany.* Ireland: CLIP Network, 2009. EF/09/49/EN 3. 34 p.

European Social Survey Round 7 Data (2014). Data file edition 1.0. Norwegian Social Science Data Services, Norway – Data Archive and distributor of ESS data for ESS ERIC.

European Social Survey Round 1 Data (2002). Data file edition 6.4. Norwegian Social Science Data Services, Norway – Data Archive and distributor of ESS data for ESS ERIC.

EUROSTAT. People at risk of poverty or social exclusion by broad group of country of birth (population aged 18 and over). Available at URL: . [accessed 29.2.2016].

GALABUZI, G. E. (2001). Canada's Creeping Economic Apartheid. The economic segregation and social marginalisation of racialised groups. [online]. Available at URL: http://www.socialjustice.org/pdfs/economicapartheid.pdf>. [accessed 28.05.2016].

HECKMANN, F. (2006). *Integration and integration policies*. [online]. Available at URL: <<u>http://www.efms.uni-bamberg.de/pdf/INTPOL%20Final%20Paper.pdf</u>>. [accessed 16.02. 2016].

JOPPKE, C. (2007). *Immigrants and civic integration in Western Europe*. Belonging. [online]. Available at URL: http://irpp.org/wp-content/uploads/2014/08/joppke.pdf>. [accessed 16.02.2016].

KOOPMANS, R. (2010). Trade-Offs between Equality and Difference: Immigrant Integration, Multiculturalism and the Welfare State in Cross-National Perspective. In *Journal of Ethnic and Migration Studies*, Vol. 36, No.1, pp. 1-26.

KYMLICKA, W. (2002). Multiculturalism and Minority Rights: West and East. *Journal on Ethnopolitics and Minority Issues in Europe*. Issue 4/2002. ISSN 1617-5247.

MARTINIELLO, M. – RATH, J. (2014). An Introduction to Immigrant Incorporation Studies: European Perspectives. Amsterdam: Amsterdam University Press ISBN 978-90-8964-648-4.

MASSEY, D. S. – DENTON N. A. (1988). The Dimensions of Residential Segregation. In *Social Forces*. Vol. 67, No. 2. pp 281-315.

MURDIE, R. A. – BORGEGARD, L. E. (1998). Immigration, Spatial Segregation and Housing Segmentation of Immigrants in Metropolitan Stockholm. In *Urban Studies* Vol. 35, No. 10. pp. 1869-1888.

OECD. (2003). Economic and social aspects of migration. In *Migration*. [online]. Available at URL: http://www.oecd.org/migration/mig/15516956.pdf>. [accessed 10.02.2016].

OECD. (2014). Foreign-born population (indicator). In *Migration*. [online]. Available at URL: http://dx.doi.org/10.1787/5a368e1b-en>. [accessed 10.02.2016].

OED Online (2016). *Marginalization; Segregation; Xenophobia*. [online]. Oxford University Press. Available at URL: http://www.oed.com/viewdictionaryentry/Entry/11125 [accessed 20.02. 2016].

PENNINX, R. (2003). Integration: The Role of Communities, Institutions, and the State. *In Migration Policy Institute*. [online]. Available at URL: http://www.migrationpolicy.org/article/integration-role-communities-institutions-and-state. [accessed 16.02.2016].

RUDIGER, A. – SPENCER, S. (2003). Social Integration of Migrants and Ethnic Minorities. Policies to Combat Discrimination. In: *OECD. (2003). The Economic and Social Aspects of Migration*. [online]. Available at URL: Available at: http://www.oecd.org/migration/mig/15516956.pdf>. [accessed 15.02.2016].

SAGER, L. (2012). Residential Segregation and Socioeconomic Neighbourhood Sorting: Evidence at the Micro-neighbourhood Level for Migrant Groups in Germany. *In: Urban Studies. Vol.* 49, No. 12. pp. 2617 – 2632.

SCARPA S. (2015). The impact of income inequality on economic residential segregation: The case of Malmö, 1991–2010. In *Urban Studies*. Vol. 52, No. 5. pp. 906–922.

SEIFFERT, W. (1997). Admission Policy, patterns of migration and integration: The German and French Case are compared. *In Journal of Ethnic and Migration Studies*. New Community, Vol: 23. No: 4, p. 441-460. ISSN 1369-183X.

SHINN, M. (2010). Homelessness, Poverty and Social Exclusion in the United States and Europe. In: *European Journal of Homelessness*. Vol 4, pp. 19-44. ISSN 2030-2762.

Statistics Sweden (2016). *Foreign-born persons in Sweden by country of birth, age and sex. Year 2000 – 2015.* [online]. Available at URL: http://www.statistikdatabasen.scb.se/pxweb/en/ssd/START_BE_BE0101_BE0101E/UtrikesFoddaR/?rxid=bee6b554-a2fc-49e3-82cd-e084678dfdbf">http://www.statistikdatabasen.scb.se/pxweb/en/ssd/START_BE_BE0101_BE0101E/UtrikesFoddaR/?rxid=bee6b554-a2fc-49e3-82cd-e084678dfdbf. [accessed 10.02.2016].

Statistics Sweden. (2016). *Foreign/Swedish background*. Available at URL: <<u>http://www.statistikdatabasen.scb.se/pxweb/en/ssd/?rxid=51aa0017-84d2-4a57-99d6-</u>f55ef0959094>. [accessed 10.02.2016].

TOLLEY, E. (2016). *Multiculturalism Policy Index: Immigrant Minority Policies*. Ontario: Queen's University at Kingston. [online]. Available at URL: http://www.queensu.ca/mcp/sites/webpublish.queensu.ca.mcpwww/files/files/immigrantminorities/evidence/ImmigrantMinoritiesEvidence2016web%281%29.pdf>. [accessed 16.02.2016].

ZAGEFKA, H. – BROWN, R. (2002). The Relationship between Acculturation Strategies, relative Fit, and Intergroup Relations: Immigrant-majority Relations in Germany. In *European Journal of Social Psychology*. Vol. 32, No. 2. pp. 171-188.

The Issue of Index Replication in the Context of Tracking Error

Michaela Dorocáková

University of Economics in Bratislava Faculty of National Economy, Department of Banking and International Finance Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: michaela.dorocakova@gmail.com

Abstract

The main sense of collective investment in the form of mutual funds is an effective risk diversification by allocation of available funds into several assets. Mutual funds in general allow to the decision-makers to monitor the actual market situation. Moreover, index funds, which are passively managed, provide advantages of cost minimisation and gain often higher return compared to actively managed funds. The aim of this article is to outline problems of index funds with an emphasis on tracking error, to describe its sources and to demonstrate it to the selected index fund.

Keywords: passive investment strategy, index funds, tracking error *JEL classification*: F 21, G 11, G 23

1. Introduction

Passive investment strategy is the opposite of active investing, which is based on technical, fundamental or psychological analysis. This analysis is used to determine undervalued respectively overvalued stocks and events that affect the price of financial instruments. Index funds due to their passive character, which minimizes movements in the portfolio, offer the opportunity to avoid the higher fees and trading costs that make the yields lower. Despite of or thanks to passive management they usually outperform actively managed portfolios. Therefore, there is no point to effort on outperforming the market average, which is expressed in the idea, that if you cannot beat them, join them. Except of that, these funds are a suitable way how to eliminate risk by investing into the number of financial instruments, respectively shares covering the whole market of selected countries, specific part of industry or some area focused on specific personal beliefs, which fits the investors' needs and preferences.¹

Index funds were conceived in 1970s, but significantly gained on the popularity in recent years, concurrently with the development of new types of index-based instruments. Under this term it is understood open-end investment fund, which is built to replicate a certain index. It combines elements of open-end mutual funds and investment funds called OEICS². The main goal of index trading is to create a portfolio that will copy the performance of selected index. We will achieve this by picking up all the titles from the selected index in such proportion in which they are represented in the index.

¹ Index acts as a market benchmark that reflects progress in the market and presents the weighted average market price of the relevant asset, normally shares.

² Open-end investment trusts.

2. Index fund's performance, tracking error and its sources

Performance of index funds and especially fund managers' ability to copy the profitability of the underlying index is evaluated by a tracking error. It is characterized as the extent, to which the returns of the fund relatively differ from yields of the relevant index that has been replicated, respectively as a standard deviation of these differences. In contrast, some authors (Lin & Mackintosh, 2010) consider relative performance to be much better indicator or tool for evaluation of index fund's efficiency than tracking error measurement.

The revenue from index funds is reinvested in further instruments of a particular index, so they could be identified as growth funds. It should be mentioned, that the yield of the fund includes particularly (Pilch, 2004):

- profits from ownership of securities;
- return on capital;
- interest on bank account and other income (from futures, etc.).

2.1 Index replication and its threats

Abovementioned strategy of indexing is not as passive as it would appear at first. In order to track the returns and also the risk of selected index, fund managers have to focus on minimization of tracking error. Sometimes it could lead to inefficiency of portfolios and losses for investors into the index funds, because managers do not conduct transactions that are not in accordance with error elimination despite the fact that these transactions might bring higher returns to investors. Thus, it could pose as an objective, when there is a goal of replicating the benchmark to the largest possible extent, but as a constraint as well. Tracking error as a constraint appears also at index tracking however with active strategy, which is aimed at outperforming the index and subsequently complying with the conditions of risk corresponding with this benchmark. These strategies differ from each other mainly in composition of total risk exposure (El-Hassan & Kofman, 2003). While both strategies causes incidental risk, the active strategy of index tracking incurs also intentional risk, which involves systematic risk and stock specific risk.

When the index fund outperforms or underperforms the benchmark index, it indicates that the manager fails his stated goal. The normal level of replication mistake³ for the common index funds is 0 % and lower than 2 % for enhanced index funds, when it is measured as standard deviation on annual basis. However, tracking error has got a tendency to be on the increase with the higher volatility of underlying index and practically it will never be at zero. We could identify two components of tracking error (Frino et al., 2004) according to its formation and the possibility to control it by managers:

- exogenous tracking error;
- endogenous tracking error.

Endogenous error is caused by independent managers' decisions, thus it is under their control, another component is not directly influenced by them and is accompanied by design of underlying index, i.e. changes in the index composition and maintenance procedures. Just the index composition and changes in its constituents are one of the significant sources of differences between the returns of the benchmark and returns of the fund's portfolio.

³ According to Vardharaj, Fabozzi and Jones (2004).

2.2 Sources of tracking error

The deviations in index copying within the meaning of tracking error are mainly based on liquidity. The fund managers have to incur fees that are paid to market makers in the case of purchasing a huge amount of assets or selling them by redemptions when there is not enough liquidity. In the context of redemption there occurs another source, namely due to that the index fund should have available sufficient amount of free resources, so this cash could not be invested, what reduces the returns. Similarly if there is not possible to invest immediately all inflowing funds. Another transaction costs and fees are caused by changes in composition of underlying index. The more constituents are added to or deleted from the index, the larger space is created for growth of differential returns⁴ and the managers have to make an effort to keep them at the lowest level as is possible. In addition, with the higher number of shares in the benchmark increases the likelihood of more frequent reconstitution of the index. However, the determinant of tracking error is not only number of titles as well as the market capitalization. In practice, it was confirmed that there are fewer changes required for the large-cap indices compared to small-cap indices. Changes in indexes have been examined also in the context of losses to investors into the index funds. Trinity of professors (Chen et al., 2006) in their study concludes that these investors incur losses due to arbitrage activity which is allowed thanks to the changes in the composition of index⁵. We distinguish between involuntary, when the company gives up exist publicly, for example due to bankruptcy, liquidation, merger, etc. and voluntary changes, where a company ceases to meet the criteria for inclusion into the index. Arbitrages are possible on condition that these changes are not only transparent, but also announced sufficiently in advance of the effective day, index is used for passive index tracking and index fund's managers are constrained to tracking error elimination. Early announcements of index changes however are necessary for managers in order to customize it to their portfolios. In the event that the managers do not have to focus on this goal and would make transactions according to strategy⁶ defined by the authors, the funds would generate higher returns in the period 1989 – 2002 and, surprisingly, at the comparable level of risk. It means that current requirements on the one hand limits the risk-taking propensity of decision-makers, on the other hand limits the benefits for investors. That is the reason why the question appears, whether the requirement of differential return minimization is really useful and efficient and whether it should not be allowed positive differences if the portfolio's risk will not be increased.

Other group of costs when investing into index funds is management fees, which usually represent a major proportion of the expense ratio. Based on the analysis of 198 U.S.-domiciled, exchange-traded funds Rowley and Kwon (2015) found that the expense ratio is not only an important element with a negative effect on funds' excess returns, but also that higher expense ratios have been connected with higher tracking error.

Vardharaj et al. (2004) highlights another determinants of tracking error, namely portfolio beta, sector deviations from the benchmark or differences in style of index fund relative to benchmark. As we previously outlined, also the volatility of underlying index has got an impact on tracking error.

⁴ Differential return is defined as difference between return of the fund and return of the replicated index.

⁵ They have examined changes and subsequent losses to investor who invest into the index funds that track S&P 500 and Russell 2000 on a sample between 1989 and 2002.

⁶ The strategy was to buy added stocks one day after the day of announcement of change and to sell deleted stocks 60 days after the effective day for index S&P 500 and to buy added stocks on 1st June and to sell excluded stocks on 31st August in that year for index Russell 2000.

To sum up, the major sources of tracking error are:

- liquidity cost associated with redemption and limited immediate investment of inflowing funds;
- fees and transaction cost connected with investing of incoming funds, redemption and index reconstitution;
- cash holdings;
- different characteristics between index fund and benchmark index;
- changes in benchmark index.

3. Selected index fund and its tracking error

There is a wide range of ways how to calculate the tracking error of funds. It is usually done by calculating monthly or quarterly net asset values of index fund and relevant index values. It could be measured also on the basis of daily return, correlations or volatility.

In this article we will examine the tracking error of selected index mutual fund by The Vanguard Group during the period of past ten years using the formula of tracking error based on the annual total returns⁷ according to Ammann and Zimmermann (2001):

$$TE = \sqrt{\frac{1}{N-1} \times \sum (Rp - Rb)^2}$$
(1)

3.1 Specification of selected index fund

For our examination we have chosen a large-cap mutual fund, namely Vanguard 500 Index Fund Admiral Shares (VFIAX)⁸ incepted on 13th November 2000 with the S&P 500 as benchmark index, which covers about 75 % of US stock market including companies with large capitalization from several industries, so this fund offer sufficiently diversified exposure to the stock market. Consumer discretionary (12.80 %), companies from the field of consumer staples (10.60 %) and energy (6.60 %)⁹ have got the largest share in the fund. It is a low-cost fund with a expense ratio at the level of 0.05 %¹⁰. The company shows, that it is by 95 % lower than the average rate of funds with similar portfolios, as this achieves about 1.03 %. The company charges neither purchase, nor redemption fee. The expense ratio is the annual fee that the fund charges to its shareholders. It expresses the percentage of assets deducted each fiscal year for fund expenses, including administrative and management fees, operating costs and all other asset-based costs incurred by the fund. This fund requires minimum initial investment of 10 000 USD and has got level of risk 4¹¹.

3.2 Performance differences and tracking error

For the period 2001 - 2015 we have calculated tracking error for Vanguard 500 Index Admiral Shares on the level of 0.0649 %, while the standard deviation of differential return is $5.998*10^{-4}$. The annual returns of fund and underlying index as well as their differential returns we could see on the graph (see Figure 1). The data are presented in the table, too (see

 $^{^{7}}$ N – number of observations, Rp – return for the tracking portfolio of the fund, Rb – return for benchmark portfolio

⁸ The Vanguard Group, [online] Accessible from

<https://personal.vanguard.com/us/funds/snapshot?FundId=0540&FundIntExt=INT>

⁹ As of January 31, 2016.

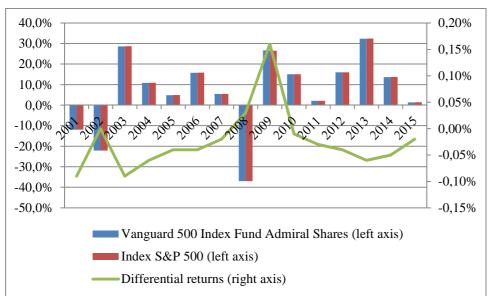
¹⁰ According to the data on April 28, 2015

¹¹ On a scale of 1 to 5, 5 being the highest risk investment.

the Table 1). The hypothesis that with higher volatility of the benchmark the tracking error increases has been confirmed, as the highest differential returns are recorded precisely in times of highest annual revenues, especially in the case of positive returns.

Figure 1

Annual returns of Vanguard 500 Index Fund Admiral Shares and S&P 500 Index and differential return in the period from 2001 to 2015



Source: own processing, data extracted from Yahoo Finance: S&P 500; The Vanguard Group. [online]. Accessible at URL: http://finance.yahoo.com/q/hp?s=%5EGSPC+Historical+Prices, https://personal.vanguard.com/us/funds/performance?FundId=0540&FundIntExt=INT#tab=1.

Table 1

Annual returns of Vanguard 500 Index Fund Admiral Shares, S&P 500 Index and their differential return

	Annual returns of	Annual returns of 500	Differential
Year	S&P 500 Index	Index Fund Adm	return
2001	-11,89%	-11,98%	-0,09%
2002	-22,10%	-22,10%	0,00%
2003	28,68%	28,59%	-0,09%
2004	10,88%	10,82%	-0,06%
2005	4,91%	4,87%	-0,04%
2006	15,79%	15,75%	-0,04%
2007	5,49%	5,47%	-0,02%
2008	-37,00%	-36,97%	0,03%
2009	26,46%	26,62%	0,16%
2010	15,06%	15,05%	-0,01%
2011	2,11%	2,08%	-0,03%
2012	16,00%	15,96%	-0,04%
2013	32,39%	32,33%	-0,06%
2014	13,69%	13,64%	-0,05%
2015	1,38%	1,36%	-0,02%

Source: own processing, data extracted from Yahoo Finance: S&P 500; The Vanguard Group, [online] Accessible at URL: http://finance.yahoo.com/q/hp?s=%5EGSPC+Historical+Prices, https://personal.wanguard.com/us/funds/performance?FundId=0540&FundIntExt=INT#tab=1.

Performance differences are caused doubtlessly by style dissimilarity, too. The tracking portfolio consists of 507 shares contrast to the benchmark portfolio, which is made up of 504 components. Index fund compared to the index invests more funds into companies from the field of finance and, conversely, less into companies from consumer discretionary. Portfolios are the same in the remaining constituents. During the observation period the index changes were made mainly because of takeovers and acquisitions and in order to make the index up to date due to market capitalization changes. In total, there were more than 250 changes and the most constituents have been replaced in 2007 and 2008. It might seem a little bit confusing, why in the times of the highest number of changes the differential returns in absolute value are not at the highest level. In our opinion this results from the fact that since October 1989 changes in index composition used to be announced before their implementations, which allows to the decision-makers to prepare for them.

As The Vanguard Group alleges (The Vanguard Group, 2012), a hypothetical investment of 10 000 USD into this mutual fund with an annual rate of return of 9% over a period of 10 years will incur cost of just 118 USD, compared to the category average, where it is 2 328 USD.

4. Conclusions and implications

Index funds and index trading are necessary connected with the issue of tracking error and focusing on its minimization. This indicator of fund's portfolio performance has got no uniform interpretation, but in general we understand it as a standard deviation of the difference between fund's portfolio returns and returns of benchmark index. There occurs variety of its sources, such as cash drag, liquidity costs and several transaction costs that are determined by number of factors, namely redemption requests, market capitalization of the portfolio, number of shares in the benchmark or the extent to which its characteristics varies from the style of relevant index fund. Although market capitalization poses as main reason for additions to and deletions from the S&P 500 index that is the underlying index of our analyzed index fund, we do not consider these changes as the most important factor relative to the tracking error of selected fund. In addition, the company providing such a mutual fund charges relatively low fees, which allows to investors to gain higher revenue. On the contrary, we can conclude that in this case mainly the benchmark volatility and composition differences had got a significant impact on differential returns between fund and index.

In the context of tracking error we should however think about the efficiency of focusing on elimination of this divergence. Although it is the mandate of managers of index funds, the objective may lead to lower yields for investors. Nevertheless, we believe that allowing active management of passive funds could slide to standard actively managed funds, which often do not exceed the market benchmark. Moreover, the replicating principle of index funds would disappear and it could fail to satisfy investors' preferences. Thus, the decision-makers should conduct transactions in accordance to their mandate and in the risk bounders corresponding to benchmark index.

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References

AMMANN, M. – ZIMMERMANN, H. (2001). Tracking Error and Tactical Asset Allocation, In *Financial Analysts Journal*, 2001, vol. 57, No 2, pp. 32-43. ISSN 0015-198X.

EL-HASSAN, N. – KOFMAN, P. (2003). Tracking Error and Active Portfolio Management. In *Australian Journal of Management*, 2003, vol. 28, No 2, pp. 183-207. ISSN 1327-2020.

FRINO, A. et al. (2004). Index Design and Implications for Index Tracking - Evidence from S&P 500 Index Fund. In *The Journal of Portfolio Management*, 2004, vol.30, No 2, pp. 89-96. ISSN 1095-4918.

CHEN, H. et al. (2006). Index Changes and Losses to Index Fund Investors. In *Financial Analysts Journal*, 2006, vol. 62, No 4, pp. 31-47. ISSN 0015-198X.

LIN, V. – MACKINTHOS, P. (2010). ETF Mythbuster: Tracking Down the Truth. In *The Journal of Index Investing*, 2010, vol. 1, No 1, pp. 95-106. ISSN 2154-7238.

PILCH, C. (2004). Fondy v kolektívnom investovaní. In *Finančné trhy : odborný mesačník pre teóriu a prax.* - Bratislava : Derivát. [online]. December, 2004, vol. 3, pp. 1-10. [citied 09.02.2016]. Available at URL: http://www.derivat.sk/index.php?PageID=67>. ISSN 1336-5711.

ROWLEY, J. J. – KWON, D. (2015). The Ins and Outs of Index Tracking. In *The Journal of Portfolio Management*, 2015, vol. 41, No 3, pp. 35-45. ISSN 1095-4918.

THE VANGUARD GROUP. (2012). [online]. Available at URL: https://personal.vanguard.com/us/funds/snapshot?FundIntExt=INT&FundId=0540#tab=3. [cited 23. 02. 2016].

VARDHARAJ, R. et al. 2004. Determinants of tracking error for equity portfolios, In *Journal of Investing*, [online]. 2004, vol. 13, No 2, pp. 37-47. ISSN 1068-0896. Available at URL: http://www.iijournals.com/doi/abs/10.3905/joi.2004.412305?. [cited 22.02.2016].

YAHOO FINANCE: S&P 500 (^GSPC). [online data basis]. Available at URL: <http://finance.yahoo.com/q/hp?s=%5EGSPC+Historical+Prices>. [cited 23. 02. 2016].

Change of Investment into Logistics in V4 Countries before and after the Financial Crisis

Michal Gallik

University of Economics in Bratislava Faculty of Business Management, Department of Production Management and Logistics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: gallik1@gmail.com

Abstract

Aim of the paper is to identify the differences between investing in logistics before year 2007 and after year 2007 to the present, and make a comparison of the difference compared to total investments directed to the economy from private sources – business investments. Paper is divided into three chapters. The first chapter is devoted to logistics, placement, comparing the investment in Slovakia before year 2007 and after year 2007. Next there is the methodology and object of the paper and the predicted outcome. There are comparisons made in terms of V4 countries in the view of moderate investments in the logistics of the total private sector investment in GDP, too. The conclusion of paper is a result of a hypothesis whether the volume of investments in logistics has changed significantly.

Keywords: Investments, logistic real estate, crisis *JEL classification:* M11, F22, E22

1. Introduction

Currently it is possible to note the growth in investment across the economy. Since Slovakia has a number of companies that worked on the car industry, it is due to their need for Just - In - Time for their suppliers need to address the issue of rapid response to their demands. The great advantage over the competition while meeting growing demands on logistic processes in every society can ensure proper logistics and information processes. Logistics enterprise does not address only transportation, receipt and distribution of goods. It is a complex whole supplier - customer relationships and relationships with the customer - seller.

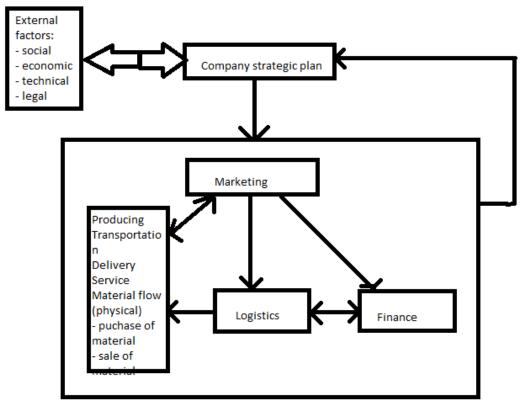
Business Logistics means:

- Logistics Procurement
- Production logistics,
- Distribution Logistics (Dupal', Brezina, 2006)

Since logistics is important for businesses illustrates Figure 1 which shows the relationship of company logistics to the cornerstone of enterprise - the strategic plan. In it, a logistics irreplaceable.

Figure 1

Relation of strategic plan and logistics of company



Source: Dupal', Brezina. Logistika v manažmente podniku

Logistics business should aim to:

- Reducing costs,
- Reduce the need for capital,
- Improving service.

With the changing situation on the financial markets and changing economic situation, changing the behaviour of the logistics and logistics planners and logisticians business and the willingness of companies to invest in logistics as such.

Many times mentioned financial and economic crisis has hit the whole of Europe as well as Slovakia. An example is the automotive industry. Since Slovakia is strongly focused on the automotive industry, changes in consumer behaviour due to the ongoing crisis years had an impact on the automotive industry on Slovak territory. In 2008, sales declined in the automotive industry by 12%, the number of produced cars by almost 11%. (Mišúnová, Mišún 2009). In the same way also conducted investment plans of enterprises. Private sector investment declined from 18.51% in 2007 to 17.37% in 2008 and further to 12.87% in 2009, when the lowest rate of investment during the reporting period. These cuts felt not only production but above all logistic processes.

Given the importance of the proper functioning logistics businesses while very turbulent economic period is extremely necessary to properly decide on any investments. Each investment in logistics in fact can mean the sacrificial opportunity production.

1.1 Data and methodology

Given the complexity of comparing the selected themes were chosen performance of the economy and investments in logistics measured in a given period of time. Comparing it to

GDP shows the actual performance of the economy. Comparing only the private sector investment, not investment expenditure. The comparative period was set at 11 years - from 2002 to 2013. They were used by the Euro-stat data and also the data of JLL. It was use Comparison of which were compared with the size of investment in logistics parks reflecting the investments in logistics will be shown. Where primarily compared the differences between investments before 2007 and after 2007 in the territory of V4 countries. Induction was use too. On the basis of a comparison of the investments made and their growth and give the current forecasts of GDP growth in each country is creating the preconditions for growth in investment from changes in logistics are not in the long term significant.

2 Investments

Based on the information of Cushman and Wakefield investment activity in Central Europe and Romania reached the value of 1.4 billion euros invested in the second quarter of 2014 was up by 73% over the previous year. (Logistic Atoz, 2015) it suggests that investment rate is growing not only in logistics, but throughout the economy. Based on the increasing information can gain a feeling that the rate of investment in logistics and systems related to the pre-crisis level. Over the past year 2014 - 2015 were made significant investments such as investments in logistics technology in PSA in Trnava (teraz.sk, 2015), the opening of several large logistics warehouses in Sered' (Pravda, 2015) and at Senec (egoodwill, 2014)

2.1 investments before year 2007

By the year 2007, he experienced an extraordinary growth boosted by strong demand for everything from consumer goods to services. Investments were large and not just in logistics. The demand for the best possible use of logistics - as an article that can bring competitive advantage.

The rising optimism the period before the recession were rising even higher investment trends as can be seen in the Table 1.

2002	2003	2004	2005	2006	2007
18,54	17,11	17,07	18,54	18,24	18,51
20,29	16,42	18,65	18,23	17,89	19,38
13,49	13,63	13,84	14,21	13,80	14,40
10,81	10,35	10,22	10,21	11,20	12,44
	18,54 20,29 13,49 10,81	18,54 17,11 20,29 16,42 13,49 13,63 10,81 10,35	18,54 17,11 17,07 20,29 16,42 18,65 13,49 13,63 13,84	18,54 17,11 17,07 18,54 20,29 16,42 18,65 18,23 13,49 13,63 13,84 14,21 10,81 10,35 10,22 10,21	18,54 17,11 17,07 18,54 18,24 20,29 16,42 18,65 18,23 17,89 13,49 13,63 13,84 14,21 13,80 10,81 10,35 10,22 10,21 11,20

Table 1

The ratio of new investments in the country's total GDP in the private sector

Source: Eurostat. Available at the URL: http://ec.europa.eu/>.

From the above tables it is clear that investments achieve very interesting value considering the level of GDP. However, there were large differences between the V4 countries, while business investment in Czech Republic to pay around 18% of GDP, in Poland it was 11% in general. As seen in the table, Hungary also improved its position in 2007, not only because of the good location Hungary. In 2007, it privatized the Budapest airport which allowed to create a new cargo terminal. This year (2007) too DHL group has invested 18 million EURO to various logistics parks across the country.

2.2 investments after year 2007

According to JLL, 2013 it was the strongest year of investments in logistics since 2007. However even in the year 2008 compared to 2007 fell by 44%. Direct investments in logistics in 2013 exceeded the value of 6,000 million euros for the first half, representing a 57% increase in investment over the same period in 2012. As the most active markets were identified by the UK, France and Germany - collectively 60% of total investments. The total volume of investments is estimated at while 10 000 million. (JLL, 2013)

However, in 2014 the volume of investments in logistics even increased as can see in figure2. This figure shows a comparison of the share of investments in the first quarter (next only 1.Q) of the total share if investments in specific investment year. It is obvious that the level of investment in the 1.Q of the year shows how will look investment in logistics in the next year. As seen from the chart, the 1.Q of 2014 in EMEA (Europe medium and Europe and Africa) region were realized investment of 4 900 million EURO. This represents a 25% increase over the same period of the previous year. The following example clearly see an upward trend increase investment in logistics for the last 10 years period.

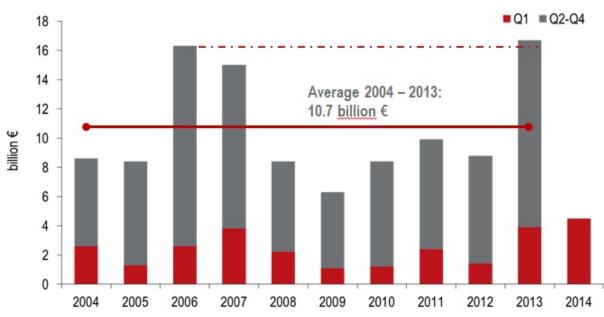


Figure 2

Comparison of investment in the Q1 and for full year in 10 years period

Source: Colliers international . Available at the URL: http://www.colliers.com>.

As the EMEA is quite big area, it would be appropriate to compare the rate of investment in individual V4 countries. On the basis of the table 2, it could be say that level of investment int the region V4 in each country is relatively constant. The table of course say that year 2009 there was depression and decline of investment in all V4 countries. The most notable it was in Slovakia, where the rate decreased by almost a third of investment. In Czech Republic is decrease of investment less dramatic, as well as in Poland. Hungary, there was only minimal reduction of investments. Interesting is, that after-crisis of investments in logistics has not yet returned to pre-crisis year 2007.

The rate of total investment in the economy in individual V4 countries (Czech Republic, Slovakia, Hungary and Poland) was as follows according to the Table 2.

State/Year	2008	2009	2010	2011	2012	2013	2014
Slovakia	17,34	12,87	14,02	15,87	13,81	13,08	Х
Czech Republic	18,78	16,35	16,40	17,45	17,65	17,25	16,95
Hungary	14,88	14,26	12,64	13,32	12,47	12,74	Х
Poland	12,62	11,22	9,80	10,15	10,14	10,22	Х

Table 2

The ratio of new investments in the country's total GDP in the private sector

Source: Eurostat . Available at the URL: http://ec.europa.eu/>.

From the table it is clear that the largest decline in private sector investment was just over 2007 in Slovakia - almost 5%, while in the Czech Republic slightly more than 2%. However, in any country, though the rate of investment to GDP rising, they have not reached pre-crisis level.

3 Conclusion and implication

In view of the conclusion of investments in 2008 negatively it affected the functioning of the economy, when Slovakia According to the World Competitiveness Yearbook ranked 33rd, which was an annual decrease of three points out of 57 observed countries (Mišúnová – Mišún, 2009). Because of these investment rate shows that although investments are increasing character, grow at a pace as GDP growth in Slovakia. Investment in technology and logistics have not have the opportunity to rise.

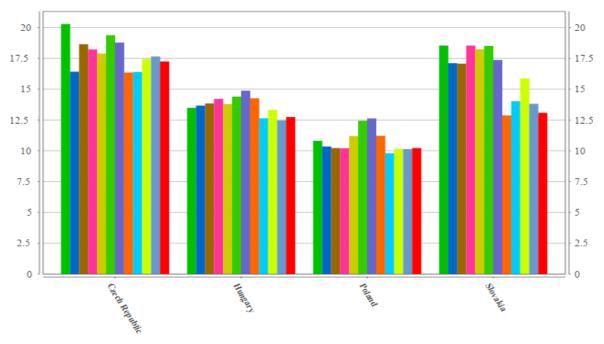


Figure 3

Investments of V4 countries in last 11 years

Source: JLL. Available at the URL: http://www.jll.eu.

The Figure 3 shows the investments in the individual V4 countries with investments from 2002 to 2013. It shows, that each country in V4 region in investment in logistics is stable.

There are not in the long term significant differences in the trends. It means, that growing of investing in logistics there will be, but in the long term there will not be radical increase of these investments. But there is one point which can increase investment into logistics – the region V4 has potential to become logistics and distribution center for Chinese companies operating in EU due to cheaper land and labour. (Szunomár, A. 2014)

References

Colliers International. (2015). *Industrial & Logistics Snapshot 2015*. [online]. Available at the URL: http://www.colliers.com/en-gb/emea/insights/market-news/2015/04-022015_colliers_january_industrial_report. [accessed 15.12.2015].

DUPAĽ, A. – BREZINA, I. (2006). *Logistika v manažmente podniku*. Bratislava: SPRINT, 2006. ISBN 80-89085-38-5.

Egoodwill. (2014). *Gebruder Weiss má dva nové sklady v senci*. [online]. Available at the URL: <<u>http://egoodwill.sk/doprava-logistika/gebruder-weiss-ma-dva-nove-sklady-v-senci/></u>. [accessed 19.10.2015].

GRANT, K. – HACKNEY, R. – EDGAR, D. (2010). *Strategic Information System Management*. Hanpsire: Cengage learning EMEA. 385 p. ISBN 978-1-4080-0793-8.

JLL-eu. (2013). *Strong growth in european logistics and industrial investment in H1 2013*. [online]. Available at the URL: http://www.jll.eu/emea/en-gb/news/480/strong-growth-in-european-logistics-and-industrial-investment-in-h1-2013. [accessed 19.10.2015].

JLL-eu. (2014). *Emea Q1 2014 industrial and logistics volumes*. [online]. Available at the URL: <<u>http://www.jll.eu/emea/en-gb/news/538/emea-q1-2014-industrial-and-logisitcs-volumes></u>. [accessed 19.10.2015].

JLL-eu. (2014). *Logistics industrial CM final report*. [online]. Available at the URL: http://www.jll.eu/emea/en-gb/Documents/Capital-markets/Logistics_Industrial_CM_Report_FINAL.pdf>. [accessed 19.10.2015].

Logistika atoz. (2014). *Investicie v strednej európe vzrástli o 73 percent*. [online]. Available at the URL: http://www.logisticsatoz.sk/investicie-v-strednej-europe-vzrastli-o-73-percent. [accessed 19.10.2015].

MALEJČÍK, A. (2008). *Logistika*. Nitra: Vydavateľstvo SPU, 2008. ISBN 978-80-552-0018-7.

MIŠÚNOVÁ, E. – MIŠÚN J. (2009). Priemysel Slovenska a dopady globálnej krízy: Globálna kríza s akcentom na automobilový priemysel. Espirit. ISBN 80-9702-022-4.

Pravda.sk. (2014). *Lidl postaví v seredi obrie logistické centrum*. [online]. Available at the URL: <<u>http://spravy.pravda.sk/ekonomika/clanok/348162-lidl-postavi-v-seredi-obrie-logisticke-centrum/></u>. [accessed 16.10.2015].

STUSEK, J. (2014). *Řízení provozu v logistických řetězcích*. C. H. Beck, 2007. ISBN 978-80-717-9534-6.

SZUNOMÁR, A. (2014). *Chinese Investments and Financial Engagement in Visegrad Countries: Myth or Reality?* Budapest: Institute of World Economics, 2014. ISBN 978-963-301-615-2.

Teraz.sk. (2014). *Peugeot- citroen investuje do logistiky*. [online]. Available at the URL: <<u>http://www.teraz.sk/ekonomika/trnava-peugeot-citroen-modernizacia/126459-clanok.html></u>. [accessed 19.10.2015].

Brainstorming – Development Path of Creativity

Marcela Galovská

University of Economics in Bratislava Faculty of Business Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: galovska.m@azet.sk

Abstract

Brainstorming as an ideas generation method isn't a stand-alone process. Brainstorming represents an exercise in different thinking, but also combining ideas and to apply a convergent thinking process is just as important. This is why every major creative process involves some idea generation stage like brainstorming, but also stages that evaluate, prototype, and implement ideas. Very rarely does a market-changing product or a groundbreaking innovation look like any of the ideas that came up during a brainstorming session. The end result of brainstorming is a list of ideas that may or may not solve the problem at hand. If you are looking just at that list, and no idea jumps out as the perfect solution, it's easy to perceive the session as a failure. That is what makes other stages so necessary. The ideas presented need to be externalised beyond the group and refined based on the collected reactions.

Keywords: brainstorming, creativity, human resources *JEL classification*: *M* 10, *M* 19.

1. Introduction

In 1938, the USA was first implemented method of brainstorming – brain – brain and storm – storm called "storm drain" or "attack" on the brain. For fear people many ideas not say, they have a great fear of mockery is, in particular, that their ideas, thoughts are silly and impractical. Alex F. Osborn – a creator of the method considered the need to overcome social and psychological barriers which hinder the development of ideas and creativity.

Every person has some ideas, but some are largely influenced by the thought that says about them as a creative personality. According to Amabile (1983) creativity is a work or problem solving is considered to be creative in so far as it is new, useful, and beneficial right solution desired tasks, and also to the extent the role of heuristic (original, new solution) than algorithmic (known role of routine solution). The person is different from animal mainly thinking and creativity.

2. Characteristics of creativity

Education for Sustainable Development allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future.

This education means including key sustainable development issues into teaching and learning; for example, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption. It also requires participatory teaching and learning methods that motivate and empower learners to change their behaviour and take action for sustainable development. This type of education consequently promotes competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way. Education for Sustainable Development requires far-reaching changes in the way education is often practised today.

Guilford as one of the first thinkers defined and delimited the concept of creativity. He understood it as a characteristic feature of a person based on the specific needs and manifested mental processes directed to the defined objective. Defined using category of creativity its structural model of four different types:

- figural creativity: sort sculpture, and other works of art,
- symbolic creativity: math, music, ballet and other,
- semantic creativity: journalism, literature and other,
- social creativity: psychology, public activities and other.

According to Žák (2004, p. 172) model of creativity:

C = Att x Ab x Pr

C – creativity Att- attitude Ab – ability Pr – process

Very important is determine to criteria the borders respectively at creativity, which define what is and is not creativity. Measure of the ability of creativity in man is determined by individual dispositions of the person, environment, education and others. Psychologists considered creativity dealing, thinking, thinking that meets the criteria:

- originality,
- correctness,
- applicability,
- benefit.

Expression of creativity is unusual, newly formed connections. Criterion of originality is uniqueness and innovativeness.

Creativity does not mean a novelty but the result must meet specified conditions, i.e. correctness – meet the stated objective. Correctness are connects the rising point to the end point and the feedback returns, creating the so-called ring.

3. Variants of brainstorming

The concept Brainstorming originated in the 30th of the last century in the United States. The fifties termed as the golden era of study and practical training of creativity, in the USA, Europe and Japan, this method is very popular. Brainstorming has grown into a 12 – variants:

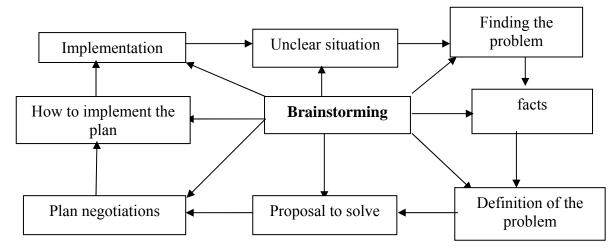
- **Brainstorming Classic:** the aim is to bring together the greatest number of ideas. Censorship is inadmissible. Anyone can say anything anytime. At the end it is important to evaluate and decision challenged will be addressed.
- *Rowlis Brainstorming:* Brainstorming is a variant of the same as a classic in the rules, principles and structure. It is used for groups that do not have the creative brainstorming techniques with no experience.
- *Negative (reverse) Brainstorming:* this technique is used in the phase of planning and preparation for production. The method supports for group the development of sensitivity to the problem. Participants are not looking for ideas, but try to take all possible problems and disadvantages that entails. It can be used in verifying the correctness of the obtained solutions.

- *Imaginary Brainstorming:* the problem definition must have three components subject, verbum, and object. In combination replaced the folder and try to think of them and imaginary to solve.
- *Visual Brainstorming:* we use when creative skills fade into the background and you cannot pronounce one idea. Facilitator creates the first instance shall bring momentum picture of the problem.
- **Brainstorming values:** in particular this methods touches, if the participants have a problem with its solution, and how it may develop in the future. It is used for a group that has experience with creative methods. Finally, the ideas categorized and followed by a discussion.
- **Role-storming:** is a very good method for empathy and social responsiveness. Participants mainly shake the feeling endangering their own identity because they use the foreign identity. A second advantage is a greater number of ideas than the classical.
- *Brain-writing:* key principle is that all ideas are directly entered by the participant. Subsequently, the paper is moved to another person.
- *Brain-writing game:* it is based on the play, but only to the extent that the winners and losers are equally successful. At the end, the group agree on the ideal solution.
- **Brain-writing 6-3-5:** numerical combination means that 6 people write 3 ideas for 5 minutes. The result is 108 ideas in 30 minutes, then evaluate ideas during the discussion.
- **Brain-writing Poker:** participants collected more cards, where the participants wrote his idea and can choose the person to his right. Participant who receives as a basis for further consideration.
- **Brain-sketching:** method is based on the fact that it is easier to force people to drawing than to writing. It employs more creative because the greater part of the brain.

According to Chobotová and Pobořil (Chobotová – Pobořil, 2005, p. 63) brainstorming scheme is as follows at Figure 1.

Figure 1

Schematic of brainstorming



Source: CHOBOTOVÁ, M. - POBOŘIL, M (2005)

The main objective at brainstorming is to find a solution that will creatively. The unclear situation at the beginning it is very important for brainstorming, and then finding the problem, facts, problem definition, idea to solve, plan meetings, how to implement the plan implementation. These parts must create a cycle in which the participant must see the connection.

When brainstorming, it is important to observe that the session were composed of:

- 50% of experts in the field concerned,
- 30% of experts from related fields,
- 20% of lay people people not associated with the given type.

Brainstorming is one of the ways of development of creativity on the other hand it is important to examine the impact of language. Thinking a foreign language is an effective impact on creativity. The following Table 1 are compare idioms and phrases concerning chromatic adjectives.

Table 1

Idioms and phrases concerning chromatic adjectives, which have no equivalent translation

Slovak language	Chinese language
Je čierny ako kominár. It is as black as a chimney sweep.	背黑锅. wearing a black wok - an
Chimney sweep profession in China is not	innocent man who wrongs
Je červený ako cvikla. It is red as beetroot. Beetroot is	老黄牛. old yellow bull - modest
not a common vegetable in China	and diligent man
Má ruky ako rak červené. He has hands like a red	绿帽子. Green cap - as in Slovak
crawfish. In Chinese: the hand as red carrots - from frost	"Deploy husband antlers"
Source: own processing on the basis of Chen Liang (2013)	

Source: own processing on the basis of Chen Liang (2013)

4. Conclusions

Currently creativity we consider human brain weapon of human resources in an uncertain world. Increase creativity in humans in the form of strengthening and development of the wider objective. Developing creative potential in humans, we can help creative competencies that every person has.

If we want to develop and strengthen the creativity is an important for exercise personal creativity. When the school ends so too ends creative writing and reading for the majority of adult persons. Currently creative industries in developed countries employ more labour and human capital. The new millennium brought new challenges, opportunities and changes in demographics, social and economic sphere, but also an increase in the creative industries. The prevalence of physical work when people first satisfy material consumption, the rise of mental work immaterial consumption not grows. Cultural transformation is the beginning.

The objective of increasing the creativity in man is not to be converted to a writer or artist, but conversely to increase the ease in creative step out of the tunnel – that was natural. Creativity is very important for human life that is not restricted at present full of changes. Instead, the rules need to have the ability to be proactive and flexible and genuine – be creative. To be able to see beyond the usual thought tunnel, in which the movement is necessary to develop and strengthen creativity.

According to Koestler (2008) expression of creativity is the:

- joke: creates unexpected, unusual context,
- science: creates an explanation of the characteristics, definitions,
- art: creates a feeling.

In developing creativity there are important competencies – attitudes, skills and process. Since each person depends on whether it will be open to new ideas, willing to take some risks from the possible refusal and he will be sufficiently patient and persistent.

Overcoming blocks, barriers underlying the development of creative approach, which has three phases:

- naming barriers,
- removal of barriers,
- development of eliminate future occurrence.

When developing a creative attitude we can use exercise: judgment hall, mysterious equation, what would happen if...., photo lab.

Ability to develop creative ideas and thoughts but also know exactly express helps to exercise the judgment hall.

Developing patience, perseverance and conscious synergistic effect is mysterious equation. Participant thinking that looks for other solutions is not standard. Exercise can be used for group cohesion and homogenization.

While recognizing continuous problem solving, risk perception and problem use exercise what would happen if... The participants develop the imagination, the ability of sensitivity to problems, willingness to accept alternatives, awareness due to the decision, a positive attitude to change, tolerance for chaos and others.

Photo lab exercise is used for important front stage of the creative process associate with the analysis, collection of information. Willingness develops perceive the problem in context, look for causes and effects, perseverance during the search details in images exercises.

We can develop creative skills through exercises, for example association Councils, KaGa and KaWa, creative alphabet, genetics laboratory. Creative process in this definitions to a large extent by influence creative abilities, in terms of Kirsty and Diekmeyer (1998) created a list of key components of creativity which are flexibility, fluency, originality, analysis, productivity, construction, remodeling, ranking, strength of expression, execution, combination, transformation, decision making, assignment, organization.

Ability to imagine something, invents, create thoughts, ideas, perceive the problems, analyze the problem, and design a solution under that we understand creative abilities. We can use them for lateral thinking and also we could constructively work with fantasy.

Association Councils of exercise are used for individuals than for the groups. When we want to get the information, the method is useful because it includes techniques that generate ideas based on the free flow of conscious thoughts and associations.

An enterprise that wants to be successful and must continue to develop flexible learning among its employees. If the enterprise is ready for change it is therefore flexible as part of the employer and the employee has a certain level of competitiveness to other companies. Staff development should be timeless with the development of science and technology and innovation processes.

In the development of education employees in the company deciding between methods of education (Koubek, 2015):

- education course of their work that education can include, for example, mentoring, coaching, mentoring, counseling, assisting, task assignment, job rotation, workshops,
- education taking place outside the workplace such as e-learning, lecture, lecture followed by a discussion, demonstration, case studies, workshops, brainstorming, simulation, role playing, assessment centers, outdoor training.

Training and staff development is a fundamental objective of the modern society. Company favors a higher level of working ability, technically and mentally prepared workers - skilled workers. Education is expressed through:

- better performance,
- improved competitiveness of the company,
- use own funds to cover the needs of employees,
- self-realization and satisfaction of employees,
- the deployment of staff time savings and financial costs.

To man should pay to develop their knowledge and skills throughout their lives. Only further education is for people to find better jobs.

References

CHOBOTOVÁ, M. – POBOŘIL, M. (2005). *Manažerské metody a techniky*. Vysoká škola podníkaní, 2005. 71p. ISBN 8086764222.

KOESTLER, A. (2008). The Act of Creation, 2008. 751 p. ISBN 9780140191912.

KOUBEK, J. (2015). *Řízení lidských zdrojů: základy moderní personalistiky*. Praha: Management Press/Albatros Media, 2015. ISBN 9788072612888.

GALLAGHER, S. (2013). *Brainstorming: Views and Interviews on the Mind*. Andrews UK Limited, 2013. 407 p. ISBN 9781845407254.

NUSBAUM, E. (2006). *Brainstorming & Writing a How-to Book that Sells*!, 2006. Lulu.com. 141 p. ISBN 9781411667501.

ŽÁK, P. (2004). *Kreativita a její rozvoj*. Brno: Computer press, 2004. 315 p. ISBN 80-251-0457-5.

CHEN, L. (2013). *Porovnanie chromatických adjektív v slovenčine a čínštine*. In: Rara Avis 10. ISBN 978-80-8105-528-7. - Trnava : UCM, 2013. – p. 104-119 [CD-ROM]

Forbes. (2013). Available at URL: http://www.forbes.com/sites/davidburkus/2013/09/10/brainstorming/. [accessed 18. 01. 2016].

Government Bonds as a Collateral in the ECB's Refinancing Operations in Light of the Financial Crisis

Vladimír Gvozdják

University of Economics in Bratislava Faculty of National Economy, Department of Banking and International Finance Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: vgvozdjak@gmail.com

Abstract

Government bonds of the EU countries were long perceived as a safe investment. They were popular among investors in order to stabilise their portfolios. The recent financial and debt crisis has led to inability of some Eurozone countries to meet their liabilities of repaying debts. This also affected the credit quality of government bonds, which are used as a collateral in refinancing operations. The aim of this working paper is to provide a critique on the ECB collateral policy as well as to share various insights on the current collateral issues and how to solve them.

Keywords: government bonds, collateral, ECB open market operations *JEL classification*: G21, G23, E58

1 Introduction: Government Bonds – Are They Safe?

Government bonds are an inherent part of all securities and assets portfolios which are created by financial institutions – be it banks, insurance companies or other financial intermediaries managing financial assets. As a financial instrument, government bonds are popular amongst portfolio asset managers – for the fact that they are a stabilizing feature: this statement is based on the fact that government bonds are generally considered to be a risk-free investment. A state should be able to meet its liabilites in time of maturity and thus is the most creditworthy debtor. This statement is no more valid based on the fact that also a state can fail in repaying its debt to the investors. We have witnessed this fenomenon in recent years, when under the financial crisis and constant increasing in debt burden some Eurozone countries were not able to meet their debt in time. This fact is jeopardizing the stability of the financial sector and credibility of investments in the form of government bonds. The inability of government to pay its debt is only one of many risks connected with investing in state bonds. In view of the low credit quality of the bonds, the Eurosystem has expanded the range of eligible collateral, in order to avoid the developing collateral squeeze. This relaxation of the collateral eligibility policy has exposed the Eurozone to more credit risk.

The situation of low credit quality was also visible in the credit spreads of the peripheral Eurozone countries known as SPIGI. During the peak of the debt crises the Greek bonds reached the level of 29,24 % (02/2012). In comparison, the German bonds had 1,85 % at that time. According to Krishnamurthy, Nagel and Vissing-Jorgensen (2015), the European Central Bank was able to reduce credit spreads of these SPIGI bonds by using Securities Market Programme and Outright Monetary Transactions. The Long Term Refinancing Operations contributed only a little. We can see the current credit quality of the Eurozone government bonds in Table 1. The credit quality of the bonds differs from the top quality bonds of Germany or Netherlands (AAA) to speculative level of the Greek bonds (B-). Most

of the bonds have stable outlook. Based on the different rating of bonds not all of them can be considered as a safe investment.

Table 1

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	S&P	outlook	Moody's	outlook	Fitch	outlook		
Austria	AA+	STABLE	Aaa	NEGATIVE	AA+	STABLE		
Belgium	AA	STABLE	Aa3	STABLE	AA	NEGATIVE		
Cyprus	BB-	POSITIVE	B1	STABLE	B+	POSITIVE		
Estonia	AA-	STABLE	A1	STABLE	A+	STABLE		
Finland	AA+	NEGATIVE	Aaa	NEGATIVE	AAA	NEGATIVE		
France	AA	NEGATIVE	Aa2	STABLE	AA	Stable		
Germany	AAA	STABLE	Aaa	STABLE	AAA	STABLE		
Greece	B-	STABLE	Caa3	STABLE	CCC			
Ireland	A+	Stable	Baa1	POSITIVE	A-	POSITIVE		
Italy	BBB-	Stable	Baa2	Stable	BBB+	STABLE		
Latvia	A-	STABLE	A3	Stable	A-	STABLE		
Lithuania	A-	STABLE	A3	STABLE	A-	STABLE		
Luxembourg	AAA	STABLE	Aaa	STABLE	AAA	STABLE		
Malta	BBB+	POSITIVE	A3	STABLE	А	STABLE		
Netherlands	AAA	STABLE	Aaa	STABLE	AAA	STABLE		
Portugal	BB+	STABLE	Ba1	STABLE	BB+	POSITIVE		
Slovakia	A+	STABLE	A2	STABLE	A+	STABLE		
Slovenia	A-	POSITIVE	Baa3	Stable	BBB+	POSITIVE		
Spain	BBB+	STABLE	Baa2	Positive	BBB+	Stable		
Source: our processing based on http://www.tradingaeonomics.com/ouro.crea/rating								

Source: own processing based on http://www.tradingeconomics.com/euro-area/rating

2 Government Bonds as a Collateral in Open Market Operations

The European Central Bank uses government bonds as one of the collaterals for open market operations, which are a tool of monetary policy. This collateral is also marked as acceptable assets. In case of acceptable assets the ECB applies *haircuts*. They represent a percentage which is deducted from the market price of an asset. ECB uses five main categories, where the percentage is based on the residual maturity, coupon structure and grade of the creditworthiness based on rating. This percentage remains the same during the time of trade.

These days the ECB is supplying liquidity to the market. Following this the ECB uses mostly these instruments:

- Main refinancing operations (MRO) reversal repo trades within Eurosystem tenders. Their maturity is mostly one week. They are executed by national central banks. By using them the ECB follows goals such as managing interest rates, liquidity and signalling the targets of monetary policy.
- Long-term refinancing operations (LTRO) their aim is to deliver liquidity for longer periods (up to three months). Sometimes they can be used even longer. They are executed by national banks. Here, the Eurosystem does not signal the intentions and is in the role of the taker of interest rates.

The following Figure 1 shows the overview of MRO's and LTRO's in 2015. As it can be seen, the volume of alloted amount decreased during the whole year. This might be caused by lower demand of commercial banks for liquid funds.

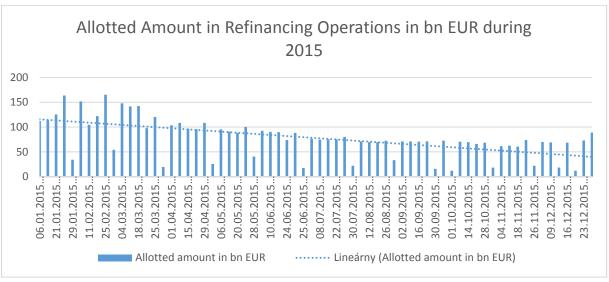


Figure 1 Evolution of MRO and LTRO in 2015

Source: own processing based on data from URL:

 $https://www.ecb.europa.eu/mopo/implement/omo/html/top_history.en.html$

The current financial crisis affected governent bonds, which cannot be considered riskfree in the view of inability of some states to repay their debt because of the extent of their burden. The policy of quantitative easing leads to the restriction of the repo market of bonds, where the bonds serve as a collateral. The disturbing effect of quantitative easing is clearly visible in case of the German government bonds which are the mostly used form of collateral.

Another reason why government bonds cannot be considered as a safe investment is that the financial and debt crisis led to decreased rating of many countries, which led to the increase in haircuts of governemnt bonds as collateral in repo agreements. This results into limited accessibility of liquidity for refinancing of commercial banks in the interbank market.

During the financial crisis and the subsequent sovereign debt crisis the major central banks launched unprecedented money measures. Besides decreasing the interest rates, the ECB lowered the quality of the eligible collateral assets which were accepted for its refinancing operations. The collaterals play an important role for the lender since the latter can protect against default of the borrower and at the same time against liquidity risk.

Haircut is the difference between the market value of an asset and the purchase price paid at the start of a repo. An initial margin is an alternative to a haircut. A haircut is expressed as the percentage deduction from the market value of collateral (e.g. 2%), while an initial margin is the market value of collateral expressed as a percentage of the purchase price (e.g. 105%) or as a simple ratio (e.g. 105:100). We can compute haircut as follows:

Ideally, collateral should be free of credit and liquidity risks. The market value of such perfect collateral would be certain, meaning that it would be easy to sell for a predicatable value in the event of default by the collateral-giver. The type of asset that comes closest to this paradigm, and is in fact the most commonly-used type of collateral in the repo market, is a bond issued by a creditworthy central government.

Assets that pose material credit and/or liquidity risks can be used as collateral but not for their full market value. Instead, a risk-adjusted value is calculated, which is less than the market value.

Table 2

Haircuts Applied by the ECB in Refinancing Operations:

		Haircut categories								
Credit quality	Residual maturity (years) (*)	Category I		Category II		Category III		Category IV		Category V
		fixed coupon	zero coupon	fixed coupon	zero coupon	fixed coupon	zero coupon	fixed coupon	zero coupon	
Steps 1 and 2	[0-1)	0,5	0,5	1,0	1,0	1,0	1,0	6,5	6,5	1
	[1-3)	1,0	2,0	1,5	2,5	2,0	3,0	8,5	9,0	
	[3-5)	1,5	2,5	2,5	3,5	3,0	4,5	11,0	11,5	100
	[5-7)	2,0	3,0	3,5	4,5	4,5	6,0	12,5	13,5	10,0
	[7-10)	3,0	4,0	4,5	6,5	6,0	8,0	14,0	15,5	
	[10, ∞)	5.0	7.0	8.0	10.5	9.0	13.0	17.0	22.5	

Credit	Residual	Category I		Category II		Category III		Category IV		Category
quality	motitrity	fixed coupon	zero coupon	fixed coupon	zero coupon	fixed coupon	zero coupon	fixed coupon	zero coupon	
	[0-1)	6,0	6,0	7,0	7,0	8,0	8,0	13,0	13,0	
	[1-3)	7,0	8,0	10,0	14,5	15,0	16,5	24,5	26,5	
Stern 2	[3-5)	9,0	10,0	15,5	20,5	22,5	25,0	32,5	36,5	not eligi
Step 3	[5-7)	10,0	11,5	16,0	22,0	26,0	30,0	36,0	40,0	ble
	[7-10)	11,5	13,0	18,5	27,5	27,0	32,5	37,0	42,5	
	[10, ∞)	13,0	16,0	22,5	33,0	27,5	35,0	37,5	44,0	

Source: https://www.ecb.europa.eu/ecb/legal/pdf/oj_jol_2016_014_r_0006_en_txt.pdf Note: government bonds are in category I

The Table 2 above shows categories of haircuts applied by the ECB based on the credit quality and residual maturity valid as of 18 November 2015. Steps 1 and 2 refer to rating from AAA to A-, Step 3 refers to rating from BBB+ to BBB-.

The issue of applying government bonds as a collateral in refinancing operations and their haircut is dealt with by many authors. In the article Liquidity, Government Bonds and Sovereign Debt Crises author F. Molteni points out that the government bonds are a primary collateral in the European repo market, which becomes the main source for refinancing of the bank system in Eurozone. He states that repo-haircuts of peripheral government bonds were significantly increased during the crisis, which led to the decrease in their liquidity and strenghtened the volatility of their yields. In this work he studies the impact of this increase in government bond haircuts on the economic cycle and the asset price via the model of stochastic general equilibrium. He points out that the government can lessen the negative effect of a liquidity shock by issuing short-term bonds, which are an alternative liquidity tool for investors. In the author's view there are two factors why the peripheral countries of Eurozone (Greece, Ireland, Italy, Portugal and Spain) have to pay higher interest from public debt in comparison with other countries: credit risk and liquidity. Their main motive why banks buy bonds is that they store liquidity and they serve as a collateral in borrowing. The

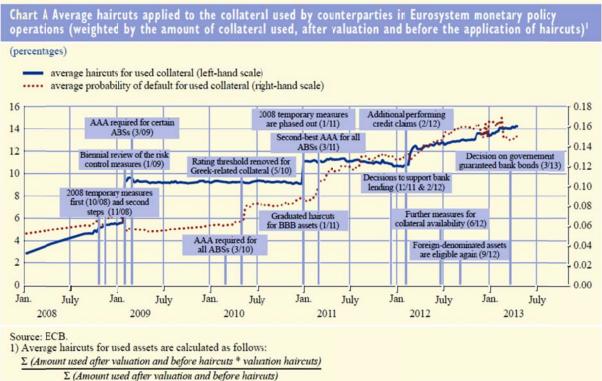
article states that the financial crisis affected the structure of government bonds as collateral. Particularly, the ratio of government bonds of peripheral countries in portfolios decreased: e.g. the share of Italian bonds decreased from 10 % in June 2011 to 7 % in December 2011 when the sovereign debt pressures were the highest. There were significant haircuts in Irish and Portuguese bonds in 2011: they increased from 15 % before the crisis to 80 %. As a result of their lower quality the banks had to reduce the bonds with higher haircuts, which led to their sale and to decrease in the price of these bonds.

There is a critical view of government bonds haircuts applied by the ECB in the article The ECB's Collateral Policy and Its Future as Lender of Last Resort by Karl Whelan (2014). The framework of collateral by the ECB was adjusted in last year in order to apply assets of lower quality as collateral. On the other hand the average haircuts of collateral increased in in line with increasing risk from 3 % in 2008 to 14 % in 2013. According to the author the approach of the ECB to government bonds is generous and should be revised. Lower haircuts applied for European government bonds together with lower rating and combined with regulatory requirements resulting from the Capital Directive IV (Directive 2013/36/EUR with reference to the Regulation No 575/2013 Section 2 Risk weights, where the exposures to Member States' central governments funded in the domestic currency have a risk weight of 0%) led to the fact that banks invest in these bonds at the expense of other assets. It would be better if the ECB applied the same rules to government bonds as to other tradable market assets. One of the important part of collateral policy is to grant credits to banks which do not have sufficient acceptable assets. This is ensured by the programmes of Emergency Liquidity Assistance (ELA). The author proposes that the risk of these operations should be shared amongs the central banks of Eurosystem.

In the Figure 2 below we can see the increase in haircuts applied by the ECB from 2008 to 2013.

Figure 2

The Increase in Haircuts Applied by the ECB



Source: Whelan, K. The ECB's Collateral Policy and Its Future as Lender of Last Resort

Whelan states in his article that in the international comparison the ECB haircuts are stricter than those of other central banks – e.g. Bank of England, FED, Bank of Japan, Central Bank of Sweden or Swiss National Bank.

The ECB currently applies relatively low haircats compared to the market perception of risk. Low haircuts play important role within the support of demand of commercial banks for government bonds. Annother support of demand is caused by the Capital Directive. Operational procedures of the ECB allow commercial banks to execute profitable carry trades, where it is possible to increase balance sums at low interest rates on the liabilities' side and higher yields from government bonds. This directive allows carry out these trades without increasing risk-weighted assets, so that this operation does not affect the risk of banks and does not affect the capital adequacy.

A solution to this situation according to the author is to revise the policy which currently supports commercial banks in buying government bonds. The conditions decrease the efectiveness of the particular part of monetary policy and strengthen the vicious circle between banks and governmentd ebts. It is necessary to create a collateral system in which central banks will apply haircuts based on the market perception of the risk.

Other authors who deal with the issue of collateral are Ch. Buschmann and Ch. Schmaltz. In their paper Sovereign Collateral as a Trojan Horse: Why Do We Need an LCR+ (Buschmann & Schmaltz, 2015) they claim that government bonds are vital for financing of government as well as banks. Banks borrow money in repo transactions and they use the creditworthiness of states issuing bonds more than they use their own credibility. According to the Basel III agreement the liquidity coverage ratio (LCR) will not protect the banks against government bonds jeopardized by states' default. Banks, despite the situation they meet the Basel requirements, can be exposed to underestimating of liquidity risk which stems from risky government bonds - via the collateral. This overseen risk can lead to system liquidity shock. The authors created a model by which they show that the payment insolvency of a state triggers jeopardy of the banking sector. This model shows that the worsening collateral in the form of government bonds can lead to the decrease in liquidity and thus not meeting the liquidity requirements by Basel III. According to the authors this fact should be covered by LCR - they use its modified version LCR+. It is the current value of LCR which is modified by the liquidity impact in case of state insolvency when meeting its liabilities from governemnt bonds. The LCR overlooks the sovereign risk of government bonds. Therefore the bank liquidity reserves, which are dependent on LCR, are not sufficient enough to cover the insolvency of states. LCR+ covers this risk and so it can protect banks against unacceptability of the Greek or Irish government bonds because it enforces the banks to increase their reserves in case of this event.

The model is based on the fact that the system liquidity shock comes from two channels: the capital channel (calculated by capital adequacy ratios) and the liquidity channel (given by LCR). This comes from a precondition that the capital and the liquidity of a bank are mutually connected. In the model the triggering event is a sovereign shock which is transferred to the banking sector via both channels and leads to the violation of Basel III conditions. The analysis proves that the capital channel is important but it is not fundamental from the point of view of compliance with Basel III. The transfer via the liquidity channel can lead to insufficient bank liquidity. As for the liquidity channel, the sharp decrease in prices of collateral directly affects the bank liquidity. In extreme cases the increasing margins and haircuts can stop the whole market.

As for the capital channel, this is based on the compliance with the Basel standards. In comparison with the liquidity channel the mechanism of the capital channel is mostly

managed by the accounting and regulatory rules. The increase in sovereign risk decreases the market value. Based on the fact that all banks within EBA stress tests use the same accounting standards, these requirements are the same and they require that banks cover their market losses by respective own capital. This decrease in market value leads to the decrease in capital adequacy ratio. The potential rating downgrade of a state can intensify the extent of this. It can cause that the government bonds are put into the category of less favourable risk-weighted assets and this can lead to increase in the volume of risk-weighted assets and thus decreasing the capital adequacy. This is a violation of Basel III in the area of capital regulation.

The original intention of using government bonds as collateral was the reduction of systemic risk. The authors show that nowadays this form of collateral comes as a Trojan horse because government bonds intensify the systemic risk. This points out at the shortage in the area of regulation. In this view the Basel Committee recommends that the regulators should consider adequate steps to monitor the availability of liquid collateral in the future as a form of reducing the systemic risk.

Based on the study of data from the EBA stress test from 2014 the authors deduce these conclusions: managers of liquidity in banks should perceive the deficiency of the LCR: in the context of insufficient liquidity which stems from the rating downgrade of a state and market chaos the banks might not meet the liquidity standards of Basel III. On the other hand there is a recommendation for the Basel Committee to consider if the LCR reflects market risk and based on this it should adjust the regulatory liquidity requirements.

There is another interesting opinion by A. Belke in the paper Gold-Backed Sovereign Bonds: An Effective Alternative to OMTs (2013). In this work the author claims that using gold as a collateral in case of default government bonds can improve the situation in Eurozone in relation to the lowering of refinancing costs. There is a condition that the European system of central banks should approve the temporary transfer of gold of countries to the management of a debt agency. This debt agency will release gold in line with the rules of no monetary debt financing. As and advantage it is stated that there should be no credit risk transfer among high-risk and low-risk countries, the losses should be borne by particular states and not by the ECB shareholders. This would lead to a transparent functioning of the system, which would not have the inflationary tendency and would support the execution of reforms.

Increasing debt burden of advanced countries in combination with low economic growth increases the concerns related to long-term insolvency of some of Eurozone states. In some cases the credit spreads of debt financing increased. This fact is an obstacle in the execution of transmission mechanism of monetary policy. Moreover, the government bonds of some countries (Portugal, Greece and Cyprus) face high haircuts, which leads to a lower ability of refinancing. Also the availability of collateral in the form of government bonds decreased, which led to the inability of commercial banks to refinance. The adjustments of bond prices negatively affected the bank assets. This also decreases the ability of banks to refinance and affects the volume of loans which the banks lend to small and medium enterprises in the problematic areas of Eurozone. Undoubtedly, the LTROs helped increasing the liquidity of weaker banks. LTROs allow the banks to apply government bonds as a collateral so that can gain access to financing from the ECB. The banks in Portugal, Ireland, Italy, Greece and Spain had 70 % share (app. 350 billion EUR) from the first LTRO tranche at 500 billion EUR. It is necessary to state that these banks also carry the risk of default. The sovereign default remains in the balance sheets of the banks. And at the same time there is a requirement to refill the collateral in case of the decrease in bond prices or their default. As a solution the author proposes to securitize a part of gold stock of Eurozone countries in the form of government bonds, which should ensure their safety. This option is not applicable for all countries. For example France and Germany have high stocks of gold, but their refinance costs are very low. Greece, Ireland and Spain do not have a lot of gold stocks. On the other hand Italy and Portugal have sufficient reserves of gold.

The usage of gold as a collateral in case of government bonds is consistent with the logic of OMT and brings similar effects. This solution should lead to decreasing yield in the non-functioning markets, which would reestablish the transmission mechanism of monetary policy.

3 Conclusions and Policy Implications

European government bonds were considered to be a risk-free investment amongst investors. Nowadays this statement is no more valid because of the financial and debt crises, where under the conditions of excessive debt burden many countries lost their position of a creditworthy debtor. This manifested itself in the rating downgrades and in line with this in increased haircuts applied by the ECB in refinancing operations. From the commercial banks point of view it affected not only the revenues and yields of these investments but also the application of government bonds as collaterals in refinancing operations by which the commercial banks gain access to resources. As an extreme example we can state the Greek government bonds, where the ECB announced on 4 February 2015 that it would not accept these bonds as a collateral for MRO for their insufficient credit quality. For supporting liquidity of commercial banks there was a possibility to use Emergency Liquidity Assistance via national central bank. The Cypriot bonds faced the same threat.

There are more opinions how to solve the negative situation regarding state bonds as collateral. Based on one group of opinions the ECB should revise the haircuts of government bonds and to apply the conditions based of how the market perceives their risk. Other authors suggest revising the risk weights of government bonds, which should lead to a higher volume of capital taking into account the riskiness of these assets. Some unconventional solution would be to back-up governemnt bonds by gold reserves, which should support the reestablishment of trust towards these securities. We agree with some of these proposals that the current haircut application system should be revised in line with increased countries' debt insolvency and risk perceived by the markets. These measures would prevent banks from shock caused by a sovereign default, which could lead in an extreme case to a liquidity crisis and subsequent systemic bank crisis, as mentioned by the authors Buschmann and Schmaltz.

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References

ALLEN, A., W. – MOESSNER, R. (2012). *The Liquidity Consequences of the Euro Area Sovereign Debt Crisis*. BIS Working Papers No. 390. Monetary and Economic Department. October 2012.

BELKE, A. (2013). *Gold-Backed Sovereign Bonds: An Effective Alternative to OMTs*. Financial Crises, Sovereign Risk and the Role of Institutions. Springer 2013. ISBN: 978-3-319-03103-3. [online]. Available at URL: http://www.springer.com/cda/content/document/cda_downloaddocument/9783319031033-c1.pdf?SGWID=0-0-45-1438808-p176329077>. [accessed 31.1.2016].

BUSCHMANN, Ch. – SCHMALTZ, Ch. (2015). *Sovereign Collateral as a Trojan Horse: Why do we need an LCR*+. Frankfurt School of Finance & Management. Aarhus University. 19. August 2015. [online]. Available online at URL: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2572753>. [accessed on 31.1.2016].

Guideline (EU) 2015/510 of the European Central Bank of 19 December 2014 on the implementation of the Eurosystem monetary policy framework (ECB/2014/60) (recast). [online]. Available online at URL: https://www.ecb.europa.eu/ecb/legal/pdf/oj_jol_2015_091_r_0002_en_txt.pdf>. [accessed on 31.1.2016].

Guideline (EU) 2016/65 of the European Central Bank of 18 November 2015 on the valuation haircuts applied in the implementation of the Eurosystem monetary policy framework (ECB/2015/35). [online]. Available online at URL: https://www.ecb.europa.eu/ecb/legal/pdf/oj_jol_2016_014_r_0006_en_txt.pdf>. [accessed on 2.2.2016].

KRISHNAMURTHY, A. – NAGEL, S. – VISSING-JORGENSEN, A. (2015). ECB Policies Involving Government Bond Purchases: Impact and Channels. December 2015.

MOLTENI, F. *Liquidity, Government Bonds and Sovereign Debt Crises.* [online]. Available at URL: http://www.parisschoolofeconomics.eu/IMG/pdf/jobmarket-1paper-molteni-pse.pdf). [accessed 31.1.2016].

Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012. [online]. Available at URL: ">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=EN>">http://europa.eu/legal-content/EU

WHELAN, K. (2014). *The ECB's Collateral Policy and Its Future as Lender of Last Resort. DIRECTORATE GENERAL FOR INTERNAL POLICIES*. POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY. November 2014. [online]. Available at URL: http://www.karlwhelan.com/EU-Dialogue/Whelan-November-2014.pdf>. [accessed 31.1. 2016].

The Wisdom of Crowds

Natália Hlavová

University of Economics in Bratislava Faculty of International Relations, Department of International Economic Relations and Economic Diplomacy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: natalia.hlavova@euba.sk

Abstract

The aim of this paper is to present the concept of the wisdom of crowds, its effectiveness, possible use in various fields involving decisions and also some of its limitations. We compare the basic aggregation of individual responses with group cooperation and its influence on the accuracy. The study uses the data acquired from the students about the population of major African cities. The results show that the estimates of students are diverse with different accuracy for different cities. We confirmed that group cooperation leads to lower accuracy than the aggregation of individual estimates. The study did not confirm the familiarity bias in students' estimates.

Keywords: wisdom of crowds, group decision, biases *JEL classification*: D 70

1. The Wisdom of Crowds

The paper deals with the concept of the wisdom of crowds or vox populi. The wisdom of crowds is famously connected to the British scientist Francis Galton and his work from the 1900s. Since then the concept was studied by psychologists, sociologists, behavioural economists and also applied in managerial practices.

The beginning of the wisdom of crowds dates back to 1907 when Galton tried to prove that only a few people had useful characteristics of like "Keenness of Sight and of Hearing, Colour Sense, Judgement of Eye, and Reaction Time." (Surowiecki, 2005) With the experiments in his laboratory he was trying to prove that the world would benefit if only the minority of the well-bred, as opposed to universal voting rights. The premise that groups of people decide badly was not exclusive is the mind of Galton, as many scholars before him shared the opinion on madness and stupidity of groups.

As part of his research (Galton, 1907) he used the data from the weight-judging competition at the country fair. The contestants (787 experienced butchers and farmers and also general public) placed wagers on what the weight of a displayed ox would be after the slaughter. By this experiment Galton tried to Contrary to what Galton expected, the mean of all guesses was just one pound less than the actual weight of 1198 pounds. According to this experiment, the guess of the crowd was almost perfect.

Since this initial paper on wisdom of crowds, the concept was studied and mostly confirmed in various fields. There were also some papers challenging the idea of the wisdom of crowds which can further help us determine the necessary conditions to fully harness the wisdom of crowds in our settings.

Many studies confirming the wisdom of crowds were performed in the field of financial markets. Chalmers et al. (2013) studied the decisions of individual investors in asset

allocation to mutual funds. Among other findings, the results confirm that collectively the investors reacted in a sensible manner when determining asset allocation.

The wisdom of crowds concept also holds in the research of Hill and Ready-Campbell (2011). They used the data from large sample of online users to determine the future performance of companies and products. These aggregate results were then compared to the data on the same subject from experts in S&P 500. The large sample of online users was more accurate in their predictions than S&P 500 in two studied years. In addition to this the researchers identified best performing online users and weighted the prediction in their favour which led to even more accurate results.

Similar study was performed by Budescu and Chen (2014) on the predictions similar to those from European Central Bank and various social events. The group of 1233 participants in the first round predicted the outcomes of current events. The individuals were then assigned the weight of their predictions based on the accuracy of their predictions in the first round. The accuracy of predictions in the second round was higher than in the first round. This supports the idea that some individuals are consistently better contributors to the wisdom of crowds and that it is helpful to eliminate the guesses of poor performers.

Chen et al. (2014) studied the wisdom of crowds in financial securities in social media. This is the place where the experts' articles about the future value of financial securities meet the commentaries of public users interested in their predictions. The analysis of these texts shows that both experts' articles and users' commentaries can predict future stock returns and earnings surprises.

Collective intelligence can be used in business practice as well. As pointed out by Buckley (2016) prediction markets using diverse groups can help the firms to determine crucial and complex decisions. When the firm decides if it would benefit from setting a prediction market, it should consider the following: appropriateness of this decision making tool for given situation, choice of the audience and budgetary requirements. If after the series of evaluation the management decides to use this decision tool, it may harness to data needed for optimal decision thanks to the phenomenon of the wisdom of crowds.

According to Ray (2006) prediction markets are accurate in many other areas of business decisions and can predict information about interest rates, inflation, exchange rates, stocks, commodity prices and many other financial data. The prediction markets using the data from vast and diverse groups are very accurate and thereby are very successful in the information function of the markets. Together with almost no regulations prediction markets belong to the most efficient markets in history.

Another area where the wisdom of crowds can be applied is sport betting. Hong and Skiena (2010) studied the wisdom of crowds in the setting of American National Football League by comparing the predictions of professional journalists and fans online through blogs and microblogs. The accuracy of the score predictions differed throughout the season but showed some general characteristics. The predictions aggregated from online users' data were more accurate than the experts' predictions. There was however one bias in both expert and general public predictions based on geography. There was a bias to predict the win of the team from the area close to the subject making tips.

Additional bias in the betting on NFL results was identified in the paper by Simmons et al. (2011). In this case the bias was only present among general public estimation and not in the predictions of experts, thus weakening the wisdom of crowds and leading to less precise results for the group. The group predictions were strongly influenced by the position of the team as favourite or underdog. Even when for the concrete match the experts favoured the

underdog, group betters chose the favourites thus weakening the collective intelligence or the wisdom of crowd. This flaw may be ascribed to the familiarity bias described by Zajonc (1980). When given the opportunity, people tend to choose the option they are more familiar with, as for example more famous football team.

Very interesting application of the wisdom of crowds is in the field of science typically reserved to highly educated scientists with specific focus on the narrow area of study. The scientists from the University of Washington (Savage, 2012) struggled to discover the structure of the protein multiplying the HIV. They colleagues then developed an online game for players to arrange proteins to their lowest-energy form. The scientists were able to come up with the structure based on the results of 57 000 players within three weeks. In this study collective intelligence outperformed not only individual experts but also computers, because of their ability to spot unusual things and their superior image-processing capabilities.

Probably the most striking example of the wisdom of crowds is the accuracy of predicting climate related events by this technique. Hueffer et al. (2013) studied the poll in Alaska known as Nenana Ice Classic, where the participants guess the date and time when the ice on Tanana River will crack signalling the begin of spring. The predictions were made during the period between 1955 and 2009 with high accuracy (more accurate than historical models) and in accordance with climate patterns change. This means that rational individuals based their predictions on historical models and contemporaneous weather information.

The wisdom of crowds effect is based on a principle used routinely in many sciences. As averaging across questions reduces the error of the overall measurement, averaging across the opinions of individuals reduces impact of the error contributed by each individual opinion. This practice is used even by individuals when deciding on something personal and asking several people to give their opinion. Iyer and Graham (2012) state that in order to harness the positive effect of the wisdom of crowds, two conditions must be met. The group of people must have an expertise in the field and must be diverse, so that they do not share the same biases.

In previous studies the individuals forming the aggregate prediction were independent from the choices of their peers. In the study done by Lorenz et al. (2011) we can see how the social aspect can influence the quality of information obtained by the wisdom of crowds. The subjects of this study were asked simple geographical and statistical question on topic which they should be familiar with but unlikely know the exact answer. In the first round they put their estimate and in the following rounds they could base their answers on the answers of their peers or on their communication about the topics. The results show two characteristics of the estimates influenced by social interaction. They answers tend to be less diverse, but also less accurate than in case of individual tips. Social interaction is shown to undermine the wisdom of crowds, even without the need to come to a consensus.

The study by Solomon (2010) confirms the negative effect of group cooperation on the advantages of collective intelligence or the wisdom of crowds. The conditions for this research are limited for the environment of the company. The authors compared the decision made by aggregated individual decisions with the decision made in group. The group decisions and also individual expert judgement were worse than the decision made by the aggregation of individual decision within the group. The perceived pressure to reach consensus can lead to less than optimal decision in the group and undermine collective intelligence.

In the following part of this paper we will introduce the result of our research concerning the accuracy of aggregated students' responses on the population of African cities. We also compare the results of aggregation of individual guesses with the results of guesses influenced by group communication and cooperation.

2. Methodology and results

In our paper we examine the wisdom of crowds on the sample of 66 students of the Faculty of International Relations of the University of Economics in Bratislava in their final years of studies. As part of their course on developing countries, mainly Africa, they were asked to estimate the population of four cities in Africa. Their estimates are studied in this paper.

The first part of our research we decided on the cities which will be part of our research. We included capitals and other major cities in Africa and presented the list of 10 cities to students. They were then asked to indicate whether they know the names of these cities and also to add maximum of five more African cities they know. We tried to use the results to study the familiarity bias where the student would be prone to guess that familiar cities have bigger population.

Based on these results we selected two pair of cities with comparable levels of familiarity among the students. The first pair of familiar cities that almost all students know is Cairo (66 students know the city) and Johannesburg (61 students know the city). For the second pair of less familiar cities we chose Dar es Salaam (16 students know the city) and Casablanca (17 students know the city).

First we asked the students to write down their estimation of the population of Johannesburg and the population of Dar es Salaam. For this task they were asked to work independently. For the second part of our study we asked the student to write down their estimates of the population of Cairo and the population of Casablanca. In this second part they were asked to discuss their estimates within the smaller groups of about 20 students. There was no need to agree on the final estimate within the group.

The results of the aggregated estimates of student were then compared with the data on actual population of the urban area of concerned cities. (The African Economist, 2012) The data on actual population together with the students' aggregated estimates are in the Table 1. The estimates are rounded to whole numbers.

Table 1

	Johannesburg	Dar es Salaam	Cairo	Casablanca
Actual population	5 014 000	2 456 100	15 546 100	3 344 300
Average estimate	6 417 649	2 996 674	7 352 879	2 425 593
Median	3 000 000	1 500 000	7 000 000	2 300 000
Standard deviation	11 154 484	3 839 935	5 238 926	1 544 682

Actual and estimated population

Source: own calculations & The African Economist (2012)

The aggregated estimations of the students in comparison to the actual population of these cities are very different. We compare the accuracy of an estimate to the actual population based on the percentage difference between the estimate and the actual population. The estimates of the students were very diverse what we can see from the values of standard deviations in Table 1. The average inaccuracy in all four cases is 32.54%.

The most accurate of all estimates was the estimate of the population of Dar es Salaam, the capital of Tanzania. The average estimate was almost 3 million inhabitants, while the actual population is only little less than 2.5 million inhabitants. The estimate was therefore 122% of the actual population or 22% inaccurate.

The average estimates were almost equally inaccurate for the cities of Johannesburg and Casablanca. In case of Johannesburg the average estimate was almost 6.5 million, while actually this city in South Africa has little more than 5 million inhabitants. The estimate was 127.99% of the actual population which means 27.99% inaccuracy. For Casablanca the average estimate less than 2.5 million was lower than the actual number of 3.3 million inhabitants. The average estimate was only 72.53%, which means the inaccuracy is 27.47%.

The worst average estimate among student was recorded in case of Cairo. One of the biggest cities in Africa was highly underestimated with the average of only slightly over 7 million, while the actual population is 15.5 million inhabitants. The average estimate was only 47.3% of the total population which means that the inaccuracy of this estimate is over 52.7%.

When we compare the results of the first round and the second round of estimates, we can compare the accuracy of aggregate individual estimates and estimates based on previous communication and feedback from the group. The literature overview in the first chapter suggests better results for aggregated individual estimates. In our case we will look for this number on estimates of population in Johannesburg and Dar es Salaam. The average inaccuracy in these cases is 25%. The estimates based on group cooperation are those for Cairo and Casablanca. The average inaccuracy in this case is 40.09%. The results of our study confirm the results of previous studies that the aggregated individual estimates are more accurate than estimates based on some form of group cooperation.

Based on the familiarity bias we supposed two results. First we assumed that the student will be more accurate in estimating the population of familiar cities, in our case Johannesburg and Cairo. The second assumption was that the population of familiar cities in the students' estimates would be overvalued, because students would see familiar cities as more important and thereby bigger.

The results of our study do not support either of these assumptions. The average estimates of the population in familiar cities was 40.35% inaccurate, while the average estimate of the population in unfamiliar cities of Dar es Salaam and Casablanca was only 24.74% inaccurate.

The second assumption was also proven false in our study. The population in one familiar city, Johannesburg, was overestimated by almost 28%, but in case of another familiar city, Cairo, the population was highly underestimated, by more than 52%. Also not both unfamiliar cities' populations were underestimated. While this was true for Casablanca, with the inaccuracy over 27%, the population of Dar es Salaam was overestimated by 22%.

The overestimation and underestimation of cities' populations seems to be connected not to the familiarity, but rather to the individual or group based estimates. When the students worked individually they tended to overestimate the number of inhabitants. However when they worked in some group setting they tended to underestimate the number of inhabitants. This may mean that the group cooperation leads to more conservative estimates.

3. Conclusion

This article introduces the concept of the wisdom of crowds also known as collective intelligence. This is basically the premise that aggregated estimates of the big diverse group are better than individual estimates, even better than the estimates of experts. This fact can be useful in various areas to improve decision making and formulation of expectations. The

wisdom of crowds was applied in business, science, sports and even in climate and weather predictions.

There are some possible biases than can undermine the positive effects of the concept, for example familiarity bias and group cooperation. Both of these biases are also studied in our research.

For the purpose of this paper we used the data acquired from 66 students to study if the phenomenon of the wisdom of crowds can be used for factual information. This application of collective intelligence is not common, but there were studies based on this as well. We studied the accuracy of students' estimates and also how the accuracy can be influenced by cooperation in group and by familiarity bias.

The results of our study show that the average inaccuracy in all cases is over 32%. The students were most successful in estimating the population of Dar es Salaam in Tanzania and least successful in estimating the number of inhabitants in Cairo, Egypt.

The group cooperation led to worse estimates than only aggregation of individual estimates, which is in accordance with literature review. In addition, the cooperation in group before estimating the population of the cities led to more conservative estimates and the student underestimated the cities' population when working in groups.

The familiarity bias may have influenced the estimates in two possible ways. The firs assumption was that the familiar cities' estimates will be overvalued. The results did not support this assumption, as familiar city's population was underestimated in case of Cairo and overestimated in case of Johannesburg. The second assumption was that the student will be able to better estimate the population of familiar cities. Our results showed that the estimates for unfamiliar cities were more accurate.

References

BUCKLEY, P. (2016). Harnessing the wisdom of crowds: Decision spaces for prediction markets. *Business Horizons*. Vol. 59, Issue 1, pp. 85-94. ISSN 0007-6813.

BUDESCU, D. V. – CHEN, E. (2014). Identifying Expertise to Extract the Wisdom of Crowds. *Management Science*. Vol. 61, Issue 2, pp. 267-280. ISSN 1526-5501.

CHALMERS, J. – KAUL, A. – PHILLIPS, B. (2013). The wisdom of crowds: Mutual fund investors' aggregate asset allocation decisions. *Journal of Banking & Finance*. Vol. 37, Issue 9, pp 3318-3333. ISSN 0378-4266.

CHEN, H. – DE, P. – HU, Y. J. – A, B. H. (2014). Wisdom of Crowds: The Value of Stock Opinions Transmitted Through Social Media. *Review of Financial Studies*. Vol. 27, Issue 5, pp. 1367-1403. ISSN 1465-7368.

Deliberation and Dissent. *The Southern Journal of Philosophy*. Vol. 44, Issue S1, pp. 28-42. ISSN 2041-6962.

GALTON, F. (1907). Vox Populi (The Wisdom of Crowds). *Nature*. Vol. 75, Issue 7, pp. 450-451. ISSN 0028-0836

HILL, S. – READY-CAMPBELL, N. (2011). Expert Stock Picker: The Wisdom of (Experts in) Crowds. *International Journal of Electronic Commerce*. Vol. 15, Issue 3, pp. 73-102. ISSN 1557-9301.

HONG, Y. – SKIENA, S. (2010). The Wisdom of Bookies? Sentiment Analysis Versus the NFL Point Spread. In *Proceedings of the Fourth International AAAI Conference on Weblogs and Social Media*. Washington, DC: Association for the Advancement of Artificial Intelligence, pp. 251-254. ISBN 978-1-57735-445-1.

HUEFFER, K. – FONSECA, M. A. – LEISEROWITZ, A. – TAYLOR, K. M. (2013). The wisdom of crowds: Predicting a weather and climate-related event. *Judgement and Decision Making*. Vol. 8, Issue 2, pp. 91-105. ISSN 1930-2975.

IYER, R. – GRAHAM, J. (2012). Leveraging the Wisdom of Crowds in a Data-Rich Utopia. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory.* Vol. 23, Issue 3, pp. 271-273. ISSN 0003-066X.

LORENZ, J. – RAUHUT, H. – SCHWEITZER, F. – HELBING, D. (2011). How social influence can undermine the wisdom of crowd effect. *Proceedings of the National Academy of Sciences of the United States of America*. Vol. 108, Issue 22, pp. 9020-9025. ISSN 1091-6490.

RAY, R. (2006). Prediction Markets and the Financial "Wisdom of Crowds". *Journal of Behavioral Finance*. Vol. 7, Issue 1, pp. 2-4. ISSN 1542-7579.

SAVAGE, N. (2012). Gaining Wisdom from Crowds. *Communications of the ACM*. Vol. 55, Issue 3, pp. 13-15. ISSN 0001-0782.

SIMMONS, J. P. – NELSON, L. D. – GALAK, J. – SHANE, F. (2011). Intuitive Biases in Choice versus Estimation: Implications for the Wisdom of Crowds. *Journal of Consumer Research*. Vol. 38, Issue 1, pp. 1-15. ISSN 1537-5277.

SOLOMON, M. (2010). Groupthink versus The Wisdom of Crowds: The Social Epistemology of Deliberation and Dissent. In The Southern Journal of Philosophy. Volume 44, Issue S1, pp. 28-42. DOI: 10.1111/j.2041-6962.2006.tb00028.x. ISSN 2041-6962.

SUROWIECKI, J. (2005). *The Wisdom of Crowds*. New York: Anchor Books, 2005. ISBN 0-385-72170-6.

The African Economist. (2012). *50 Largest Cities in Africa*. [online]. Available at URL: <<u>http://theafricaneconomist.com/50-largest-cities-in-africa/#.VtSOTvnhDIU></u>. [accessed 20. 02.2016].

ZAJONC, R. B. (1980). Feeling and thinking: Preferences need no interferences. *American Psychologist.* Vol. 35, Issue 2, pp. 151-175. eISSN 1935-990X.

Integration Development of the Visegrad Group Endeavouring to Convergence into European Structures

Martin Hudec

University of Economics in Bratislava Faculty of Commerce, Department of Marketing Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: mhudec18@gmail.com

Abstract

In the Visegrad countries whose economic and social transformation is generally considered as highly successful, the process of European integration was presented as some kind of return on the map of Europe. Nowadays, many years after the formal completion of these processes and signing of the accession treaties in 2004, especially in terms of the continuing crisis of the European Union, it is time to take a slight look back into the past and to analyse selected integration processes, focusing on major convergence steps in order to better understand the importance of integration development and ambitions of the V4 countries. Aim of this research is the comparison of selected European integration processes of the V4 countries till their integration into the European Union in 2004. The political situation, including the economies of these countries have gone over the last few decades through significant changes. Although these processes may seem inevitable, predictable and clearly towards the way of integration, the development of Visegrad could have taken place on a different line, which in the way of consequences of development can be hard to imagine today.

Keywords: Visegrad Group, European Union, Convergence *JEL Classification:* 04, 010, 052

Introduction

The Visegrad countries have set and achieved many relevant goals by their constant cooperation, along with mainly the restoration of democratic principles and national sovereignties. Destruction of the totalitarian system have offered a way and the first but foremost step for achieving freedom not only in terms of economic, social, and spiritual debris, but have also initiated a parliamentary democracy and respect for fundamental human rights and freedoms. At the same time, the V4 countries have created a modern market economy with a full integration into the European legal system. Governments are persuaded that their cooperation is an important step towards the European integration, which can be only done as practical cooperation steps to achieve this in particular with the key European institutions, for example utilizing a strong ties, consulting on safety and internal borders, the resolution to create a smooth relationship between institutions and socio-economical organizations. Moreover, free movement of capital, good environment for cooperation between enterprises and foreign capital investments, development of transport infrastructure, cooperation in the field of ecology and the right conditions for the exchange of information, cultural goods and values are considered to be the pillars of convergence towards the developed countries (Schreier, 2015).

1 Methodology

The inevitable fall of communism in Europe have ended the Eastern block and changed the course over the post-communist countries. As a result, countries all over the Europe started their free journey towards newly adjusting political pluralism and parliamentary democracy, private companies and economy sectors, which have opened their ways to foreign commerce and amazing investment options. Naturally, this complex process had markedly different course in the essence of speed around the Europe. The key methods of this research are analysis and comparison. The comparative method is applied especially in the third part of the research, where it is used to compare individual selected aspects and the progress of individual accession negotiations of the V4 countries through the integration processes into The European Union. In combination with the method of comparison there are also used analytical and historical methods, conducive to achieving required results. We focus mainly on the domestic standpoint and the related foreign political decisions of the V4 countries during the reported period, which had an imperative significance during many negotiation processes of entering the EU.

2 Results and Discussion

The origins and development of Visegrad

Inspired and based on the historic meeting of European monarchs in Visegrad in 1335 (gathered monarchs John of Luxembourg, King of Hungary Charles I Robert and King of Poland Casimir III the Great, have agreed to resolve their disputes and cooperation) the president of the Czechoslovak Federal Republic, Václav Havel have organized on April 9, 1990 meeting of Heads of State of Czechoslovakia, Poland and Hungary to deepen their cooperation and to define the foreign policy orientation of the participating countries. The basis for the future cooperation of the Visegrad countries was based on solving the same problems arising from the collapse of the Eastern bloc and the dissolution of the Warsaw Pact, withdrawal of Soviet troops, the Council for Mutual Economic Assistance, concluding treaties with the USSR, integration into the structures of NATO and the European society. Furthermore, there were also fears of a possible mass migration affected by the collapse USSR. The first joint declaration of the V4 in April, 1991 has therefore included the adoption of the following points - harmonizing countries' practices in establishing links with European institutions, the development of economic cooperation, transport infrastructure, extending cooperation in environmental protection, creating conditions for the exchange of information, cultural heritage and values, ensuring the rights of national minorities and contributing into creating sub-regional contacts (Gilbert, 2011).

Promising cooperation at the time among the countries of the V3 (Czechoslovakia, Poland and Hungary) have continued through the summit in Krakow in November 1991, and then during a summit in Prague on May 6, 1992. The summit in Prague meant a great qualitative shift of the Visegrad cooperation, and although there have been subsequent internal political changes later on, this summit was definitely a success, mainly because of the adoption, at the Prague Summit Declaration, of the following points - participants agreed unequivocally with the trend to join the NATO structures in the future; agreement with the creation of the peacekeeping forces of the OBSE (Organization for Security and Co-operation in Europe); support the use of NATO and WEU (Western European Union) mechanisms for peacekeeping operations; common interest in economic stability and the Economic Community of Independent States; the willingness to contribute to the participation of

international assistance to countries of the CIS (Commonwealth of Independent States) (Fawn, 2003).

2.1 Visegrad Rediscovery

Between the years 1992-1998 the promising Visegrad program started to lose its intensity. This fact was impacted by various factors. The first of them was the division of the former Czechoslovakia into two new states, which is associated with controversial foreign policy of the former Slovak government, having in the mentioned period convergence tendencies towards the East, as it did not receive an understanding nor consent in Western Europe. Another influencing factor was the continuing conflict in Yugoslavia, which had rather discouraged most of states from joint integration. On the other hand, it was the CEFTA (Central European Free Trade Agreement, signed on December 21, 1992) which has represented a key role as the agreement was aimed at the gradual elimination of trade barriers in trade participating of the V4 countries with the final emergence of a free trade zone on 1 January, 2001. The main reasons for the creation of this group were the economic problems of foreign trade of the participating countries due to the loss of traditional outlets for its products caused by the collapse of the former Soviet Union Comecon organization (Council for Mutual Economic Assistance).

The rediscovery of the Visegrad's group potential in the context of mutual socioeconomic and political cooperation has occurred once again after the period of stagnation thanks to the initiative of the Government of the Czech Social Democratic party, which initiated the meeting of the Prime Minister of Poland, Czech Republic and Hungary in Budapest on 21 October, 1998. The result of the meeting in Budapest was consensus on the benefits of Visegrad cooperation, confirmation of Slovakia as a full member of Visegrad. On this meeting, there has also been defined the objective of Visegrad's cooperation as a means of integration into EU structures, and not its equivalent. On the further development of Visegrad cooperation in the following years were almost equally attributable by all participating countries through alternating presidency. As the balance of each presidency, we can say that the contribution was a newly received contract for future cooperation, which were adopted at the summit in Kroměříž in 2004 which gave the right direction for further Visegrad cooperation inside the EU. Poland, during his Presidency managed to take full advantage of its largest foreign political influence of the V4 countries, increasing Europe-wide awareness of the Visegrad group including Polish credit for intensifying cooperation within the group. The Hungarian presidency oversaw the cooperation of the Visegrad Group in the field of energy and security. Slovak contribution to Visegrad consisted mainly in raising awareness about the actual activity of the V4 and the International Visegrad Fund (Fiala, 2009). Slovak Presidency also outlined the basic areas of common foreign interests, which were the Eastern Partnership and with the Western Balkan.

2.2 Convergence towards the European integration

Most of the V4 candidate countries have filed an official request for membership to the EU between the years 1995 and 1996. Poland submitted a formal request for membership to the European Union during the Foreign Minister Andrzej Olechowski government on April 8, 1994 at the time of Greek EU Presidency. Lobbying for Polish accession began shortly after applying for membership, especially the efforts of convincing EU governments about the indispensability of Poland as a future member. This initiative began to bear fruit in 1995, when the first foreign politicians started claiming that Poland is a serious candidate for membership in 2000. These views were shared mainly by former French President Jacques

Chirac and German Chancellor Helmut Kohl. However, a realistic view of the membership in 2000 was rather utopian, because Poland together with other candidate countries for membership was not quite ready yet. However, Poland was a country that could very well use the resources to help and follow the pre-accession EU funds. In subsequent years, Poland was able to utilize 93-97% of money allocated. Until 2004, Poland was able to get almost 6 billion euros from the funds such as Phare, Tempus, ISPA and Sapard. Along with the orientation of the foreign policy of Poland to lobby for support for entering the EU, Poland was also trying to change the face of the country in the eyes of the international public (it was mainly supporting vernissages, concerts, theatrical performances). Another part of Poland's pre-accession strategy was to convince the Poles about the benefits of EU membership. In addition to this, the main opponents of European integration were members of Self-Defence party (SRP) and the League of Polish Families. Their strategy was to create concerns of EU membership. However, the situation in the eyes of Polish public was more on a wave of optimism to European integration than euroscepticism.

The entry of Poland into the EU was notably supported by Germany, which was aware of its geographic position as a border state of the EU and would rather like to see Poland as a center than the end point. Another good reason for a German initiative was the development project of the former GDR, which would not be possible without cross-border cooperation with neighboring regions of Poland. In January 1997, the Polish government has adopted the National Strategy for Integration, clearly defining the goals needed for European integration. March 31, 1998 was followed by the official launch of the negotiation talks between the European Union and Poland on issues concerning Poland's entry into the EU. Initial negotiations were led mainly in three areas, namely science, education system and policy of Poland towards SMEs (Small and medium-sized enterprises) by Jan Kułakowski, as chief negotiator for the Polish candidacy (Filipova, 2011).

In accordance with the timetable for entry negotiations, Poland submitted at the end of 1999 its views on all 31 chapters of the acquis (the body of European Union law). The final opinion was supplemented by agriculture, which appeared to be one of the most difficult chapters of accession talks. Poland has managed in 1999 to close only one of the chapters from the accession negotiations, and that was the area of statistics. Most of the negotiations on the various chapters had then launched during the Portuguese presidency in the first half of 2000. Throughout the negotiations and the integration of Polish interest to all negotiations on sensitive areas were fast and peaceful, political establishment was aware of the low and very sensitive support for EU accession among the general public. The second chapter from the accession negotiations was the areas that could bring greater or lesser problems, for example on free movement of goods, where the Polish side did not secure the necessary legislation systems of European certificates. The biggest problem, however, arose when discussing agriculture and heavy industry. Heavy industry and agriculture in particular, have been the backbone of Poland into the industry since 1989 (Cordell, 2002).

During the year 2000, Poland was able to close the chapter called Common Foreign and Security Policy (CFSP), but due to interference in the Polish import duties of crops, the talks on liberalizing trade in agricultural products were halted. In October 2001 new and stronger government came to power, whose main electoral program became the EU entry. This government was pushing and accelerating the process of preparation Poland for EU membership, because there was a chance that Poland would not be able to manage all the processes of integration and Eastern enlargement of the EU and that it would shift or be without its participation. At the end of 2001, Poland had concluded with the European Commission only 18 chapters, of which a large number of complex chapters would yet to be discussed. The new Polish government led by Leszek Miller, however, managed to shake off delay integration and had ultimately led to the successful completion of accession talks. Poland had in the imaginary overall ranking finished in the last place in 2004 among other new members, but eventually even the mere presence of Poland between prospective new EU countries was sufficient for the Poles victory (Chwalba, 2009).

On the other hand, Hungary submitted an application for membership as one of the first countries from so called Eastern enlargement on 1 April, 1994. In July 1997, after the European Commission published assessments of individual member countries, including Hungary, it was in these valuations cited as one of the six candidate countries, which meets criteria for starting negotiation talks. Hungary had earned positive reviews in competition, public procurement, intellectual property protection, corporate law and accounting. The European Commission also praised Hungary for the established trend of economic policy, however, pointed to its fragility. The biggest shortcomings of the European Commission was at the time the area of environmental protection (among the negatively assessed concerns was the nuclear power plant in Paks), customs control, energy and the laws protecting consumers. The European Commission also criticized the excessive energy dependence of Hungary from the Russian Federation (Hungary's energy dependence on the Russian Federation had reached 50% at the time).

Domestically, the Hungarian government put emphasis on the public opinion and systematically preparing public on the EU membership need. Despite the understandable resistance from the opposition, Hungarian government could rely on the support of EU accession among the public by 62-70%. The actual negotiation talks between the EU and Hungary were launched in Brussels on 31 March, 1998, while assuring the EU that it intends to adopt the acquis communautaire in its entirety and intends to participate in all EU common policies. The Hungarian government during one of the first negotiation talks also said it will not seek any permanent exemption in the accession treaty, but will ask for the possibility of transitional periods in the areas of agriculture, environment and transport. In regular European Commission report from 1999, Hungary was classified as a competitive market economy, where positively assessed was the export of which 77% was directed to EU countries. Committee saw shortcomings in the inflation rate and the low level of health and environmental sustainability (Minkenberg, 2015). In 2000, the Hungarian negotiating team had transferred the integration process to a new stage, focusing on the given difficult chapters. This hard work of the Hungarian team was reflected in the closure of an important chapter of energy, social policy and unemployment (these two chapters seemed to be in previous years very difficult, while due to the closure of these two chapters, the total number of closed chapters rose to 13).

Hungarian negotiating team achieved very good results during negotiations while Hungary resulted in a ranking of countries with the highest number of closed chapters in October 2001, which were 22 and 8 other chapters have been opened in the negotiations. For example, Hungary was the first V4 country which had closed taxes chapter. Conversely, it was the only V4 country with remaining opened customs union chapter, which was being perceived sensitively. In 2002 Hungary managed to close the remaining 8 chapters, including problematic chapters such as culture and customs union, making Hungary evaluated by the European Commission as the best-prepared candidate country (Schreier, 2015). Subsequently, Hungary has ended accession talks with the European Council summit in Copenhagen in December 2002 with a membership decision on 1 April, 2004.

At the European Council meeting in Cannes on July 27, 1995 Slovakia submitted its application for membership to the EU. In accordance with the internal procedures of the EU, the European Commission was asked to prepare a report on the requests of individual countries. Unfortunately, European Commission stated the same fact as in the report on

Slovakia's membership to the EU in 1997, saying that Slovakia does not fulfill satisfactorily political criteria set by the Copenhagen summit. On the basis of this report the European Commission after the European Council in December 1997 did not recommend opening accession negotiations with Slovakia. Major milestone in Slovakia's European integration became the year 1998, mainly as the result of parliamentary elections, creating conditions for a government led by Mikuláš Dzurinda. During Dzurinda's first visit to Brussels institutions, the former Commissioner Hans van den Broek offered to forge a working group at a high level, which aimed to resume Slovakia's European integration attempts. At the summit in Vienna in December 1998, the European Union has stated that the democratic elections in Slovakia provided the opportunity to solve political problems, and that they offered a way to satisfy the political criteria. This high-level working group was led by François Lamoureux (European Commission side) and Ján Figel' (the Slovak side to the EU's chief negotiator).

Furthermore, in the case of fulfilling the economic criteria, the working group dealt with measures to ensure macroeconomic balance. Important decisions were taken regarding the effective restructuring and privatization of the banking sector, also in the field of internal market law. Within the working group there was also formed a sub-group dealing with nuclear energy, where one of the conditions was the acceptance of the concept of nuclear energy development, which envisaged the closure of two units at a nuclear power plant V-1 Jaslovské Bohunice. All these actions have contributed to the positive assessment by the European Commission. Thanks to the sustained efforts of the Slovak Government and the working group, the European Council summit in Helsinki in December 1999 had concluded that Slovakia fulfills the Copenhagen criteria and it was invited to accession talks (together with Latvia, Lithuania, Malta, Bulgaria and Romania). The big advantage of Slovak government at the beginning of the negotiation talks was a relatively large public support for joining the EU, backed up by solid support of 60-70% of the population (Weiner, 2009).

Slovakia has committed itself on February 15, 2000 to perform legislation optimization with the EU law and to establish the necessary administrative capacity by the end of 2002. At the beginning of negotiation talks Slovakia had fully accepted the objectives of the Amsterdam treaty and was ready to fully accept the acquis once entering into the EU. Therefore, it did not envisage negotiating any exemptions from the acquis, nevertheless it had wished to negotiate a transitional period specifically in those areas relating to the performance of the Slovak economy. In the first phase of negotiations, Slovakia aimed to open up the highest number of chapters by the end of 2000 and all of them by 2001. Even during the Portuguese presidency in the first half of 2000, it had managed to open eight negotiating chapters, and close six of them. Overall, by 2000 Slovakia managed to open 16 chapters, thereby meeting the goal of opening at least half of the chapters, of which ten of them were even closed. During the year 2001, the European Union opened negotiations with Slovakia on 13 chapters, 12 of which were tentatively concluded by the end of 2001 (Leška, 2006). Finally, in 2002 Slovakia had opened only two remaining trickiest chapters, competition and institutions, and managed them to conclude, thus succeeding in a significantly shortened time to catch up with the V4 group and to reach the same level of integration.

Although most candidate countries had filed an official application for the EU membership in 1995 and 1996, Czech Republic with the former Prime Minister Václav Klaus government (known for his skepticism towards the EU) was in no hurry (Gančaříková, 2007). Czech coalition government applied for the EU membership as one of the last candidate countries on January 17, 1996. Membership in the EU was for the Czech Republic at the time perceived as a future top foreign policy of the country, but not as an entity which would influence the internal running of the country. In July 1997, the text of Agenda 2000 was approved by the European Commission, aiming to create a stronger and larger union. Parts of

Agenda 2000 were reports reviews of the candidate countries. The Commission has also committed to regularly report on progress to the European Council in the preparations of candidate countries of Central and Eastern Europe. On the recommendation of the Commission referred to the European Council there was a meeting in Luxembourg on 13. 12. 1997 formally inviting 11 new countries, including the Czech Republic to join the EU. For the Czech Republic was invited president Václav Havel, accompanied by former Foreign Minister Jaroslav Šedivý (Barták, 2007).

Legal framework of the integration process was formulated in the document called Accession Partnership. This entry partnership was introduced on March 15, 1998 during the negotiation processes phase of integration talks about Czech Republic's membership in the EU (this process was called screening, where the current level of legislation in the candidate countries was compared with European legislation). For the needs to perform screening of the Czech legislation and all other candidate countries the EU acquis was divided by segments into 31 chapters and always before starting negotiations on a specific chapter The European Commission elaborated a common position. On January 14, 1998 the Deputy Foreign Minister Pavel Telička was appointed to be the head of negotiating team of the Czech Republic. The country has been relatively successful during 1999s negotiation talks, when negotiating team managed to close 10 negotiating chapters, including problematic chapters such as free movement of goods. Thus, the Czech Republic ranked the forefront of integration processes between candidate countries. There can be felt already remarkable progress in a report from 2000, especially even more speeding up the adoption of European law.

Reforms in the market economy have ensured a positive evaluation of the Czech Republic in the Commission report from 2001, but the problem remained with the Roma minority and the state administration reform. Thanks to the systematic work of the Czech negotiating team, they were able to conclude at the end of 2001 already 21 of the 30 chapters of negotiations. Closed chapters contained problematic areas such as the customs union. On the other hand, the Czech Republic remained negotiating important chapters of energy and environment. The problem arose in 2002 when addressing the issue of the Beneš decrees, but the analysis found that the acquis in terms of the decrees on the Czech side posed no legislative obstacle (Fiala, 2009). Process of negotiations with the Czech Republic and other remaining candidate countries was completed at the European Council in Copenhagen in December 2002 by completing all 31 chapters including the transitional period, which was supposed to provide more time to cope with the problematic areas of some obligations naturally arising from the EU membership (where the most solved problematic chapter negotiation process were undoubtedly energy and environment chapters).

3 Conclusions and policy implications

The importance and inevitability of democratization as a direct part of the convergence processes which have taken place in the Visegrad countries in the late 80s and 90s was necessary because the future European integration would be unthinkable without it. Subsequently, during the first half of the 90s in the field of integration processes Hungary together with Poland have positioned themselves as the leaders who relied on their position of economic reforms and political contribution to the fall of the Iron Curtain. This situation have to some extent lasted till the second half of the 90s, but began to change at the turn of the century. At first, Poland wasn't so strong during the negotiation talks with the EU and the Visegrad outsider Slovakia eventually landed among the candidates for accession to the European Union. All the V4 countries have finally joined the European Union at the same time, but the Czech Republic and Hungary were able to benefit from rather a smooth entry

compared to Poland and the Slovak Republic, whose negotiation processes were facing some problems.

All of the monitored countries joined the European Union together on May 1, 2004 (they have signed their contracts together on April 16, 2003 during a summit in Athens), while their entry was paced with signing the Accession Treaties and executing an EU membership referendum. The progress of the referendum was connected particularly because of the low voter turnout, which ranged from 58% in Poland to 46% in Hungary. Despite the low turnout, the referendum showed all eventually force and their outcome as positive. The highest support for the accession to the European Union was recorded in Slovakia with 92%, followed by Hungary with 84%. The support was consistently the lowest in Poland and the Czech Republic, where it reached 77%.

Generally, the V4 countries have many of same characteristics for example, the processes of democratization in the 80s and 90s, which have happened in all of them, however, their continuity was different. As another common sign may appear almost identical declaration of foreign policy of the 90s focused on Western Europe and the fastest possible integration into pro-European structures such as the fact that all Visegrad have joined the European Union at the same time.

On the contrary, the different characteristics in the convergence process of the European integration of the Visegrad countries can be seen mainly in slightly different negotiating processes, which took place at different times and with varying degrees of success at the time. Overall, it is fair to say that the integration processes in the Visegrad countries starting since the early 90s until joining the European Union in 2004, were followed in a line and were carried out almost identically.

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References

BARTÁK, K. – TELIČKA, P. (2007). *The Accession of the Czech Republic to the EU*. Oxford University Press: New York, 156.

CORDELL, K. (2002). Poland and the European Union. New York : Taylor and Francis, 224

CHWALBA, A. (2009). Polsko 1989 – 2008. Brno: Centrum pro studium demokracie a kultury, 305

FAWN, R. (2003). *Ideology and National Identity in Post-communist Foreign Policy*. New York: Routledge. 160 p.

FIALA, P. – PITROVÁ, M. (2009). *Evropská Unie*. Brno: Centrum pro studium demokracie a kultury. 803 p.

FIALA, P. – PITROVÁ, M. (2005). *Evropská Referenda*. Brno: Centrum pro studium demokracie a kultury. 310 p.

FILIPOVA, I. (2011). *The Visegrad states on the EU's Eastern frontier*. London: Lambert Academic Publishing. 124 p.

GANČAŘÍKOVÁ, I. (2007). *Postoje států k V4 a paralely*. [online]. Available at URL: <<u>http://www.e-polis.cz/clanek/visegrad-2-postoje-statu-k-v4-a-paralely.html></u>. [accesed 21. 02.2016].

GANČAŘÍKOVÁ, I. (2007). *Visegrád – Střední Evropa a spolupráce*. [online]. Available at URL: http://www.e-polis.cz/clanek/visegrad-1-stredni-evropa-a-spoluprace.html>. [accesed 21.02.2016].

GILBERT, M. (2011). European Integration: A Concise History. London: Rowman & Littlefield. 292 p.

LEŠKA, V. (2006). Slovensko 1993 – 2004. Praha: Ústav mezinárodních vztahů. 432 p.

MINKENBERG, M. (2015). Transforming the Transformation? London: Routledge. 396 p.

SCHREIER, Ch. (2015). 25 Years After: Mapping Civil Society in the Visegrád Countries. Stuttgart: Lucius & Lucius Verlag. 188 p.

WEINER, A. (2009). European Integration Theory. Oxford: University Press. 312 p.

The Important Role of Crude Oil in the Quality of Life in Selected Countries

Michelle Chmelová

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

Abstract

The first part of research belongs to own analysis of the crude oil market. The second part of this paper is devoted to quality of life. This part recognises subjective and objective aspect of quality of life where measurement methods are used and according to these methods OPEC countries are devided to groups. Next part of paper belongs to methodology and data. In this chapter we decribe the measurements of importance of crude oil for the quality of life. This chapter contains the variables which are use in panel regression. According to the measurement methods, we estimate the important role of the crude oil in quality of life which we measure as GDP per capita in PPS (international dollar). Finally, we state results.

Keywords: crude oil, oil market, gdp per capita, quality of life *JEL classification*: A13, C49, E01

1 Analysis of oil market

The past year has been a test for all producers and investors, who have had toface up to the realities of a shifting global oil industry. Prices of Brent oil fell from above \$111/barrel in february 2013 then to the \$31/barrel in february 2016. As we saw prices of crude oil fell down rapidly and fluctuation of crude oil prices led to negative macroeconomic consequances for country which export this primary input. This paper analyse situation on oil market in selected countries. The group of selected countries is organisation OPEC. The reason why we pay attention on this organisation is that this organisation own around 75% of world stock of this significant economic primary input. The world economy is based on different type of primary energy resources : oil, gas, coal and other renewables. Share of coal on total primary energy dominated to 60 years of previous century. The change has became from 70. years of previous cetury. In this season the share of oil started to rise from 30,5 % of total primary energy to 49,4% of total primary energy in 1980.

Analysing of production of crude oil in OPEC and share in total production:

Oil production									
Oil: Production					Change over				
Thousand barrels daily	2011	2012	2013	2014	2013				
Ecuador	501	505	527	556	5,6%				
Venezuela	2734	2704	2687	2719	1,1%				
Iran	4373	3742	3525	3614	2,0%				
Kuwait	2915	3172	3135	3123	-0,5%				
Qatar	1850	1968	1998	1982	-0,9%				

Table 1

Saudi Arabia	11144	11635	11393	11505	0,9%
United Arab Emirates	3325	3406	3648	3712	0,9%
Algeria	1642	1537	1485	1525	1,8%
Angola	1726	1784	1799	1712	-4,9%
Libya	479	1509	988	498	-49,8%
Nigeria	2450	2395	2302	2361	2,5%

Source: According to data available at http://www.tsp-data-portal.org/

Table 1 shows, that OPEC has importent role in production of cruide oil in the world. In 2014 production of OPEC create more than 40 % of total production (table 2). Saudi Arabia belongs to the biggest producer of crude oil in the world.

Table 2

Total world production of crude oil

production, thousand barrels daily						share of total in 2014
Total World	83980	86150	86579	88673	2,3%	100,0%
OPEC countries	35939	37472	36628	36593	-0,3%	41,0%

Source: BP Statistical Review of World Energy, June 2015 available on :http:PPwww.bp.com/statisticalreview

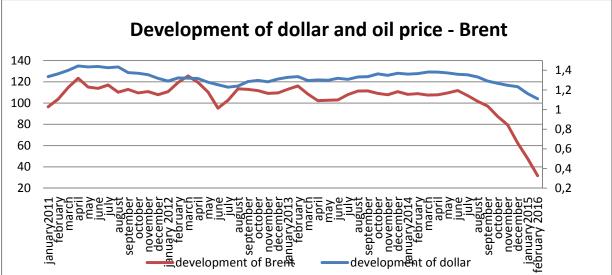
In Table 2, there is detected comparing of production of crude oil in the world and in OPEC countries. The production share of OPEC countries on total world production of crude oil introduces more than 40%. The results of analysing in production of crude oil are comfirmed in importen role of OPEC countries on oil market.

2 Reason of fell in price of crude oil

The first reason of fell in price of crude oil is related with development of dollars. Thats why apreciaton of american dollars had influence on falling in price of crude oil.

Graph 1

Development of dollar and price of oil-Brent



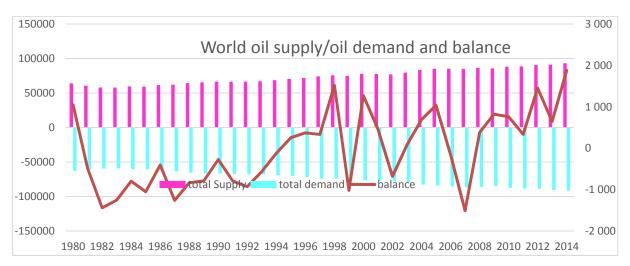
Source: ECB(devolpment of dollar¹, US. Energy Information Administration(development of Brent), own processing of data (data of month is calculated as average of day information of indicators

¹ definition, sources and explanatory notes:http:eia.doe.gov/dnaw/pet/TblDefs/pet_pri_spt_tbldef2.asp

The second important reason was meeting of OPEC, they control major part of crude oil. OPEC didn't decrease of production quota of crude oil, which action should lead to reducing supply of crude oil with target to prevent of continue falling of oil crude price. One of the reason of continuing fall of oil price was right this decesion.²

According to Graph 1, we can see the relationship between falling in crude oil price of Brent and decesion in november 2014, from the date we see that prices of crude oil fell to february 2016. In long term, the reason why crude oil price fall is the supply and the demand balance. Since 2008 we can recognize oversupply in the world oil market.³

Graph 2



World oil supply/demand and balance

Source: dataset OPEC Bulletin 2015, own processing of data, data are in thousand barrels per day. Available on: www.opec.org

The total demand for crude oil rise, but the rising is smaller than rise of total supply of crude oil. According to table, we can see demonstrate the growth rate of the total world demand and supply of crude oil in the world. In this part of analysing of oil market is important to say that in the world is marketing push on decreasing energy intensity of GDP. This fact is one of the reasons of decreasing demand of crude oil in the world. For instance, China dicrease energy intensity of GDP from 2013 to 2014 more than 6% per year.⁴

The world dicreasing of energy intensity of GDP from 2013 to 2014 represent 2,5% per year. If we look on change in energy intesity of GDP from 2000 to 2014 this dicreasing introduce 1,4 % for world, especially 2,4% for China and more than 4% for Ukraine, Nigeria, Portugal. Internationl Monetary Fund for quantifications of supply shocks of fall in oil price made estimate according to two scenario for global GDP⁵.

The result of scenario is positive efect in GDP of GDP in 2015. But from 2015 according to this estimate is negative economic growth. Despite this market instability, OPEC has continued to be an efficient, reliable and economic supplier of oil.

² http//www.worldbank.org/content/dam/Worldbank/GEP/GEP2015a/pdfs/GEP2015a_chapter4_report_oil.pdf

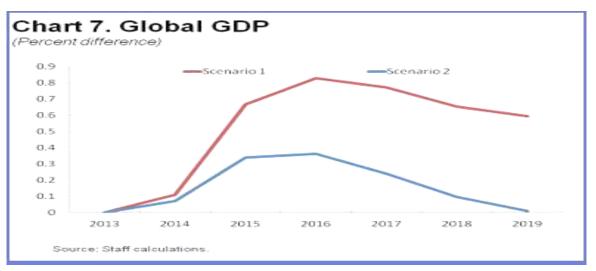
³ World oil outlook 2015

⁴ Data from BP Statistical Review of World Energy June 2015

⁵ Available on https://blog-imfdirect.imf.org/2014/12/22/seven-questions-about-the-recent-oil-price-slump/

Picture 1

Estimate of Global GDP by two scenario according to IMF estimation

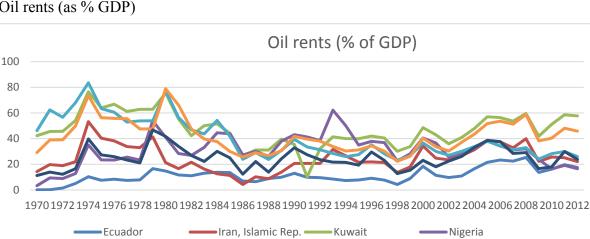


3 Impact on exporter countries

Oatar

The important quastion is: what it means for exporter countries (in this case OPEC). One visible impact is – when GDP is dicreasing then profit from oil production is decreasing too. The development of the oil rents shows that from 2012 oil rents dicreased (season of dicreasing oil price rapidly).

Graph 3



-Saudi Arabia

Oil rents (as % GDP)

Source: World bank dataset, last updated date 17.2.2016; own processing

But the degree of this impact dependents from degree of depedence of oil exports. We can see that countries like Angola, Iraq, Kuwait, Libya, Nigeria and Venezuela are very dependent on export of petroleum. This countries do not diverzificate their economy. Export of petroleum represent more than 90% of total export in this countries.

Venezuela, RB

Rady8

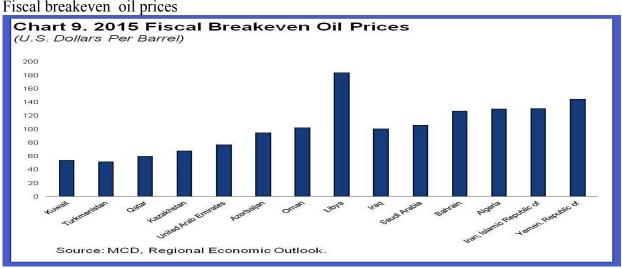
Share of perioreuni export on total expo	11			
share petroleum export on total export	2011	2012	2013	2014
Algeria	68,089%	64,823%	63,827%	67,687%
Angola	97,510%	98,398%	95,816%	<mark>90,144%</mark>
Ecuador	57,903%	57,858%	56,756%	42,852%
IR Iran	79,207%	94,469%	67,460%	54,204%
Iraq	99,736%	99,694%	99,621%	<mark>98,834%</mark>
Kuwait	94,776%	94,967%	94,321%	<mark>93,637%</mark>
Libya	97,667%	98,626%	96,582%	<mark>98,100%</mark>
Nigeria	93,769%	99,246%	93,898%	<mark>91,691%</mark>
Qatar	55,512%	48,926%	45,712%	43,208%
Saudi Arabia	84,850%	84,791%	83,560%	76,480%
United Arab Emirates	36,951%	34,333%	32,476%	28,356%
Venezuela	94,957%	96,126%	96,224%	<mark>96,421%</mark>
OPEC	74,478%	74,506%	69,783%	64,154%
	-		1 1 .	

Table 3

Source: dataset of OPEC bulletin december 2015, own processing according to data. Available on:www.opec.org

One way to illustrate the vulnerabilities of oil-exporting countries is to compute the so-called fiscal break-even prices—that is, the oil prices at which the governments of oil-exporting countries balance their budgets. For Middle Eastern and Central Asian countries, the breakeven prices range from \$54 per barrel for Kuwait to \$184 for Libya with a notable \$106 for Saudi Arabia.⁶ Negative fiscal effect on government borrowing, with high share of oil rents from export of oil in seasons where price is lower and lower is likely that country with high reserve of crude oil will try to rise their production in case where their productions capacity will enought to produce it. Falling oil prices will lead to a government budget deficit, and will require either higher taxes or government spending cuts. Other oil exporters like Venezuela are relying on oil revenues to fund generous social spending. A fall in oil prices could lead to a significant budget deficit and social problems.

Graph 4



Fiscal breakeven oil prices

⁶ https://blog-imfdirect.imf.org/2014/12/22/seven-questions-about-the-recent-oil-price-slump/

In most countries, a mechanical effect of the oil price decline is likely to be a fiscal deficit. Development of macroeconomic indicator General government net lending/borrowing shows, that the dicreasing in cruid oil price which influence oil rents has negative impact on government indicators. According to development of share of petroleum export on total export, we analyse situation on macroeconomic indicators. From year 2012 to 2014, dicreasing in crude oil prices shows influencing general government net lending/borrowing (Table 4).

Table 4

General government net lending/ borrowing Percent of GDP; data from weo october 2015, own processing

General government net lending/borrowing Percent of GDP	2011	2012	2013	2014
Angola	8,677	4,586	-0,334	-6,445
Iraq	4,744	4,094	-5,837	-5,307
Kuwait	33,023	34,662	34,007	26,296
Libya	-15,894	27,807	-4,047	-43,546
Saudi Arabia	11,164	12	5,79	-3,435

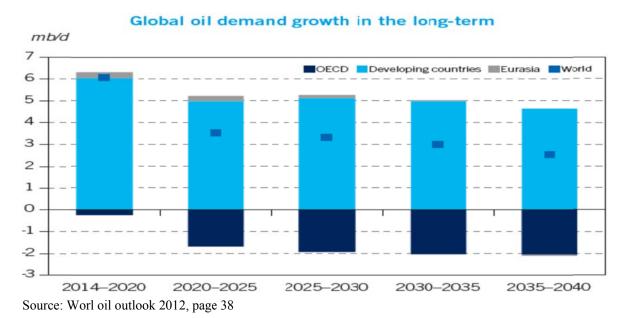
Source: International Monetary Fund, World Economic outlook Database, october 2015, own processing

Demand growth decelerates gradually in the long-term.

In terms of growth, an overall downward trend in oil demand growth is projected over the forecast period. While global oil demand is expected to grow during the medium-term (2014–2020) by 6.1 mb/d, growth decelerates to 3.5 mb/d during theperiod 2020–2025 and 3.3 mb/d for 2025–2030. During the period 2030–2035, it further decreases to 3 mb/d and then to 2.5 mb/d during the last five years of the forecast period.

Graph 5

Global oil demand growth in the long-term



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In previous part, we try to describe situation on oil market in selected countries. For deeper describing the role of oil in countries which export the crude oil, we analyse impact the role of the oil on quality of life in selected countries.

4 Quality of life and econometric analysis

For specifying the role of crude oil we pay attention on countries (from OPEC), which are dependent on oil rents, export of petroleum. Quality of life include objective and subjective aspects. Subjective aspects of quality of life is measured by "soft data". In this paper is used happy planet index and quality of life index. Objective aspects of quality of life is measured by human development inedx evidanced from 1990 by United Nations Development Programme. Subjective aspects of quality of life – happy planet index. According to latest results of happy planet index shows (151 examined countries), whether people from whole world make long, happy life. Happy planet index select area: life span, welfare, ecological-footpring. The rank of OPEC countries is following: Ecuador (23.place), Iraq (36.place), Iran (77.place), Libya (81.place), Angola (127.place), Kuwait (143.place) and Qatar (149.place)

For econometric estimation the role of the crude oil we decided to use GDP per capita in PPS in international dollars as dependent variable to qualify the quality of life and two independent variable - oil rents (% of GDP) and share of petroleum exports on total exports⁷

Selected countries are Angola, Kuwait, Libya, Saudi Arabia. The period under review is yers from 1985 to 2013 (as latest infromation about indicators).

We made econometric analysis by panel regression in STATA. We used fixed effect model.

The results

When oil rents rise about 1% then GDP will rise more than 1,9 % at unchanged share of petroleum exports on total exports. When share of petroleum exports on total exports rise about 1% then GDP will rise more than 2,4%. When we try to estimate the dependence GDP per capita on oil rents and share of petroleum exports on total exports separate, the results are more important to GDP per capita.

Output from STATA according to panel regression:

⁷ GDP – in measured in PPS (international dollars (milions)) weo ; oil rents (% of GDP)Opec bulletin; share of petroleum exports on total exports (% of total exports) Opec bulletin

Fixed-effects (within) regres	sion	Number	of obs	=	116	
Group variable: CountryCode	Number	of grou	ups =	4		
R-sq: within = 0.2942		Obs pe	r group	: min =	29	
between = 0.9451				avg =	29.0	
overall = 0.0000				max =	29	
		F(2,11	.0)	=	22.93	
corr(u_i, Xb) = -0.3026		Prob >	F	=	0.0000	
lnGDPPPS	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
OilrentsofGDP	.0191489	.0036131	5.30	0.000	.0119887	.0263092
shareofoilexportontotalexpo	.0240511	.0115377	2.08	0.039	.0011861	.0469162
_cons	8.794017	1.01586	8.66	0.000	6.780821	10.80721
sigma_u	1.2014066					
sigma_e	.47407436					
rho	.86526993	(fraction o	of varia	nce due t	o u_i)	
F test that all u_i=0: F(3, 110) =	148.04	1	Prob > F	= 0.0000	

Conclusion

According to analysis of situation on oil market in the world with impact on OPEC countries, we see the oversupply in the world. It means that the growth of the rate of demand rise slower than growth rate of supply. It's one of the factor which influence dicreasing price of today. The crude oil price dicreased more than 50% from price in 2008. Selected OPEC countries which are dependent on the oil exports and oil rents feel negative impact on their macroeconomic indicators which influence quality of life of their members. When prices of crude oil will still fall, is likely that production in OPEC countries will higher than before. According to policy of OPEC, its priority to lower mining of crude oil to price keep rise and balanced world supply and demand of crude oil. Near future show how OPEC countries will cooperate together. Projections about future GDP is in negative view which can be negative factor in achieving targets on oil market. According to econometric analysis, the crude oil has importent role in selected countries with high dependece on oil rents and petroleum exports.

References

CORDEN, W. M. (1995). Protection Growth and Trade. [online]. Available at the URL: http://www.aae.wisc.edu/courses/731/PDF/Corden-Neary-BoomingSector-EJ1982.pdf>.

Could Low Oil Prices Cause A Global Recession? (2016). [online]. Available at the URL: http://oilprice.com/Finance/the-Economy/Could-Low-Oil-Prices-Cause-A-Global-Recession.html>.

Data from BP Statistical Review of World Energy June 2015. (2016). [online]. Available at the URL: http://www.bp.com/en/global/corp orate/energy-economics/statistical-review-of-world-energy/downloads.html>.

Database World Economic Outlook. (2016). [online]. Available at the URL: https://www.imf.rg/external/pubs/ft/weo/2015/02/w eodata/index.aspx>.

Falling oil prices: Who are the winners and losers? BBC. (2016). [online]. Available at the URL: http://www.bbc.com/news/business-29643612>.

GELB, A. (1988). Oil Windfalls: Blessing or Curse?. World Bank. 1988, 357 p. ISBN 0195207742.

Global Outlook. World bank. (2016). [online]. Available at the URL: http://www.worldbank.org/en/publication/global-economic-prospects/GEP-Jan-2016-Global-Outlook>.

Oil Prices: What's Behind the Drop? Simple Economics. (2016). [online]. Available at the URL: http://www.nytimes.com/ interactive/2016/busin ess/energy-environment/oil-prices.html?_r=1>.

OSTROM, E. (1990). Governing the commons: the evolution of institutions for collective action. [online]. Available at the URL: < http://www.kuhle n.name/MATERIALIEN/eD ok/ go verning_the_commons1.pdf>.

ROMER, P. (1986). Increasing Returns and Long-Run Growth. In *Journal of Political Economy*. Vol. 94, No. 5 (Oct., 1986), pp. 1002-1037. ISSN 0022-3808. [online]. Available at the URL: http://www.jstor.org/stable/1833190>.

SALEM EL-BADRI, A. 2015. *The Global Energy Outlook*. [online]. Available at the URL: <<u>http://www.opec.org/opec_web/static_files_project/media/downloads/press_room/SG_6th_</u>OPEC_Seminar_June_2015.pdf>.

SALEM EL-BADRI, A. (2013). *The Global Energy Outlook*. [online]. Available at the URL: <<u>http://www.opec.org/opec_web/static_files_project/media/downloads/press_room/SG_Intern</u> ational_Energy_Week_Oct_2013.pdf>.

Seven Questions About The Recent Oil Price Slump. (2016). [online]. Available at the URL: https://blog-imfdirect.imf.org/2014/12/22/ seven-questions-about-the-recent-oil-price-slump/>.

Understanding the Plunge in Oil Prices - World Bank. (2016). [online]. Available at the URL: <<u>http://www.worldbank.org/content/dam/Worldbank/GEP/GEP2015a/pdfs/GEP2015a_chapter</u> 4_report_oil.pdf>.

Start-ups in Chile

Barbora Janubová

University of Economics in Bratislava Faculty of International Relations Dolnozemská cesta 1 852 35 Bratislava Slovak Republic E-mail: barbora.janubova@euba.sk

Abstract

In the last decade, the start-ups in Latin America are growing. Chile as the most developed Latin American country belongs to the most innovative economies in the region. The Chilean government has implemented programmes in national economy to support start-ups and their expansion abroad. The article also focuses on institutional and financial framework and obstacles to start-up of new business in Chile. In the last part, the author deals with concrete successful start-up in Chile, food company Algramo which offers food for lower prices in poorer areas.

Keywords: start-ups, business, Chile *JEL classification*: L 26, M 13

1. Introduction

In the last decades, innovations are a key factor of development strategies in countries. New technologies and improvement of existing knowledge in the form of start-ups strengthen development and competition of economies. Firstly, we will define what we mean by start-up. Significance of start-up is not unambiguous. According to a study from OECD (2013) start-ups can be defined in more different ways. The first group, *high-growth enterprises*, embodies companies with ten or more employees at the beginning of the observation. Their number of employees has increased by more than 20% a year over a three-year period. A subset of above mentioned high-growth enterprises are so called *gazelles* which were established five years or less before the end of observation. *Dynamic entrepreneurships* indicate microenterprises transformed into small and medium enterprises (SMEs) which have a big potential to grow up in the next years. In addition, they include gazelles. The next category involves *innovative start-ups* which arise from research and development in cooperation with other entrepreneurships, research centers and universities.

The relation among mentioned institution is a key determinant of successful connection between commercial and science areas. Next, the term *high-impact entrepreneurs* accounts "for companies with above-average impact in terms of job creation, wealth creation and the development of entrepreneurial role models"¹. They are launched and managed by individuals who tend to develop partnerships with other firms and international customers. In addition, they are angel investors in many cases. The last meaning of start-up captures "*a human institution designed to deliver a new product or service under conditions of extreme uncertainty*" (Ries, 2010) or young high risky enterprises promoted by first-time entrepreneurs.

From the above mentioned definitions results fact that start-ups can be identified by using performance or innovation based criteria. In other words, start-ups indicate growing

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¹*Ibid*.

companies which create many jobs and new opportunities for employees and on the other hand, they bring new products and technology also applicable in other branches.

Start-ups are relatively a new phenomenon in the world. In developed countries, there are a huge potential and the best condition for increase of new products and technologies. But there is a growing interest in the rest of the world. In the article the author focuses on Chile as the most developed country in Latin American region. Nearly whole Latin America aims to support innovation within development strategies. This effort has strengthened after the financial and economic crises in 2008 which revealed limitation of growth and shows the need to find new sources of growth. In recent years, the governments have introduced new programmes to support start-ups.

Despite of high potential of Latin America in implementation start-ups, there are many obstacles to launch innovations or new products. To main barriers belong incomplete infrastructure, corruption, bureaucracy, restricted access to finance, and a little cooperation between universities and corporations. The following figure shows the degree of administrative and regulatory barriers to start up a new business in comparison with OECD countries.

In the next part, the author focuses on the case of Chile including the institutional framework of financing, barriers to start up new business for corporations and sole proprietors and the programmes implemented to support new businesses such as the Start-up Chile created by Chilean government which aims to make from Chile a hub of innovation in Latin America. A lot of enterprises have left the United States and have come to Chile. For this reason there have arisen so-called the Chilecon Valley.

In the last part, we deal with concrete successful start-ups in Chile, food company Algramo which offers food for lower prices in poorer areas and brings innovative idea how to fight against poverty. In addition, the owner of Algramo co-operates with the Ministry of Economy in providing courses how to start up and expand new enterprise. In the following text, the term start-up refers new innovative idea or improvement of existing technologies.

2. Start-ups in Chile

Chile is one of the most innovative economies in Latin America and began to support start-ups before other countries in the region. According to Ease of Doing Business index (World Bank) Chile ranked 48th place in 2015 what represents the second best results in Latin America (see the Table 1). The above mentioned index captures an ability to do business in comparison with other economies. Countries are ranked from 1–189 whereas the first place means the best condition for doing business in country. "A high ease of doing business ranking means the regulatory environment is more conducive to the starting and operation of a local firm." (World Bank, 2015). The index takes into account 10 topics: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. These components are weighted equally and an economy's distance to frontier score is indicated on a scale from 0 to 100, where 0 represents the worst performance and 100 the frontier (Doing Business, 2016).

According to the particular determinants Chile reaches the best results in dealing with construction permits and in paying taxes in comparison with other Latin American countries. The most fundamental obstacle is to get credit in Chile such as shows component Getting Credit with score of 79.

	EDBR	SB	DCP	GE	RP	GC	PMI	РТ	TAB	EC	RI
	20		(7		10.6					41	
Mexico	38	65	67	72	106	5	57	92	59	41	28
Chile	48	62	24	51	56	79	36	33	63	56	58
Peru	50	97	48	64	35	15	49	50	88	69	74
Colombia	54	84	38	69	54	2	14	136	110	180	30
Costa Rica	58	121	49	23	53	7	166	80	67	124	87
Panama	69	44	70	32	84	19	66	166	54	148	132
Guatemala	81	101	106	21	75	15	174	50	78	173	153
Uruguay	92	61	160	40	110	59	122	130	153	104	64
Paraguay	100	135	55	96	78	79	144	111	135	75	102
Honduras	110	150	87	143	88	7	134	155	136	150	139
Brazil	116	174	169	22	130	97	29	178	145	45	62
Ecuador	117	166	74	97	69	97	115	139	120	99	148
Argentina	121	157	173	85	116	79	49	170	143	38	95
Nicaragua	125	123	168	94	147	97	150	165	81	94	103
Guyana	137	92	138	165	125	167	99	117	139	87	156
Bolivia	157	178	150	101	143	126	144	189	124	136	92
Venezuela	186	186	125	171	129	109	178	188	186	141	165

 Table 1

 Ease of doing business index for Latin American countries

Source: own processing based on data from: World Bank. Available at URL: http://www.doingbusiness.org/rankings>.

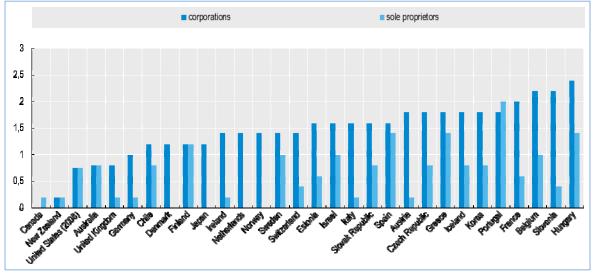
Notes: Ease of Doing Business Rank= EDBR, Starting a Business= SB, Dealing with Construction Permits= DCP, Getting Electricity= GE, Registering Property= RP, Getting Credit= GC, Protecting Minority Investors= PMI, Paying Taxes= PT, Trading Across Borders= TAB, Enforcing Contracts= EC, Resolving Insolvency= RI.

However Chile has relatively good results in components creating the index, but in comparison with the most OECD countries falls behind. According to OECD study from 2008, start-ups face higher regulatory and administrative barriers in whole Latin America including Chile than in most OECD countries. As shows the figure below, nowadays Chile belongs to top 10 countries with the least administrative barriers to start up new business.

The gap between OECD countries and Chile is diminished because the administrative burdens have increased in many OECD countries after financial and economic crises in 2008. In addition, Chilean government approved the law in 2011 which simplifies the procedures that are needed to start a new business and numbers of days was shortened from 22 to 7. However, there are still relatively high regulation and bureaucracy barriers.

Figure 1

Administrative burdens on starting up for corporations and sole proprietors (Scale from 0 to 6 from most restrictive)



Source: OECD. Entrepreneurship at a glance 2014 p.87. ISBN: 978-92-64-21195-7.

2.1 Institutional support

Since the mid-2000s, the government has increased interest to support innovation. "*The innovation budget has increased from about USD 300 million in 2005 to about USD 1 billion in 2013.* (OECD, 2013)

The main institution promoting start-ups are the following:

- the Ministry of Economy (Ministerio de Economía)
- the Chilean Production Development Corporation (CORFO- Corporación de Fomento de la Producción)
- the National Research, Science and Technology Commission (CONICYT-Comisión Nacional de Investigación Científica y Tecnológica)
- the National Innovation Council for Competitiveness (CNIC- Consejo Nacional de Innovación para la Competitividad)
- the Committee of Ministers for Innovation.

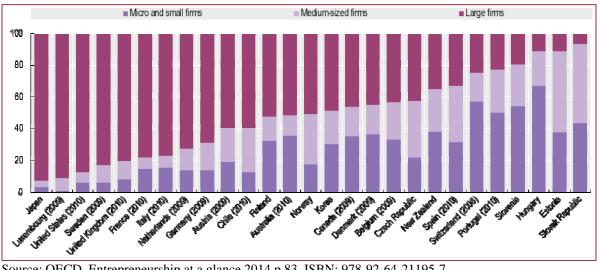
Chilean institutions offer a wide range of support of innovation including direct and indirect support for firms, such as non-repayable grants, tax incentives for research and development and grants for training human resources. Financial aid is supported through all the stages of entrepreneurship. The Ministry of Economy, as a basic institution for development policy in this area, sets a strategy and general lines. CORFO, a key player in supporting start-ups, creates and implements new programmes. It is responsible for growth and expansion of new enterprise. CORFO also has financed venture-capital funds and launched so-called "Go To Market programme" which supports both, researchers and entrepreneurs with potential to expand abroad. CONICYT regulates grants for technology programmes. CNIC was created in 2006 as organization responsible for formulating the Chilean's innovation policy from long-term. There was also established the Committee of Ministers for Innovation which is chaired by the Minister of Economy. Its function is to

coordinate cooperation among institution and to monitor it.² Chile has not an innovation ministry in opposite to countries such as Brazil, Argentina, Costa Rica, Cuba and Venezuela in the region.

In the context of supporting and financing, the government help is focused on large firms in Chile. Next, the medium firm gain approximately 30% and small enterprises³ only 13% of government finance (see the Figure 2). (OECD, 2014)

Figure 2

Government-financed R&D in the business sector by enterprise size



Source: OECD. Entrepreneurship at a glance 2014 p.83. ISBN: 978-92-64-21195-7.

2.2 Start-up Chile Programme and the Chilecon Valley

The Start-up Chile Programme was created in 2010. The Chilean government introduced it to increase number of new enterprises and to attract Chile as appropriate place for domestic and also foreign investments. Through programme the foreign enterprises get a year's visa to come and work on their ideas in Chile. "The end goal of this program is to position Chile as the innovation and entrepreneurship hub of Latin America" what its motto expresses: "Instead of changing the world through revolution, we can change the world through innovation" (Start-up Chile).

The Start-up Programme provides seed capital, access to basic infrastructure, training activities and networking with investors and local entrepreneurs (OECD, 2013). The Start-up Chile contains three financial subprograms based on the stage of the new business:

- the S Factory: support for business in early stage, focuses on companies founded by female, provides aid to 40-60 companies each year.
- Seed: for startups with a functional product and early validation, two rounds a year • of 80-100 companies each.
- Scale: for top performing start-ups, 20-30 enterprises in two rounds/per year • receive financial support

The Start-up Chile programme also provides the Acceleration Programme including:

² Ibid.

³ Small firms are defined as those with annual sales of less than CLF 25 000 (around USD 1.1 million), and medium-sized firms as those with annual sales of between CLF 25 000 (USD 1.1 million) and CLF 150 000 (USD 6.8 million).

- SUP Academy: Training program (workshops, talks and other learning experiences), Platoons (peer to peer monitoring and support) and Pitch Training.
- Connections with global and local mentors, investors.
- Events (internal and external)
- Experience (Start-up Chile).

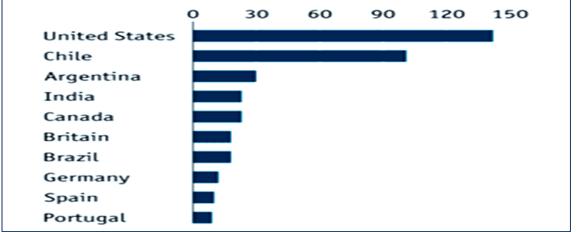
Thanks to Start-up Chile Programme many foreign companies, including those from U.S, have moved from country of origin into Chile. Many enterprises have left United States or chosen other destination. The reasons are following:

- United States has changed the immigration policy thus the number of visas to skilled workers has been reduced
- foreigners get little credit for being entrepreneurs
- the process of applying for permanent residency is slow and unpredictable (The Economist, 2012).

Now, the most of enterprises admitted to Start-Up Chile Programme comes from United States (Figure 3). Although Chile (mainly Santiago) is known such as Chilecon Valley, the capital is not an ideal place for entrepreneurs because there is a small domestic market, private venture capital is rare and credits are $costly^4$.

Figure 3

Number of firms admitted to Start-up Chile, top ten by country of origin



Source: The Economist. 2012. As America shuts out immigrant entrepreneurs, Chile welcomes them. [online]. Available at URL: http://www.economist.com/node/21564589>.

2.3. Algramo and small enterprises

One of the interesting examples of start-ups in Chile is *Algramo* (means by the gram in English), a food company which offers food for lower prices in poorer areas. Algramo is an idea of one entrepreneur, José Manuel Moller, created in 2013. When he and his friends experimented as students and moved to the suburb of Santiago de Chile, he realized that the cost of food there at stores was undue. They perceive it as so-called poverty tax. Thus Moller and his business partner, Salvador Achondo, started to launch vending machines. Nowadays, they own vending machines with food products such as rice, beans, lentils, and sugar. Prices

⁴ Ibid.

are lower because they cut out the costly marketing and packaging process used by chain supermarkets (Forbes, 2016).

Although, the company aims to provide service to the lowest income households, offered food has equal quality than food in supermarket chains. This new enterprise owns 474 vending machines (Algramo, 2016) located in Chile and abroad. Firstly, they chose Colombia and plan to introduce their business into Paraguay and Mexico in 2016 (Forbes, 2016). In addition, Moller and Achondo want to expand further: "We can solve a different problem in Africa. (...)There Algramo could help solve actually getting the food to the people."⁵

Moller co-operates with the Ministry of Economy in providing courses how to start up and expand new enterprise. The Minister of Economy Luis Felipe Céspedes sees it like an opportunity to increase economic performance and growth in Chile. They try to develop an appropriate strategy to support small and local businesses.

3. Conclusions

The start-ups offer an opportunity to improve economic growth for Chile and they have helped to drive broader changes in society such as reduction in poverty. New technologies coming from United States can strengthen position of Chile not in the region of Latin America but also in the world. How the owner of Algramo, Moller, said: "In Latin America we are really establishing our identity.(...) Some years ago the dream was to go to Silicone Valley and start there, but I think in Latin America, there are many entrepreneurs who do not want to go to Silicone Valley anymore."⁶

Chile has an ambition to become a hub of innovation in Latin America but there are still a lot of obstacles to start and expand new business such as bureaucracy, administrative burdens and the position of Brazil, a Chilean competitor, which has an advantage - the big domestic market- compared to Chile. Fortunately, the Chilean government implemented new programme, Start-up Chile, which have positive impact on entrepreneurship. Beside the fact that Chile invites new foreign enterprises, it also sees the future in small and local enterprises whose situation is improving due to support of the Ministry of Economy. The biggest challenges for new entrepreneurs are areas such as solar energy, mining, tourism, agriculture, technology sector and healthy foods.

In the article, the author devotes to a food start- up Algramo, but there are many interesting new enterprises in Chile such as *Buscalibre* (a Chilean online book retailer), *Portal Educativo* (a school website where students can study, practice and ask), *Chevereto* (lets you set up your own image hosting on your server) *GoPlacelt* (a real estate portal), *Recorrido* (a bus ticket website), *VoyHoy* (a bus ticket website) etc.

References

Algramo. (2016). *Las cifras de hoy*. [online]. Available at the URL: . [accessed 19.02.2016">http://algramo.com/>.

Doing Business. (2016). *Distance to frontier and easy of doing business ranking*. [online]. Available at the URL: http://www.doingbusiness.org/~/media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB16-Chapters/DB16-DTF-and-DBRanking.pdf>.

⁵ Ibid.

⁶ Ibid.

Forbes. (2016). *This Chilean Startup Wants To Change The Way Latin America Shops For Food*. [online]. Available at the URL: http://www.forbes.com/sites/gracebanks/2016/02/05/this-chilean-startup-wants-to-change-the-way-latin-america-shops-for-food/#4b446c3d73a1>. [accessed 19.02.2016].

OECD. (2014). Entrepreneurship at a glance 2014. ISBN 978-92-64-21195-7.

OECD. (2013). *Start-ups Latin America: Promoting Innovation in the Region*. OECD, Development Centre Studies, Paris, 2013. ISBN: 978-92-64-20230-6.

Ries, E. (2010). "*What is a startup?*" Startup Lessons Learned. [online]. Available at the URL: http://www.startuplessonslearned.com/2010/06/what-is-startup.html>. [accessed 14. 02.2016].

Start-up Chile. *About*. (2016). [online]. Available at the URL: http://startupchile.org/about/. [accessed 17.02.2016].

The Economist. (2012). *In the war for talent, America can learn a lot from Chile*. [online]. Available at the URL: http://www.economist.com/node/21564564>. [accessed 16.02.2016].

World Bank. (2015). *Ease of doing business index (1=most business-friendly regulations)*. [online]. Available at the URL: http://data.worldbank.org/indicator/IC.BUS.EASE.XQ. [accessed 14.02.2016].

Valuation of Fixed Income Financial Instruments on Inactive Markets – an Example of Slovak Government Bonds

Michal Jurčík

University of Economics in Bratislava Faculty of Business Management, Department of Business Economics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: jurcikmichal@gmail.com

Abstract: The best evidence of fair value is a quoted price on the active market. When the market is inactive, valuation techniques, maximising the use of observable market data, shall be used. The market of Slovak government bonds might be assessed as less active due to only few recent transactions. We introduce valuation technique as an alternative to yield curve bootstrapped from the market data. The theoretical yield curve is based on the yield curve of German government bonds as a representative of time value of money assuming that credit risk spread on those bonds is very low. In order to address credit risk of Slovak government bonds we include risk premium as priced on a credit default swap market with minor adjustments. The comparison of bootstrapped yield curve and theoretical yield curve shows only nonmaterial differences.

Keywords: time value of money, credit spread, Slovak government bonds *JEL classification:* G12

1. Introduction

Demand, supply and equilibrium price are three fundamental concepts of the economic theory. When demand and supply are equal, the amount of good supplied and good demanded is equal. One can speak about the equilibrium price. But what is the equilibrium price? IFRS 13: Fair Value Measurement defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Thus, determination of the fair value is a market-based measurement, rather than an entity-specific measurement. The fair value of a good or service anticipated by both seller and buyer should be the same. IFRS 13 assumes that the transaction takes place in the principal market, which is the market with the highest volume and level of activity and the valuation includes assumptions about risk.

The best evidence of the fair value is a quoted price on an active market. When the quoted price is not available, entities use valuation techniques, maximizing the use of observable market data and assumptions that market participants would normally use.

The paper examines the valuation of the Slovak government bonds. The best evidence of the fair value of the Slovak government bonds is the quoted price on the active market. IFRS 13 suggests couple of factors that should be considered to determine the active market. There are only few recent transactions on the Slovak government bond market, indicating that the market may not be active.¹ We propose an alternative valuation technique and make comparison of yield curve built using the valuation technique to yield curve bootstrapped directly from observable quoted bond prices.

¹ Only few deals are made a week.

2. Time value of money

What is the difference between ≤ 100 now and ≤ 100 ayear later? There is no universal answer as the time value of money is a dynamic parameter and changes over time. Our economic experience might suggest that ≤ 100 now has higher value than ≤ 100 a year later? But what is the difference? Economic theory suggests couple of explanations. For our purposes, the best explanation of time value of money is income from no-arbitrage, risk free financial instrument.

We assume the following situation. Initially we have our ≤ 100 and an opportunity to invest our money to risk free financial instrument. When we are certain about timing and amount of future cash flows, we bear no risk and investment is considered to be risk-free. After a certain period of time, e.g. a period of one year, the risk free investment earns a certain risk free income, e.g. ≤ 5 . After that period we end up with the total amount of ≤ 105 . As the investment is risk-free, there is a certainty of ≤ 5 income. These ≤ 5 represent the time value of money. Virtually, ≤ 100 now has a higher value than ≤ 100 a year later, as we can make a risk-free profit of ≤ 5 .

Determination of the time value of money at the measurement date is the first step to value financial instruments with fixed income. The term structure of risk free interest rates is represented by an *interest rate curve* (IR curve or curve). The curve allows us to calculate a discount factor for each date within the curve range. The discount factor is a risk free present value of one unit of currency. Actually, the discount factor is a fair value of one unit of a future risk-free cash flow.

The IR curve is sometimes called zero coupon curve as the curve is built from yields of risk free zero coupon bonds. This method of curve building is quite convenient one. The yield curve of coupon bearing bonds assumes that coupons are reinvested at the yield. This assumption is a complication, as it may be impossible to reinvest the coupons exactly at the yield to maturity. A zero coupon bond bears no coupon and the only yield is the difference between a discounted purchase price and a nominal amount. When there is an active market of risk free zero coupon bonds, this can be a robust reference of the time value of money. When such a market is not identified, some other references shall be used.

Traditionally, the IR curve is built from instruments that belong to the three groups:

- cash and deposit rates;
- interest rate futures or Forward Rate Agreements ("FRA") and
- interest rate swaps ("IRS").

Some other references of the time value of money can be used such as Overnight Index Swap ("OIS") rates or yield curve of risk free government bonds. All financial instruments used as a benchmark for the time value of money shall be actively traded. In the following text we examine their pros and cons and their practical application.

2.1. Interest rate curve based on money market, FRA and IRS

Cash and deposit rates or money market rates are used to construct the curve up to 12 months. In Slovakia, entities shall use Euribor/Eonia rates. Euribor (Euro Interbank Offered Rate) rates are based on the average unsecured interbank term deposits offered by one bank to another within the Eurozone. Those deposits are not risk-free as they include the credit risk of the Eurozone banking sector. Eonia (Euro OverNight Index Average) is an overnight reference rate calculated as a weighted average of all overnight unsecured transactions

² The effects of negative interest rates is discussed later.

between Eurozone banking institutions. Eonia is not a risk free rate, but as the risk associated with overnight lending is virtually zero, the risk priced in Eonia rates is very low.

Building the curve from the money market rates is quite simple, as the rates are readily available. The drawback is that Eurozone interbank credit risk is included in the rates and thus the constructed curve is not risk-free.

For each market, there can be different money market rates suitable for the construction of the curve, e.g. some markets shall use London Interbank Offered Rate ("LIBOR"). When building the curve, entities shall consider couple of factors, e.g. for Euribor rates we use a day count convention of Act/360, Modified Following Business Day Convention and a settlement date T+2.

For the period longer than 12 months up to 18 months we usually use forward rates. Forward rate is a rate agreed today to a transaction that will take place in the future. Term structure of the forward rates is represented by a forward curve. There is a mathematic relation between the IR curve and the forward curve. One curve implies the second curve and vice versa.

Forward rate quoted e.g. FRA 6X12 represents an annualized rate. The transaction/loan will take place in 6 months and the final maturity is in 12 months. The loan will be drawn for the period of 6 months. As money market rates, forward rates are not risk free.

When we have 6M Euribor and 12M Euribor, we can easily calculate FRA 6X12 using the following equation

$$(1 + \mathbf{r}_{(t1+t2)})^{(t1+t2)} = (1 + \mathbf{r}_{t1})^{t1} * (1 + \mathbf{f}(t1, t2))^{t2}$$
(1.1)

where f(t1, t2) is a forward rate and r is a spot rate (e.g. Euribor), the loan will be drawn in t1; t2 is a tenor of the loan.

Using compound interest the equation 1.1 can be rewrite as follows:

$$e^{r_{(t_1+t_2)}(t_1+t_2)} = e^{r_{t_1}(t_1)} * e^{f(t_1t_2)(t_2)}$$

The above equations are valid under no-arbitrage assumption and active/effective markets. The left side of the equations represents an income from the investment for the period of t1 + t2. The right side is represented by two investments, the first investment is for the period of t1 at the respective spot rate and the second investment is for the period of t2 at the respective forward rate. Both sides of equations shall earn an equal profit.

Construction of the IR curve after the period of 18 months is usually based on the swap rates. The swap rates are implied by Interest Rate Swaps ("IRS"). IRS is a financial derivative where two parties agree to exchange interest rate cash flows based on a notional amount. One party to the contract pays a fixed rate and the other party pays a floating rate. At inception, theoretically present values of both cash flows are equal and the value of IRS is zero. Fixed rate is referred to as the swap rate.

Let us assume an IRS with the notional amount of $\in 1$ and the swap rate s_T . Spot rates are implied by swap rates based on the following equation:

$$\sum_{t=1}^{T} \frac{s_T}{(1+r_t)^t} + \frac{1}{(1+r_T)^T} = 1$$

where r_t represents individual spot rates and r_T the maturity date spot rate.

Let's consider one year IRS with semi-annual cash flows. Swap rate is 5% and six month spot rate is 2%. Using compound interest one can calculate one year spot rate as follows:

 $0.025e^{-0.02x0.5} + 1.025e^{-r_Tx1} = 1$

In order to build a continuous function from the individual spot rates, we use a mathematical tool called the interpolation. There are various techniques used in practice. Van Deventer, Imai and Mesler in Advanced Financial Risk Management (2013) define the "best" curve as the shortest and smoothest one. Furthermore, the curve fits the market observable data exactly. They identified two interpolation techniques as the most suitable for building the best curve: a quadratic technique and a cubic technique. Both techniques require advanced software tools or Visual Basic programming in a standard spreadsheet software.

For example, the quadratic function can be written in the following form:

$$r_i(t) = a_i + b_{i1}t + b_{i2}t^2 + b_{i3}t^3$$

where a and b represent parameters that are calculated using the quadratic technique.

2.2. OIS Curve and yield curve of risk free government bonds

Money market rates, forward and swap rates as the reference of the time value of money were frequently used before the recent financial crisis. As a consequence of the crisis, the credit spread has widened and the IR curve was shifted upward. The IR curve as a proper representation of the time value of money should be constructed from the risk free financial instruments traded on the active market.³

The IR curve constructed based on the OIS rates might be a better benchmark of the time value of money as the risk associated with the OIS rates is much lower. OIS is a swap in which one contracting party pays a fixed interest rate and the other party pays a floating rate. The floating rate equals to a geometric average of overnight ("O/N") interest rates (e.g. Eonia) during a predefined period of time. Thus the term structure of OIS rates is OIS curve. O/N deals are less risky compared to the deals discussed earlier as the probability of default is virtually zero.

A yield curve of risk-free government bonds can be considered as a proper reference of the time value of money. Historically, the debt issued by many Eurozone countries was considered to be risk-free and Basel II capital regulations require no capital allocation in order to cover the risk. In March 2012, the International Swaps and Derivatives Association ("ISDA") declared that a reconstruction of Greece government bonds is a trigger of impairment which activated related Credit Default Swaps ("CDS"). Generally we shall not consider all bonds issued by the Eurozone countries as risk free. Riskiness of government bonds shall be assessed based on the proper fundamental analysis.

³ LIBOR OIS spread is considered to be a valuable indicator of money market risk. The wider spread represents higher money market risk. During the favorable economic times, OIS rates and LIBOR rates are similar. When the market sentiment is deteriorated, LIBOR rates rise as the perceived interbank/money market risk increases.

As at 5 February 2016, the external credit ratings of Germany were S&P AAA, Moody's Aaa a Fitch AAA. Currently, the German credit risk is consider to be very low and German debt may be a proper representation of the time value of money.

2.3. Negative interest rates

The IR curve constructed as at 15 February 2016 is characterized by negative interest rates up to four years. This is in a contradiction to the previous assumption that certain amount of money now has a higher value than the same amount of money in the future. Many economic scientists used to consider negative interest rates as only temporary matter of fact. Current economic experience indicates that negative rates might persist for a decent period of time.

In July 2012, the Danish National Bank set nominal interest rates below zero, followed by the European Central Bank ("ECB") approximately two years later. Besides the expansionary monetary policy, the main incentive of central banks was deflation. At that time, nominal interest rates were close to zero, but real interest rates were increasing as a consequence of deflation. In order to keep real rates low, central banks were pushed to decrease the nominal rates below zero.

Commercial banks usually keep two types of balances due from central banks, clearing accounts and minimum reserves. Each commercial bank is required to deposit certain average balance of a minimum reserve in a central bank. As the interest rates on the minimum reserve are below the market rates, commercial banks tended to keep the average balance as low as possible. Due to the increasing risk aversion, balances due from central banks started to rise.

Risk aversion of commercial banks increased demand for government bonds as well. As a consequence, bond prices were rising and yield to maturity decreased. In January 2015, the ECB introduced Expanded Asset Purchase Programme ("EAPP") with the intention to purchase bonds issued by public sector in the amount of \notin 60 billion each month. EAPP shall terminate in September 2016 and increase the inflation up to 2%.⁴

Very low or negative interest rates are favorable for borrowers including the public sector. At the end of 2007, the nominal public debt of the Eurozone public sector reached 65% of GDP. Till the end of 2014 the ratio increased to 92%, representing an increase by 41%. The fair value of the debt increased even more starting from 66.8% up to 106%, representing an increase by 58%.⁵

Generally, inflation of bond prices was affected by the downward movement of the yield curve as a consequence of changes in the time value of money and a decrease of a credit spread. For example, German government bond with the ISIN DE0001135143, issued in 2000, with the maturity date in 2030 and a fixed coupon of 6.25% was traded at 169.3 as at 31 December 2015. In 2011, the credit spread of certain Eurozone countries like Italy or Spain started to rise up, reaching 600bp over the yield curve of the German government bonds. In contradiction to the increasing credit risk, the credit spread of those countries started to decrease in 2015 in line with the rising demand and expansionary monetary policy. Current bond fair values could be mispriced including mispricing of the credit risk.

Low or negative yields on government bonds motivated certain financial institutions to invest into long term bonds, leading to the prolongation of parameter effective duration in the second half of 2014.⁶ The effective duration measures a sensitivity of bond prices to a parallel

⁴ European Central Bank. Asset Purchase Programmes (9)

⁵ The World Bank. 2015. *Negative Interest Rates in Europe: A Glance at their Causes and Implications* (8) ⁶ Hannoun, Herve, Bank for International Settlements. 2015. *Ultra-low or negative interest rates: what they mean for financial stability and growth* (10)

shift of the yield curve. When the effective duration is long, the whole bond portfolio is more sensible to the yield curve shift. A longer effective duration measure indicates an increasing interest rate risk.

Low interest rates impact valuation of financial assets and liabilities. A discounted cash flow method is widely used for valuation purposes. When the interest rates are close to zero, the whole valuation is sensitive to even small changes in the discount factors. Especially, the valuation of financial liabilities might be a matter of a great concern. Inflated value of liabilities negatively impacts P&L account and equity.

Current very low or negative interest rates bring number of questions. Low or negative yield curves inflated fair value of bonds and potentially mispriced credit risk of certain Eurozone countries. Investors are inclined to extend effective duration, increasing an interest rate risk. We could identify other positive or negative impacts of very low interest rates, but they are out of the scope of this paper.

3. Credit spread

A credit risk represents a primary risk for Slovak financial institutions. The credit risk is a risk when a counterparty to a contract fails to meet its obligations in the full amount or at the agreed time. Quantification of the credit risk is fundamental for determination of a credit spread. A high credit risk is associated with higher credit spread and an investor requires compensation for bearing such an increased risk.

Quantification of credit risk could be a challenging task. The following techniques might be applied:

- an investor can analyze historical probability of defaults or use statistics in order to determine correlation of defaults to certain parameters. If the analyzed population is statistically significant and an analyzed period is correctly selected, we are able to make proper estimates of probability of default,
- an investor can determine the credit risk based on the market data. Credit default swaps ("CDS") represent popular financial derivative on the credit risk. CDS can be described as an insurance against default or as a put option in the case of default, we can transfer a receivable to an issuer of the CDS for a predefined compensation,
- external ratings issued by rating agencies provide a simple assessment of probability of default. For example, capital adequacy calculation based on Basel II requirements might refer to external ratings in some cases. On the other hand, one can identify a couple of drawbacks, e.g. conflict of interest when a rated entity pays for its own rating, no linkage between probability of defaults and maturity dates etc.

A proper quantification of the credit spread is required for a correct valuation of fixed income instruments. Let us assume two bonds with the identical amount of cash flows and their timing. The riskier bond is valued with a higher credit spread and its fair value is lower compared to the other bond.

A market price of bonds implies credit risk as quantified on the market. Under the assumption of an active, competitive market, a credit risk priced by traded bonds and CDS on those bonds should be equal. This idea was very promising for many investors as allowed easy and simple quantification of credit risk on the CDS market. Later, a number of empirical

research papers showed that credit risk priced by CDSs and bonds themselves could by quite different. 7

The papers identified that credit risk priced by the CDS market is higher compared to the bond markets. The difference is a credit risk premium as a compensation for CDS issuers for insurance of credit risk. Number of other factors were identified that contribute to a different credit risk pricing. An effective market requires a large number of buyers and sellers, homogeneous product, low transaction costs, high level of liquidity and information that is readily available for all market participants. Taking into consideration all of those characteristics of effective markets, we shall admit that the CDS market is not an effective one. On the side of supply, there are only few financial institutions that provide the insurance, the market is quite illiquid and the information about the volume of trades are one week belated. In 2011 U.K. Financial Services Authority stated that insider dealing is a problem on the CDS market.⁸

The best evidence of a fair value is a quoted market price. When such a price is not available, we use valuation techniques maximizing the use of observable market data. The CDS market might provide useful information about the credit risk. On the other hand, we shall be aware of the fact that CDS market might not be assessed as effective and information obtained from the market shall be treated with care.

4. Slovak government bond valuation

International Financial Reporting Standards are principle based and so IFRS 13 does not provide exact guidance how to determine an activity of the market. The standard stipulates that when there are only few recent transactions, the market shall be assessed as inactive. No quantification of "few transactions" is provided. Traders can assess the activity of the market based on the information like the volume of realized trades, quoted prices, bid – ask spread, etc. Using the Bloomberg terminal, we have reviewed activity of the market as at 15 February 2016. There were only few recent trades to the date, however, bid – ask spread is quite small. Small bid – ask spread can indicate an active market, but based on few recent transaction we should conclude that the market may be inactive. In the following text we provide alternative building of the Slovak government yield curve and make a comparison to the yield curve bootstrapped from quoted prices.

Figure 1 shows three IR curves constructed based on the money market, forward and swap rates; the OIS rates and the yields of German government bonds. The money market, forward and swap curve lies above the OIS curve as it includes credit spread of the Eurozone banking sector. OIS rates include the credit spread of overnight unsecured banking deposits. Overnight deposits are less risky than long term deposits thus the credit risk implied by O/N rates is much smaller. Nowadays, financial derivative valuations are recommended to be based on the OIS curve plus specific credit value adjustment and debit value adjustment. OIS curve might be a proper reference of the time value of money as it is based on the data obtained from the active market and contains only the credit risk of overnight unsecured deposits.

The yield curve of German government bonds lies even below the OIS curve. Currently, the credit risk of German state bonds as implied by the market is very low. Very low yield curve can also be affected by increasing demand for the Eurozone state bonds.

⁷ For example: Zhu, Haibin, Bank for International Settlements Working Papers. *An empirical Comparison of Credit Spreads between the Bond Market and the Credit Default Swap Market* (13)

⁸ http://www.bloomberg.com/news/articles/2011-03-25/fsa-said-to-review-credit-default-swaps-in-market-abuse-probe

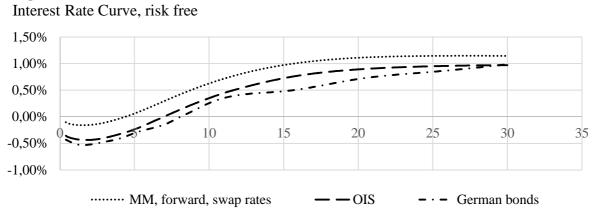


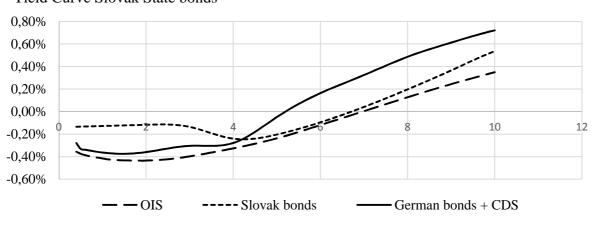
Figure 1

Source: Bloomberg

Figure 2 compares the yield curve of the Slovak government bonds bootstrapped from the market data to the theoretical yield curve constructed based on the yield curve of German government bonds and the CDSs on the Slovak government bonds. As stated above, the CDS price includes the credit risk premium. In order to eliminate this premium, we deduct a price of the CDS on the German government bonds. As the German credit risk is considered to be almost zero, the price of the German CDS implies the credit risk premium.

The yield curve of the German government bonds was selected as a time value of money, due to riskiness of bonds, activity of the market and the fact that the Eurozone government bond market is impacted by an increased demand. The CDS might not be the best reference of credit risk as discussed earlier. We make the adjustment deducting price of the CDS on the German bonds and compare the theoretical curve to the curve bootstrapped from the market. The differences between two curves lie between -25bp and 29bp.

There is no clear guidance on the valuation of financial instruments. The best reference is a quoted price on the active market. If there is no such price, alternative valuation techniques shall be applied. We compare the yield curve bootstrapped from the less active bond market to the theoretical curve showing non-material differences.





Source: Bloomberg

5. Conclusions

The valuation of financial instruments might be straightforward when quoted price on the active market is available. When there is no such quoted price or the market is inactive, valuation techniques have to be applied. We show building the yield curve of the Slovak government bonds based on the yield curve of the German government bonds and the credit risk as priced on the CDS market. The CDS market data might provide useful quantification of credit risk, but prudent approach shall be applied. The theoretical curve converges to the yield curve bootstrapped from the quoted market prices.

References

Bank for International Settlements. (2015). *A New Database on General Government Debt*. [online]. Available at the URL: http://www.bis.org/publ/qtrpdf/r_qt1509g.htm. [accessed 18.2.2016].

CFA Institute. (2014). Alternative Investments and Fixed Income, 2015 CFA Level II Volume 5. Wiley, 2014. ISBN 978-1-939515-42-1.

DEVENTER, vanR. D. – IMAI, K. – MESLER, M. (2013). Advanced Financial Risk Management. John Wiley & Sons Singapore Pte. Ltd., 2013. ISBN 978-1-118-27854-3.

European Central Bank. *Asset Purchase Programmes*. [online]. Available at the URL: <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html>. [accessed 18.2. 2016].

FABOZZI, J. F. – MANN, V. S. (2005). *The Handbook of Fixed Income Securities, Seventh Edition*. McGraw-Hill, 2005.

FABOZZI, J. F. – MANN, V. S. – CHOUDHRY, M. (2003). *Measuring and Controlling Interest Rate and Credit Risk*. John Wiley & Sons Inc., 2003. ISBN 978-0-471-26806-2.

HANNOUN, H. (2015). Bank for International Settlements. 2015. *Ultra-low or negative interest rates: what they mean for financial stability and growth*. [online]. Available at the URL: http://www.bis.org/speeches/sp150424.pdf. [accessed 15.2.2016].

HULL, C. J. (2009). *Options, Futures and Other Derivatives, Seventh Edition*. Pearson Education International, 2009. ISBN 978-0-13-500994-9.

Kaplan, Inc. (2014). Schwesernotes 2015 CFA Level II Book 4: Alternative Investments and Fixed Income. Kaplan, Inc., 2014. ISBN 978-1-4754-2772-1.

KENYON, Ch. – STAMM, R. (2012). *Discounting, LIBOR, CVA and Funding, Interest rate and Credit Pricing*. Palgrave Macmillan, 2012. ISBN 978-1-137-26851-8.

Národná banka Slovenska. (2015). *Správa o finančnej stabilite k máju 2015*. [online]. Available at the URL: <www.nbs.sk/_img/Documents/ZAKLNBS/PUBLIK/ .../SFS_ 052015.pdf>. [accessed 10.1.2016].

The World Bank. (2015). *Negative Interest Rates in Europe: A Glance at their Causes and Implications*. [online]. Available at the URL: http://worldbank.org/content/dam/Worldbank/GEP/GEP2015b/Global-Economic-Prospects-June-2015-Negative-interest-rates.pdf>. [accessed 20.2.2016].

ZHU, H. Bank for International Settlements Working Papers. *An empirical Comparison of Credit Spreads between the Bond Market and the Credit Default Swap Market*. [Working Papers No. 160]. 37 p. [online]. Available at the URL: http://www.bis.org/publ/work160.pdf>. [accessed 21.2.2016].

Implemented Crisis Management Measurements by Selected Entrepreneurs

Martin Kello

University of Economics in Bratislava Faculty of Business Management, Department of Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: mkello@vub.sk

Abstract

The paper is oriented on the field of crisis management. As a subject the enterprises from the furniture production sector in Slovakia were selected. This sector has not yet been the matter of deeper analysis in terms of recent economic crisis. As the object we point some specific measures taken by individual crisis management from functional units within mentioned firms. The goal is to show the approach of managers to recognise the crisis, quantify its impact and take appropriate steps and strategies to create conditions for protection and prevention. The results were taken by questionnaire survey and individual interviews with managers.

Keywords: Management, Crisis management, Furniture production, Measurements, Strategy *JEL classification:* H 12, L 10, L 68

1. Introduction

This work deals about management approach of selected firms toward crises and crises environment which has appeared during last financial and economic crises. The essential and desirable role of management is to understand the crises as an challenge to act. The goals of these activities is to bring up classic, changed or brand new solutions that should move the firm toward new status and such set up stability of the firm in terms of place and time. One of the sectors impacted by crises in Slovakia is the furniture production as well. This sector bears its tradition within Slovakia and has good prerequisites. After 1989 the production of furniture had spread into small and medium sized enterprises, microbusineses and manufactories. This research is oriented into analyses of crises impact onto selected sector exactly by mean of its crises management. We were interested how firms did perceive the crises how they did approach the crises and which outcomes did they identify.

The roots of crises in any environment are when conflicts within the environment grow over the level which represents the threat of change of substance of this environment (Booth, 1993). We say about a situation which an individual or company (society) is facing, but without ability to face it by the way of routine procedures and processes and in which the stress is rising by instant changes (Booth, 1993). The crises status is perceived as a negative - the state by the consequence of which the status of firm is worsens or the ability of the firm to react is reduced. In this state the necessity of new or unconventional solutions can be investigated. It is the situation in firm that long-timely or entirely presents a negative deviation from a normal status (Smejkal – Rais, 2013). A crisis is a live cycle phase of business during which adverse development of its performance potential appears by mean of a radical turnover decrease, equity decrease, the market share downgrade and liquidity decrease. By this its future existential is limited immediately in case the development will continue in negative manner and trend (Majtán et al., 2009). In this phase the resolution

comes up. The resolution whether the business is going to get back (at least) into pre-crises situation or the goals and aims of business are prospectively threatens or eventually its future existential is endangered (Zuzák – Königová, 2009). According to Majtán et al. (2009) side effects and inner signals are as follows:

- Number of innovation decline;
- Tolerance and excuse of partial defects and failures;
- Unreasonable cross-foundation of earnings and profits into loss-making departments;
- Marginalization of problems and issues, neglect of reserves revelation and new opportunities;
- Cutting of number and quality of courses and trainings or other professional education of staff.

Another interesting view is that one which affirms that occurrence of crises could be connected to managerial failures in terms of strategic field as well as in terms of decision-making, control and informational field. Based on Smejkal and Rais (2010) the most frequent killer of organizational efficiency are:

- Unclear strategy;
- Priorities conflict;
- Inefficient top management;
- Inappropriate management style;
- Inadequate communication;
- Unsatisfactory functional coordination;
- Insufficient managerial skills;
- Insufficient staff motivation.

2. Crises impact

In 2009 yet more than 87 per cent of small and medium sized enterprises and microbusinesses had advised negative crises impact. A crisis has brought, beside others, mainly:

- Drop in business orders or customers;
- Payment discipline worsening (secondary payment insolvency);
- Worsening of debt and liabilities liquidation (primary payment insolvency);
- Pressure applied on price level decline;
- Lowering of investments returns;
- Loans and funding accessibility.

To support sustainability the capital sufficiency is inevitable. Either for financing of operations, financing of investments or financing of loss. As far as ability of firms to access loan financing and especially their ability to repay debts and loans the most frequent and most critical reasons to default are as follows: strong dependency (concentration) on the only customer; strong dependency (concentration) on the only supplier; inflexible fixed cost regulation; excessive investments; long operational cycle; poor market knowledge.

3. Crises management

Inevitable role of management is to dedicate and devote itself in business strategy continuously. Strategy is an open document to summon goals and objectives of firm. Its element is also the definition of inner and outer environment. It has to be continually renewed and re-thought. The strategic plan is closed document. It integrates activity structure of business in terms of time and content. We can consider it to be a summary of mutually sequencing aims and tool of its achievement. Crises plan must contain all information necessary to manage a crisis, but on the other side it should not be a long and ambiguous document (Zuzák – Königová, 2009). We perceive the firm as an open system with interactions between it and its environment. It needs incomes and outcomes to exist. These relations could be signed as active, because they are the reason its existence. Crises arisen from active interaction are the outcome of conflicts between interests of firm and its suppliers on side of outputs as well as conflicts between interests of firm and its suppliers on side of inputs. The second type of relations to environment is the passive relations. The crisis can arise often, and it really does, by inadequate reaction on these changes or by inability of firm to react on the changes (Zuzák – Königová, 2009).

4. the subject and object

The subjects of investigation were eight selected firms which have passed through the crises recently. The objects of investigation were measurements taken by the selected firms at level of individual organisational units (personnel, production, sales, economics and finance, etc.).

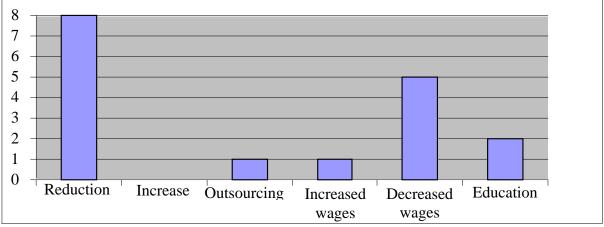
5. Measurement

5.1. Personal management

We monitored the approach of management to possibilities given to them by personal management.

Figure 1

Measurements taken by personal management



Source: author's calculations

The Figure 1 shows that all firms were oriented on staff reduction. Second conclusive factor was reduction of wages. Five out of eight firms decided to reduce wages. The staff reduction is related with severance payouts which can from a short time period lead to personnel cost increase. Other measurements seemed not to be so attractive for them and that is why the personal outsourcing or education was used just by a small number of firms.

5.2. Financial management

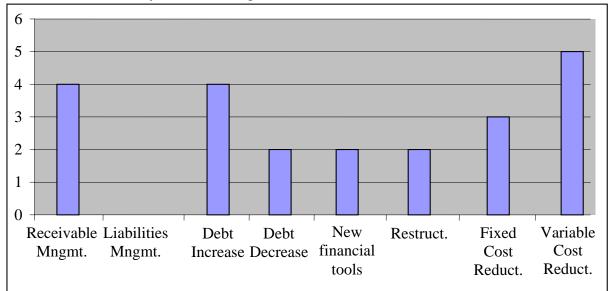
The Figure 2 shows findings of the financial management field. Before apprising this field we have to point out the most apparent features of wrong business behaviour. The most critical reasons to fail by finance management and debt servicing are as follows:

- strong dependency (concentration) on the only customer;
- strong dependency (concentration) on the only supplier;

- inflexible fixed cost regulation;
- excessive investments;
- long operational cycle;
- Poor market knowledge.

Strong dependency on one supplier or one customer lowers the manoeuvre area of firm in case of default of that specific supplier or customer. Inflexible regulation of fixed costs the firm is lack of efficiency. Excessive investments leads incremental burden in form of additional loan instalments. Sometimes managers are not able to estimate capacity of firms. In case when investment does not perform in intended scope, resp. performs later than it should, the financial impact on firm could be critical. Too long operational cycle means high level of capital deployment in non cash assets. Firm thus threaten its operation, potential growth and debt service ability. Poor market knowledge means undervalue of threats and risks hidden in market. We can say either about overvaluation of demand for firm production or undervaluation of abilities and possibilities of competitors. Important as well is to recognise the conditions of neighbour countries in which the competitors act (legislation, finance, etc.). Figure 2 evidences that majority of firms did reduced its costs in particular the variable costs.

Figure 2



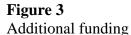
Measurements taken by finance management

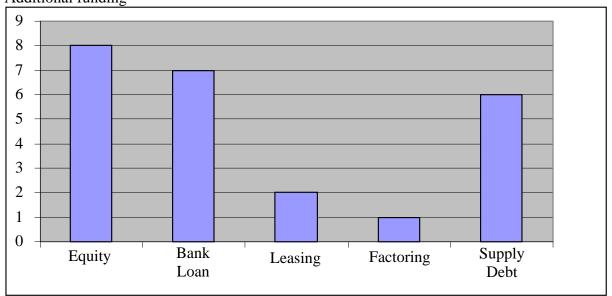
Source: author's calculations

This is connected to above mentioned personnel costs, but firms tried to reduce costs even in other spheres. Half of it was oriented on receivables management. It is very important, maybe inevitable sphere and firms should maximize an effort in receivable management to avoid threatening of cash flow and ability to serve operational loans. They have to be in contact with their payers constantly and ensure the receivables collection to be as good as possible. We consider this measurement implementation just in half of firms to be insufficient. Very surprising is a zero endeavour to manage liabilities.

This confirms that under crises conditions the payment discipline is getting worse and firms operate "at the expense" of their lenders. Just a small part o firms deployed new financial tools. Two of them were forced to go under debt restructuring. Half of firms found a new way out of crises in new financial debt. It is inevitable for the firm to be in very best financial conditions in crises times. In next investigation we were interested in the manner how the enterprises obtain additional funds. The results are shown in Figure 3.

The positive point is that in all firms used equity to increase their cash position. This shows an engagement of owners. In line with this fact the majority of firms financed its needs by bank loan. Interesting is also fact that a big portion of firms used a supplier debt. We can not generalize the mutual supplier – customer relations, but it is reality which can be influenced by mentioned zero liability management or funding based on the expense of lenders especially trading lenders. We did also take a look at how did firms approach an investments during a crises times.

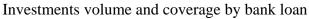


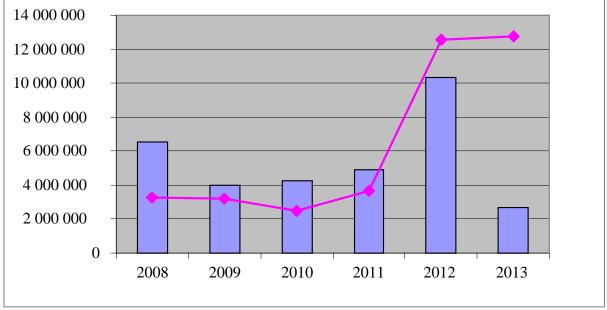


Source: author's calculations

By investments the enterprise can enforce the production capacities or to rearrange it to bring up new opportunities. They use either own capital or debt financing. The most popular was the bank loan or leasing.

Figure 4





Source: author's calculations

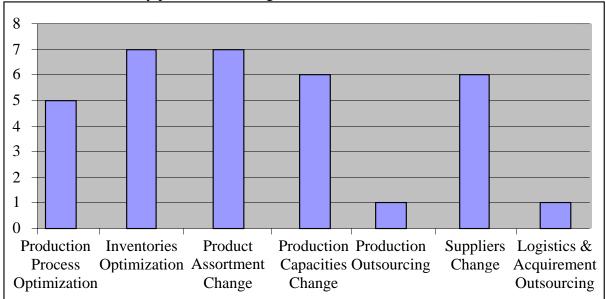
If the investments exceeds the financial capability there could come a crucial situation when new investments drain up a considerable portion of cash which afterwards lacks in way to cover other financial needs of firm, for example the operation. Another threat is when firm covers investments by such a volume of debt that it is not able to serve the debt. There come problems then. We can evenly record a cyclic problem, when an old debt is covered by new one.

The total debt is inflated and getting firm into deeper and deeper financial crisis. Figure 4 is evidence that in 2009 the investment volume showed as a bar chart has declined apparently. We interpret it to be a consequence of crisis. In next periods the investment volume stagnated, whereby it has oscillated at level of 4 millions to 5 millions EUR yearly. In 2012 the volume rose up to reach twice as much as in 2001. We can also see that firms did cover its investments just by bank loans (line chart). In 2102 the loan volume reached more than triple comparing 2009. In 2013 the investment dropped down to a very smallest number within observed period.

5.3. Production management

Taking a look at crises management measurements in production we can see firms appealing a wide spectrum of tool. Almost every one of them did optimize their inventories.

Figure 5



Measurements taken by production management

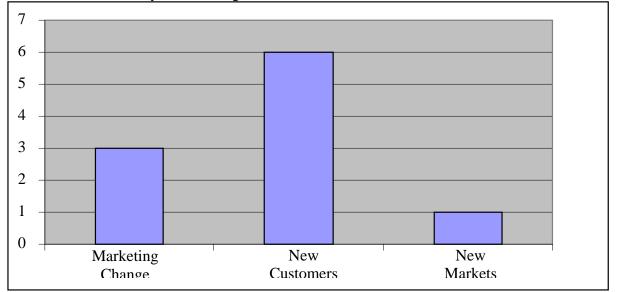
Source: author's calculations

This is a logic step which lowers down a dependency of operation capital on inventories and its releasing into other fields of production cycle. The same number of firms used a change of product assortment. We can evidence the intention of firms to get closer to its customers and reach a market share. In relatively big extent enterprises did changed their suppliers and changed their production capacities. Finding new suppliers is linked with inventories optimization as well as with product alternativeness. However the reason to change a supplier could be: an ambition to get to supplies from alternative or cheaper suppliers or enhance a quality of supplies. We can also take a note of fact that just a minimum of firms used an outsourcing, either in terms of production or in terms of logistics. The reason is either high factor intensity of production as the firm need to integrate an outsourcing supplier into whole production process or contrary relatively low factor intensity of production when the outsourcing supplies would inefficiently overprice the production.

5.4. Sales management

Not all the investigated firms perform the same business model. Some of them produce for other sellers. Another ones aim their production to sell in their own retail chain. Comparing three main measures of this category, the majority of firms reached out mainly for one of it, namely new customers. This is the way how management supports or even widens own production.

Figure 6



Measurements taken by sales management

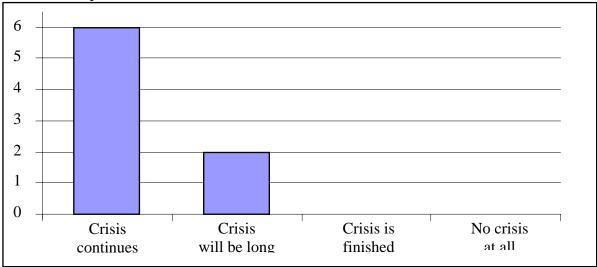
Source: author's calculations

As showed on Figure 6 looking for new customers or clients belongs to main activities in sales management process. Beside one, all of enterprises looked for new customers' exclusively on domestic market and so far they did not reached for markets in abroad. As very interesting we see the fact that relatively small number of managements decided to convert their marketing concept.

5.5. Contemplation management

If we take a look at Figure 7 we can see an approach of firm managements to crisis as such. The conviction is evident that the crisis has not yet finished. All managers are confident that crisis will continue. Managers in two out of all firms even see the crisis bowing the market down for a long period yet.

Figure 7 Crisis contemplations

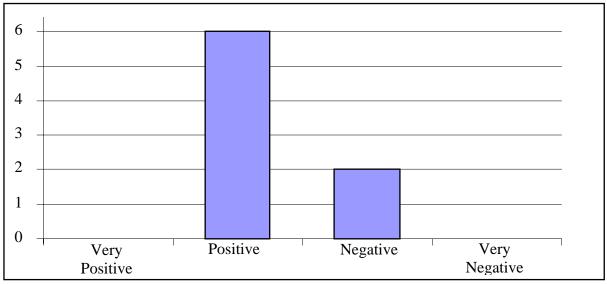


Source: author's calculations

Despite the fact managers can feel crisis being present in many fields their outlook is positive in general. There is conviction that managers recognise the crisis more as an opportunity than a threat. On Figure 8 is visible that attitude to crisis and its following progress are positive. Just two out of investigated group see the situation as negative. It is not extraordinary that these two are just the firms that went into debt restructuring.

Figure 8

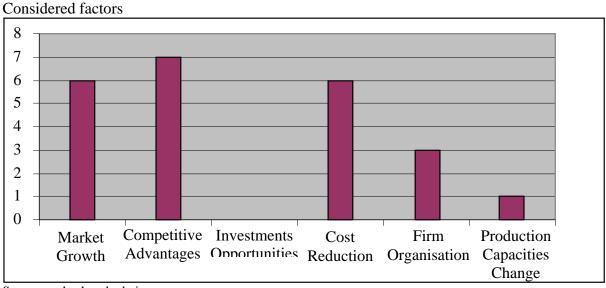
Management outlook



Source: author's calculations

None of managers finds the situation as extremely positive or extremely negative. Managers of investigated firms have to manage the business further, even though in crisis conditions. While determination of further business aiming it is important how managers observe the circumstances. All that connected to single firm are very important nevertheless not less important are those connected to other firms in environment, or entire society. We were interested which factors were taken into consideration by managers while setting up a strategies for next periods. Findings can be seen in Figure 9. Mostly the competitive advantages and cost cutting were relevant factors. The majority assumes as well that markets is going to grow corresponding with their positive perception of next crisis development.

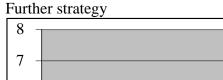
Figure 9

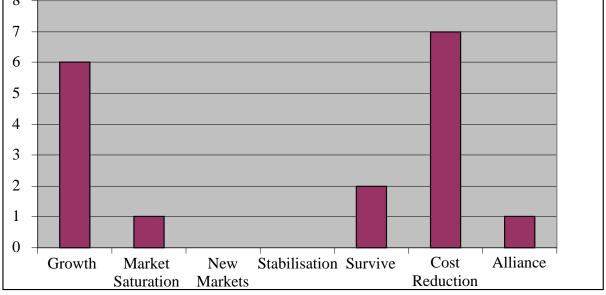


Source: author's calculations

Just a smaller part of managers is concentrated on inner changes either change of firm organisation or change in production capacities. Neither one sees investments today as a crucial factor. The question regarding considered costs was followed by question regarding a strategy set up for further season. Managers could specify more than one answer regarding intended strategies.







Source: author's calculations

It is visible that most of the firms set its strategy up on market growth and cost reduction. Just a minimum of firms sees a strategy in market saturation and gap filling or building up alliances. Two out of them declare survival as a strategy. Again we are speaking about two firms gone under debt restructuring.

6. Conclusion

Crisis should be seen as a common component of day life of enterprises, economies or even whole societies. Enterprises and their managements can not avert crisis because it is constantly close and being prepared to threaten at any time. By contrast it is time demanding for managements to be prepared and ready to face the crisis and to resolve its impacts. Crises management of firm infected by crises can be identified as a pool of principles, tools and procedures with aim to manage the crises and turn the firm out of the crises back to the normal condition. Zuzák (2009) differentiates the crises management as follows:

- Crises management in wider manner, which initiates a long time before the crises can be surely identified. From this point of view it is a permanent process including preventive measurements leading to limitation of new crises appearance, creation of early warning systems and an impact mitigation systems and its quick and successful managing;
- Crises management in narrow manner, performing single process of leading the firm out of the crises in stage, when the crises is coming through evidently and is identifiable by its features.

Important is an ability to get over the crisis. The crisis could bring accomplished crisis plans being able to protect enterprises in the future. If crisis is understood just in negative position, the view on problematic is limited because crisis could be at the same time seen as an opportunity. Many times passed crisis shifts managers and employees onto higher levels of their professional grade. Main goal is to find the most optimal solution to lead the firm out of the crisis. Eventually each crisis brings a positives such as the out-comers would be bigger or stronger enterprises, better product and process basin or more accomplished crises plans which should be able to protect firms in future. The firm could not overcome the crisis as a passive, waiting subject. During crisis there is a time enough to enhance many of fields such as:

- Processes enhancement;
- Product development;
- Staff education and training;
- Early warning systems deployment;
- New sales markets exploring;
- New business partners joining;
- Innovations.

In general we can sum up that mostly firms took measurements aiming into cost reduction. There were some subjects that went under debt restructuring. Most of managers perceive the crisis as an opportunity and further development see in a positive manner even though the crisis is not over yet and will follow.

References

BOOTH, S. A. (1993). *Strategy. Competition and change in modern enterprises.* Routledge, London, 1993. ISBN 0-415-06230-6.

MAJTÁN, Š. et al. (2009). *Podnikové hospodárstvo*. Sprint dva, Bratislava, 2009. ISBN 978-80-89393-07-7.

SMEJKAL, V. – RAIS, K. (2006). *Řízení rizik ve firmách a jiných organizacích*. Grada Publishing, Praha, 2006. ISBN 80-247-1667-4.

ZUZÁK, R. – KÖNIGOVÁ, M. (2009). *Krizové řízení podniku. 2. vyd.* Grada Publishing, Praha, 2009. ISBN 978-80-247-3156-8.

Slovak Credir Bureau. (2013). *Bancrupcy and restructuring development*. [online]. Available at the URL: http://www.crif.sk/Novinky/Novinky/Documents/TS%20Konkurzy%20a%20re%C5%A1trukturaliz%C3%A1cie%202.Q%202012.pdf>. [accessed 2.4.2013].

HNONLINE.SK. (2013). *Theories explaining the reasons of financial crises*. [online]. Available at the URL: http://finweb.hnonline.sk/c1-53627070-teorie-ktore-vysvetluju-priciny-financnych-kriz. [accessed 12.4.2013].

The Evolution of the Level of Economic Indicators of Studied Types of Firms in Terms of Ownership

Daniela Kerbčárová

University of Economics in Bratislava Faculty of Business Management, Department of Management Tajovského 13 Košice, 041 30 Slovak Republic E-mail: daniela.janicova@euke.sk

Abstract

This paper focuses on the evolution and comparison of economic indicators of studied types of firms. The first part is devoted to the issue of foreign direct investment as well as an overview of the results of empirical studies dealing with the achievement gap in terms of labour productivity and wage levels between domestic and foreign owned firms. Our data set covers the period from 2004 to 2013. Industrial firms in our study were divided into three groups: specifically private inland firms, international firms and foreign firms. Average number of firms for each year was as regards private inland firms 1380, for international firms it was 286 and in case of foreign firms the average number was 552. The conclusions of this paper deal with the comparison and assessment of the level of economic indicators of studied types of firms in the Slovak Republic.

Keywords: average wages, average labour productivity, foreign direct investment *JEL classification:* D22, L25

1. Introduction and Literature background

There are a several studies based on the investigation if foreign firms overcome in terms of performance domestic ones or not. Kuntluru et. al. (2008) confirmed that foreign ownership has a positive effect on the financial performance of pharmaceutical firms in India. Foreign pharmaceutical firms in India achieve higher financial performance compared to domestic ones. Liu et. al. (2001) investigated the impact of FDI on labor productivity in China and their results confirm that the presence of foreign capital was associated with higher levels of labour productivity. Other authors also suggest that foreign firms outperform domestic ones, in terms of labor productivity (Aitken and Harrison, 1999; Howenstine and Zeile, 1994). Blomström (1988) pointed out the difference in labor productivity between foreign and domestic firms in the Mexican manufacturing industry. His findings confirmed that the foreign firms in Mexico are more productive as compared to Mexican domestic firms. The same findings that foreign firms outperform in terms of the productivity domestic counterparts confirmed studies realized in Germany (Gelübcke, 2013), in Great Britain (Davies and Lyons, 1991) and in the Czech Republic (Jarolím, 2000). Aitken et. al. (1996) investigated the wage disparity in Mexico and Venezuela, and the results confirmed that foreign firms pay higher wages than domestic firms. The same finding was confirmed by Willmore (1986). Lipsey and Sjöholm (2004) was devoted to this issue in Indonesia and confirmed that the higher presence of FDI in the firms leads to the higher wages.

1.1 Data

Our data sets includes industrial firms established in the Slovak Republic divided according to type of ownership into three groups; specifically private inland firms,

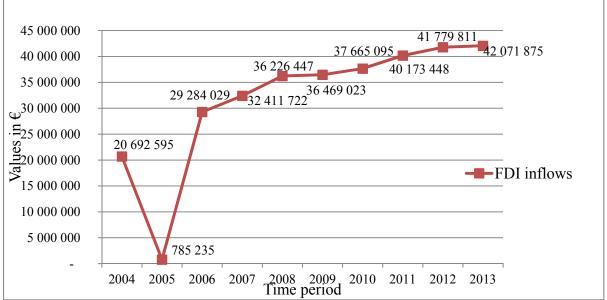
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international firms and foreign firms and spans the period 2004-2013. The private inland firms involve only domestic capital. International firms involve firms, where the capital in terms of ownership is mixed and foreign firms involve industrial firms, where capital is composed of only financial and nonfinancial deposit of foreign investors. Average number of firms for each of year was as regards to private inland firms 1380, for international firms it was 286 and in case of foreign firms, the average number was 552. As regard variable in our study we used foreign direct investment inflows (next only FDI inflows), average wages, average labour productivity. Labour productivity is in our study defined as turnover for own performances and goods per employee in euro. Average wages are represented by average monthly wage per employee in euro. The FDI inflows represent the total amount of funds invested in the Slovak Republic in euro. We retrieve data on inward FDI from database of the National Bank of the Slovak Republic; the other variables were obtained from Statistical Industry Yearbooks published by the Statistical Office of the Slovak Republic. Statistical Industry Yearbooks contains results of the processing of corporate annual reports; specifically results of processing of corporate annual reports submitted by firms with 20 or more employees as well as results of corporation with up to 19 employees, but reaching yearly turnover of more than 5 million euros.

2. Results

Figure 1 provides an overview of evolution of FDI inflows in the Slovak Republic from the period 2004 - 2013. In 2004, the Slovak Republic joined the European Union. Economic and political changes have caused attenuation of interest of investors to invest their capital to other countries. The FDI inflows since 2005 acquire the rising trend.

Figure 1



Foreign direct investment in the Slovak Republic from 2004 to 2013 in euro

Foreign direct investment has become a key factor determining economic growth in the Slovak Republic (Ferenčíková and Ferenčíková, 2012).

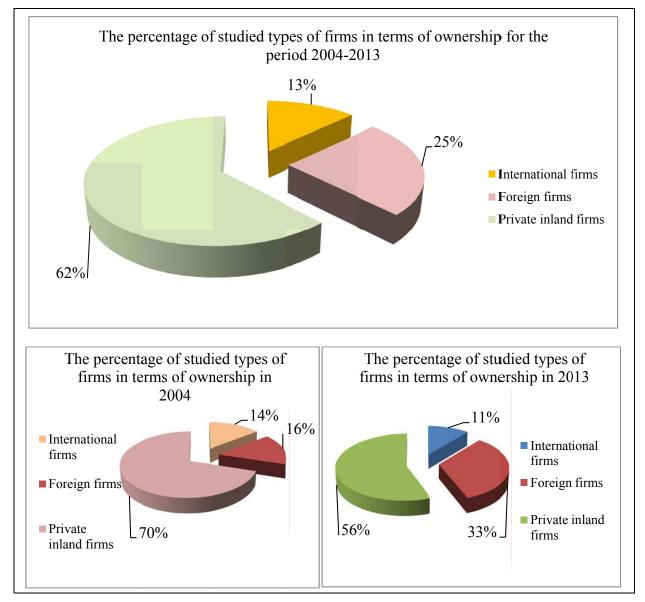
Figure 2 represents the overview of the percentage of studied types of firms for the period 2004-2013, as well as percentage changes in the shares of studied firms between 2004 and 2013. The figure 2 noticeable shows that the percentage of private inland firms compared to other types of firms is the largest (for the period - 62%, 2004 - 70%, 2013 - 56%), but the

Source: own processing based on data of the National Bank of the Slovak Republic

change between 2004 and 2013 shows a declining trend as regards the number of private inland firms. Increase the percentage of foreign firms in 2013 compared to 2004 (16% - 33%) was due to the inflow of foreign direct investment. In 2004, the Slovak Republic joined the European Union and in 2009, the Slovak Republic joined the euro area. In addition, the Slovak Republic is due to its strategic location, skilled workforce and low labor costs very promising country for foreign investors. These and other facts led to substantially increase the interest of foreign investors to invest their capital in our country. A great example has become the arrival of foreign investors and the establishment of Kia Motors Slovakia s.r.o., formation of U. S. Steel Košice, s.r.o, as well as the arrival of other equally economically important investors. Change in the percentage of international firms between 2004 and 2013 (14% - 11%) shows a very interesting fact. FDI are directed mainly to the establishment of new branches, or expanding existing firms. Decrease of interest of foreign investors teaming up with domestic firms.

Figure 2

The percentage of studied types of firms for the period 2004-2013 and percentage changes in the shares of studied firms between 2004 and 2013



Source: own processing based on data of the Statistical Industry Yearbooks

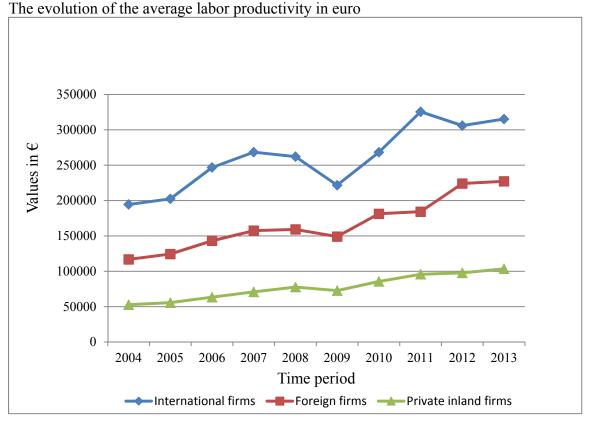


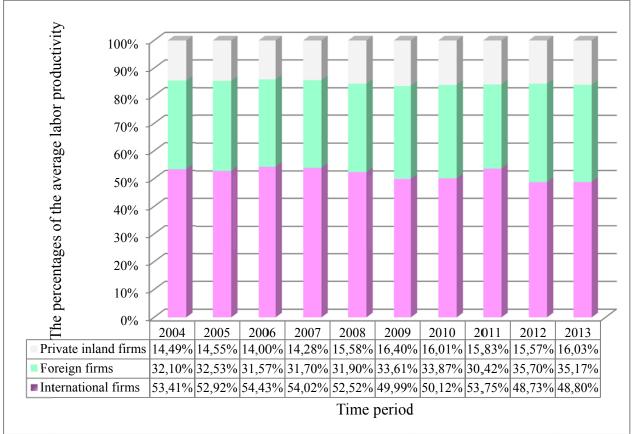
Figure 3

Source: own processing based on data of the Statistical Industry Yearbooks

Figure 3 provides the evolution of the average labour productivity of firms during the period from 2004 to 2013. The highest level of average labour productivity for each of year was in case of international firms. The lower level of average labor productivity was achieved by foreign firms and the average labour productivity of private inland firms achieved the lowest level, for the each of year. In 2008 and 2009, there was a declining of labour productivity, in all types of firms. The decline in labor productivity is related to the economic situation of the country, namely the economic crisis. Generally, firms with foreign capital outperform private inland firms in terms of the level of labour productivity. This finding is in the line with a number of empirical studies of foreign authors e.g. (Aitken and Harrison, 1999; Blomström, 1988). Despite the fact that foreign investors prefer to invest their capital to their foreign firms (this fact is confirmed by the increase in the percentage of foreign firms in 2013 compared to 2004, and a decrease in the percentage of international firms in 2013 compared to 2004), the figure 3 represents that level of average labour productivity of foreign firms is compared to international firms lower. One reason may be the fact that foreign investors have capital, better technology, better organizational and managerial skills, but on the other hand, private inland firms and their managers well known the local market, the needs of employees and customers, they know how to motivate and reward their employees. The combination of these two benefits caused that the highest level of average labor productivity is achieved by international firms.

Figure 4 represent the percentages of the average labor productivity of firms for the period from 2004 to 2013. International firms markedly outperform other types of firms in terms of the average labor productivity, for each of studied year.

Figure 4



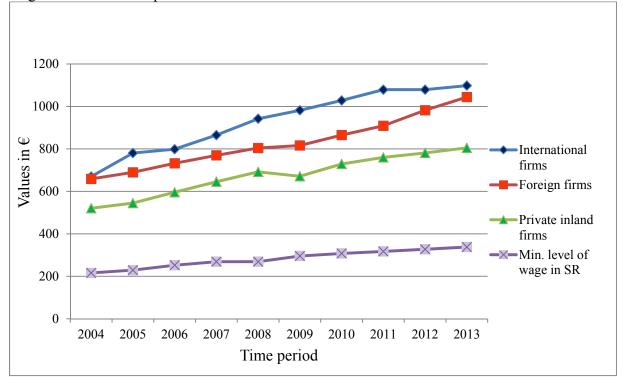
The percentages of the average labor productivity of firms for the period from 2004 to 2013

Source: own calculation based on data of the Statistical Industry Yearbooks

The level of labour productivity is also closely related to wage level. Figure 5 reflects the evolution of the level of average wages of firms and comparison with the level of the minimum wage in the Slovak Republic for the period 2004 - 2013. As the figure 5 shows, international firms are characterized by the highest level of average wages. In addition, international firms pay more due to their higher labor productivity compared to other types of firms. Generally, firms involving foreign capital pay higher wages in comparison with private inland firms. This fact has been confirmed by several foreign authors e.g. (Lipsey, 1994; Almeida, 2007). Although, the wage level of private inland firms is characterized by an increasing trend, but the level of average wages of private inland firms compared to other types of firms is the lowest. Notable is the fact that the economic crisis (2008 and 2009) caused a decline in wage level, but a decline in wages has been demonstrated only in the case of private inland firms. The average wages of private inland firms is on average twice as high as compared to the minimum wage in the Slovak Republic. In addition the evolution of wage level of private inland firms is almost identical with the evolution of the minimum wage in Slovak Republic. Figure 5 partially confirms the spillover effect. Wage growth of firms with foreign capital acts on wage growth of private inland firms (Driffield and Girma, 2003). There are several empirical studies which confirm the fact that firms with foreign capital pay higher wages but reject spillover effect (Aitken et. al. 1996). The evolution of the average level of wages in most cases follows the evolution of the average level of labor productivity.

Figure 5

The evolution of the level of average wages and comparison with the level of the minimum wage in the Slovak Republic



Source: own calculation based on data of the Statistical Industry Yearbooks

3. Conclusions

Foreign firms in the Slovak Republic, respectively firms which are controlled by foreign capital play a key role in the national economy. They contribute to economic growth by creating new jobs opportunities, providing modern technology, know-how, introduce a better organizational skills as well as other benefits, resulting in the growth of labor productivity. The results of the analysis indicate that the FDI inflows in the Slovak Republic since 2005 acquire the rising trend. The figure 2 shows that the percentage of private inland firms compared to other types of firms is the largest (for the period - 62%, 2004 - 70%, 2013 - 56%), but the change between 2004 and 2013 shows a declining trend as regards the number of private inland firms. Increase the percentage of foreign firms in 2013 compared to 2004 (16% - 33%) was due to the inflow of foreign direct investment. Change in the percentage of international firms between 2004 and 2013 (14% - 11%) shows a very interesting fact. FDI are directed mainly to the establishment of new branches, or expanding existing firms. Decrease of interest of foreign investors teaming up with domestic firms.

The highest level of average labour productivity for each of year was in case of international firms. As regards to percentage, international firms markedly outperform other types of firms in terms of the average labor productivity. The lower level of average labor productivity was achieved by foreign firms and the average labour productivity of private inland firms achieved the lowest level, for the each of year. In 2008 and 2009, there was a declining of labour productivity, in all types of firms. The decline in labor productivity is related to the economic situation of the country, namely the economic crisis. Generally, firms with foreign capital outperform private inland firms in terms of the level of labour productivity. This finding is in the line with a number of empirical studies of foreign authors e.g. (Aitken and Harrison, 1999; Blomström, 1988).

Finally, the level of labour productivity is also closely related to wage level. International firms are characterized by the highest level of average wages. In addition, international firms pay more due to their higher labor productivity compared to other types of firms. Generally, firms involving foreign capital pay higher wages in comparison with private inland firms. This fact has been confirmed by several foreign authors e.g. (Lipsey, 1994; Almeida, 2007). Although, the wage level of private inland firms is characterized by an increasing trend, but the level of average wages of private inland firms is on average twice as high as compared to the minimum wage in the Slovak Republic. In addition, the evolution of wage level of private inland firms is almost identical with the evolution of the minimum wage in the Slovak Republic.

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References

AITKEN, B. et al. (1996). Wages and foreign ownership: A comparative study of Mexico, Venezuela, and the United States. In *Journal of International Economics*. 1996, vol. 40, no. 3-4, p. 345–371. ISSN 0022-1996.

AITKEN, B. H. – HARRISON, A. E. (1999). Do domestic firms benefit from direct foreign investment? Evidence from Venezuela. In *American Economic Review*. 1999, vol. 89, no. 3, p. 605-618. ISSN 0002-8282.

ALMEIDA, R. (2007). The labor market effects of Foreign owned firms. In *Journal of International Economics*. 2007, vol. 72, no. 1, p. 75–96. ISSN 0022-1996.

BLOMSTRÖM, M. (1988). Labor productivity differences between foreign and domestic firms in Mexico. In *World Development*. 1988, vol. 16, no. 11, p. 1295-1298. ISSN 1873-5991.

DAVIES, S. W. – LYONS, B. R. (1991). Characterising relative performance: The productivity advantage of foreign-owned firms in the U.K. In *Oxford Economic Papers*. 1991, Vol. 43, no. 4, p. 584–95. ISSN 1464-3812.

DRIFFIELD, N. – GIRMA, S. (2003). Regional Foreign Direct Investment and Wage Spillovers: Plant Level Evidence from the UK Electronics Industry. In *Oxford Bulletin of Economics and Statistics*. 2003, vol. 65, no. 4, p. 453–474. ISSN 0305-9049.

FERENČÍKOVÁ, S. – FERENČÍKOVÁ, S. (2012). Outward Investment Flows and the Development Path: The case of Slovakia. In *EasternEuropeanEconomics*. 2012, vol. 50, no. 2, p. 85-111. ISSN 0012-8775.

GELÜBCKE, J. P. W. (2013). The performance of foreign affiliates in German manufacturing: Evidence from a new database. In *Review World Economics*. 2013, vol. 149, no. 1, p. 151-182. ISSN 1610-2886.

HOWENSTINE, N. G. – ZEILE, W. J. (1994). Characteristics of foreign-owned U.S. manufacturing establishments. In *Survey of Current Business*. 1994, vol. 74, no. 1, p. 34-59.

JAROLÍM, M. (2000). Foreign direct investment and productivity of firms. In *Finance a uver* - *Czech Journal of Economics and Finance*. 2000, vol. 50, no. 9, p. 478–487. ISSN 0015-1920.

KUNTLURU, S. et al. (2008). Financial Performance of Foreign and Domestic Owned Companies in India. In *Journal of Asia-Pacific Business*. 2008, vol. 9, no. 1, p. 28-54. ISSN 1059-9231.

LIPSEY, R. (1994). Foreign-OwnedFirms and U.S. Wages. In *National Bureau of Economic Research*. 1994. Working paper no. 4927, p. 1-51.

LIPSEY, R. E. – SJÖHOLM, F. (2004). Foreign direct investment, education and wages in Indonesian manufacturing. *In Journal of Development Economics*. 2004, vol. 73, no. 1, p. 415-422. ISSN 0304-3878.

LIU, X. et al. (2001). The impact of foreign direct investment on labour productivity in the Chinese electronics industry. In *International Business Review*. 2001, vol. 10, no. 4, p. 421–439. ISSN 0969-5931.

National Bank of the Slovak Republic. (2016). *Priame zahraničné investície*. [online]. Available at the URL: http://www.nbs.sk/sk/statisticke-udaje/statistika-platobnej-bilancie/priame-zahranicne-investicie. [accessed 15.03.2016].

Statistical Office of the Slovak Republic. (2016). *Ročenka priemyslu SR*. [online]. Available at the URL: . [accessed 28.03.2016].

WILLMORE, L. N. (1986). The comparative performance of foreign and domestic firms in Brazil. In *World Development*. 1986, vol. 14, no. 4, p. 489-502. ISSN 1873-5991.

Export into BRIC Countries

Lucia Khúlová

University of Economics in Bratislava Faculty of Commerce, Department of International Trade Dolnozemská cesta 1 Bratislava, 85235 Slovak Republic E-mail: furdova.lucia2@gmail.com

Abstract

BRIC countries represent a big opportunity for export. Expanding into new markets entry requires an analysis of the market opportunities. The paper deals with comparison in terms of specification of export of goods to chosen countries (Brazil, Russia, India, and China) according to transportation and business opportunities and market entry strategies. Through Logistics Performance Index issued by the World Bank, the situation of transportation and logistics is characterised in BRIC countries. The transit time, customs and delivery time are compared in the case study.

Keywords: logistics performance index, customs, delivery time. *JEL classification*: L 91, M 20.

1. Introduction

Integration and globalization processes, internationalization of the existing economic relations between countries influence growth of international trade with goods and services. Focusing on a specific market or market segment retire. The typical is improvement of world economy growth. These facts have become an impulse for development in BRIC countries.

The aim of the paper is to highlight the specifics of export to chosen countries (Brazil, Russia, India, and China), for example export business, and export strategies – entry market strategies or delivery time. It emphasizes the importance of transport and logistics performance in each country.

1.1 Methodology

A theoretical overview of research problems of BRIC countries was obtained mainly by the literature research method. The comparative method with the focus of selected indicators such as transport infrastructure and performance is used in the article. The Logistics Performance Index issued by World Bank is used for comparison. The opportunities for export to BRIC countries are identified using this method.

The issue is mentioned in several studies such as: Manual for exporters, Doing Business, BusinessInfo. The problem is also the part of scientific work and publications from Stock, Lambert, Johnson and others, who the importance of transport and logistics as an effective foreign market entry emphasize.

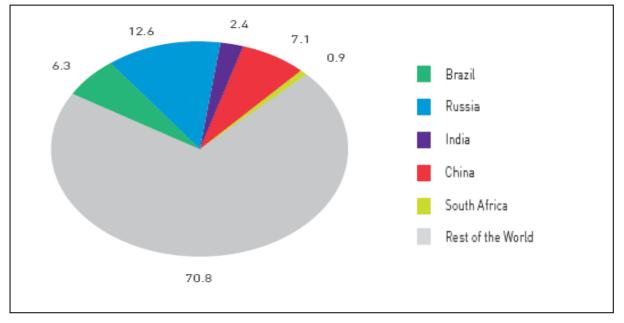
2. BRIC

The heads of state of the four countries (Brazil, Russia, India, China) held the first official summit in Russia (Yekaterinburg) on 16 June 2009, where the topic about a more democratic and multipolar world was discussed. Eight years earlier nobody knew that the acronym

"BRIC" could turn into a real political forum one day. Today the BRIC countries are very important actors in the world market and the opportunity for export. (Renard, 2009)

These "big four" countries represent a similar stage of advanced economic development and a related acronym "BRICS" includes South Africa as well (South Africa was invited into BRIC group in 2010 and changed the four BRICs to BRICS with a capital S). For purpose this paper we are focusing on BRIC countries (Brazil, Russia, India, and China). Their economic potential is high and they could become also the dominant economies in the future. These four countries take over 25% of the world's land coverage how we can see the following figure.

Figure 1



Share of the BRICS countries in the World Territory (2013)

Source: <http://www.gks.ru/free_doc/doc_2015/BRICS_ENG.pdf>.

The improvement of negative aspects is important for growth. The cracks in the BRIC are for example in: (Prasad, Narayanan, Palande, 2012)

- Brazil (very highly priced economy, poor infrastructure, too dependent on commodity exports, highly protectionist),

- Russia (politically supported oligopoly, shrinking population, too dependent on oil and gas exports, crumbling infrastructure),

- India (inefficient government, messy democracy – difficult to do business, worsening public finances),

- China (underdeveloped financial sector, rising wages and labor unrest, ageing population).

For the development of export activities into BRIC countries, analysis of the infrastructure and possibilities entry the market is important. Table 1 compares the chosen transport infrastructure in BRIC countries. The best situation was in China, where the investment in land transportation increased, which was reflected in the length of railways and highways. The quality of infrastructure influences the export activities and delivery possibilities as well.

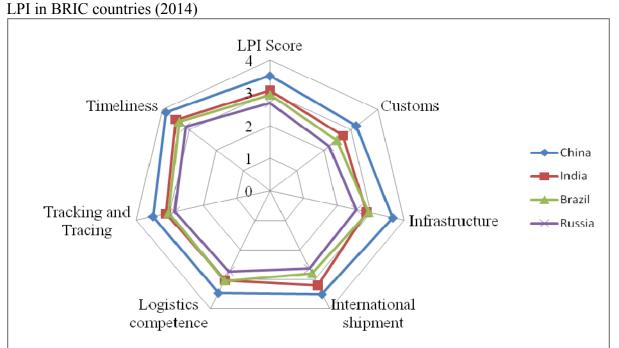
	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Length of railways in operation (1 000 km)											
Brazil	29	29	29	29	31	30	28	29	29	30	30
Russia	86	85	85	85	86	86	86	86	86	86	86
India ⁽¹⁾	63	63	63	63	63	64	64	64	65	65	66
China	69	75	77	78	80	86	91	93	98	103	112 (2)
Length of highways (1 000 km)											
Brazil	1 579	1 610	1 603	1 765	1 736	1 712	1 712	1712	1 7 1 3	1 691	1 721
Russia ⁽³⁾	532	531	597	624	629	647	665	728	925	984	1 018
India ⁽¹⁾	185	210	215	219	221	229	231	235	241	247	
China	1 680	3 345	3 457	3 584	3 730	3 861	4 008	4 106	4 238	4 356	4 464 (2)

Table 1Transport infrastructure in BRIC

Source: <http://www.gks.ru/free_doc/doc_2015/BRICS_ENG.pdf>.

The logistic performance of country represents opportunities for improvement the transportation that means the quality of infrastructure, delivery time and so on. We can compare the BRIC countries through Logistics Performance Index (LPI) issued by World Bank. In a generally, China had the best LPI score in 2014 (3,53 = LPI rank 28) and the worst Russia (2,69 = LPI rank 90). The LPI rank was 54 (LPI score 3,08) in India and 65 (LPI score 2,94) in Brazil in the year 2014. We can see the quality of logistics conditions in Brazil, Russia, India and China in the following figure.

Figure 2



Source: <http://lpi.worldbank.org/international>.

Notes: The efficiency of customs and border management clearance (Customs) / The quality of trade and transport infrastructure (Infrastructure) / The ease of arranging competitively priced shipments (International shipments) / The competence and quality of logistics services—trucking, forwarding, and customs brokerage (Logistics competence) / The ability to track and trace consignments (Tracking and tracing) / The frequency with which shipments reach consignees within scheduled or expected delivery times (Timeliness).

Each country has individual conditions for import, that means entry strategies, distribution strategies at a micro level and for example customs conditions, legislation, restrictions at a macro level. When we want to export to BRIC countries, it is important to recognize the potential of each market and specifications.

2.1 Brazil

Brazil is the largest economy in Latin America and since 2010, the country's GDP has grown 3,4% on average. This country is also the point of access for imports from Europe and regional gateway due to Latin America's largest port (Santos). The most important trade partners (top import origins) are USA, Germany, Mexico, China, Italy, and Hong Kong. The commodity structure of foreign trade (import commodities) represents machinery, electrical and transport equipment, automotive parts, oil, or electronics. (DHL, the Economist, GOV.UK, World Bank, 2014)

Brazil is very good export partner and represents for exporters the opportunity to do business because: (Doing Business in Brazil, 2015)

- Brazil's population is the fifth largest in the world (202 million = nearly 3% of global consumers).

- Brazil is a traditional leader among emerging markets.

- The Brazil Government is prioritizing macroeconomic stability and support international business.

Exporters should focus their market entry strategy on development the strong personal relationships and to collaborate with a qualified distributor (middleman) or to establish an office or joint ventures in Brazil. It is possible to use the direct selling as well. It is cheaper, but the trading companies have more contacts with subjects in the distribution chain and so they can acquire more clients. (Kanda, 2012)

2.2 Russia

Russia is the largest nation on earth with a GDP ranking of seventh in the world. According to the World Bank, GDP per capita was 13 210 USD in the year 2014, that means the highest of the BRIC countries. The most important trading partners of Russia are China, the Netherlands, Italy, Germany, USA, Ukraine, Turkey, South Korea and Poland. (Doing Business in Russia, 2015)

The main instrument of Russian's trade policy is import duty, but the most interesting exceptions are customs for import of cars, where the individual customs (30%) as a protection of local manufacturers are applied. (Kašťáková, Ružeková, 2014)

In a general the country represents opportunities for exporters and the typical import commodities are for example machinery, vehicles, pharmaceutical products, fruits, nuts, medical instruments, iron, and steel. For shipping to Russia, it is important to have the right documentation because of strict control measures related to customs regulations. So exporter will need to provide: (DHL, 2011)

- Original invoice (with no abbreviations),
- Copy of insurance certificate (especially for Incoterms CIP and CIF),

- Price verified by seller (confirmation about declared value of goods, that means the value is the true value that any other company can purchase the goods for, it can be for example seller's stamp, catalogue or web page / link with price list),

- Copy of export documentation,

- Permissions where required by HS Tariff coding (for example export license by pharmaceutical products),

- The consignee in Russia needs to provide: charter registration documents, trade contract, signed brokerage contract (for example by using customs broker's service), import deal (document about currency control issued by the bank of importer), translation of invoice, licenses or certificates issued by Russian authorities, customs fee / duties / taxes (according to customs legislation in Russia).

Exporters should focus their market entry strategy on communication with Russian business partners to ensure a common understanding of expectations, on travelling to Russia in order to establish and maintain relationships with partners and on maintaining a long-term timeframe to implement plans and strategies. (Doing Business in Russia, 2015)

It is possible to use Russian business partner for export to Russia. The positive aspects are lower financial costs, knowledge about the market, prompt communication with the local office, but the negative side by using a middleman (distributor or agent) can be deception risk, loss of goodwill, poor promotion. (Krs, Pytlíček, 2012)

2.3 India

The factor of economy growth is economic liberalization in India that has created a national market and widespread access to technology. Imports into India are focused on oil, iron, steel, chemicals, and machinery. The top import origins are China, Hong Kong, USA, Germany, and Italy. By export into India exporter needs to be registered with India's Directorate General of Foreign Trade and provides an "Importer Exporter Code" (a unique 10-digit number). (DHL, GOV.UK, McKinsey Global Institute, UKTI, 2014)

"India's requirement for equipments and services for major sectors such as energy, environmental, healthcare, high-tech, infrastructure, transportation, and defense will exceed tens of billions of dollars in the mid-term as the Indian economy further globalizes and expands." (Doing Business in India, 2015)

India is a specific market and the market entry strategy should be oriented on a certain barrier habits. It is necessary to calculate with competition in areas with lower technological intensity or know-how (that means many local competitors) and with protectionist politics (that means high customs tariff). The best solution is to use more representatives – sole distributors according to territory. (Janíček, Calábková, Peterková, 2012)

2.4 China

Due to economic reforms in the late 1970s country has emerged as a leading world economy and the largest producer of goods. The commodity structure of foreign trade of China represents goods such as: electrical and other machinery, oil, mineral fuels, and motor vehicles, optical and medical equipment. The most important import origins are Germany, USA, Hong Kong, Italy, South Korea, Japan, and Singapore. By delivering the goods to China the exporter should know some customs specifics, for example, that a packaging list is required if the shipment value exceeds 5 000 CNY or the weight of shipment is over 100 kg or the shipment includes more than two items, than wood packaging must have an Integrated Pollution Prevention and Control sign or certain goods require an import licence issued by the China Entry Exit Inspection and Quarantine Bureau. (DHL / GOV.UK, McKinsey Global Institute, 2014)

It is important to have previous export or business experience abroad for entering the China market. For many companies, representation by Chinese agent, middleman or distributor can provide contacts and knowledge about the specific of market and industry. Exporters should also know how to protect their Intellectual Property rights under Chinese law before entry the China market. (Doing Business in China, 2015)

2.5 Case study – transit time (delivery time)

Not only the delivery cost but also the transit times influence export into certain country. This fact means the time, how quickly it is possible to reach the market and fulfil customer's requirements. Each country has a specific customs requirement, what affect also a transit time. The transit time depends on the value of the shipment and on fact if the goods are dutiable or non-dutiable. According to the company DHL we can compare transit times from The United Kingdom of Great Britain (UK) to BRIC countries:

Table 2

Brazil	Russia	India	China	
Rio De Janeiro	Moscow	New Delhi	Beijing	
N-D: 4 days	D: 2-3 days	N-D: 3 days	N-D: 3 days	
D: 4 days		D: 4 days	D: 5 days	
Belo Horizonte	St. Petersburg	Calcutta	Shanghai	
N-D: 4 days	D: 2-3 days	N-D: 3 days	N-D: 3 days	
D: 4 days		D: 4 days	D: 5 days	
Manaus	Irkutsk	Mumbai	Tianjin	
N-D: 6 days	3 days	N-D: 3 days	N-D: 4 days	
D: 6 days		D: 4 days	D: 6 days	
Sao Paulo (North)	Nizhniy Novgorod	Bagalore	Shenyang	
N-D: 4 days	D: 3-4 days	N-D: 3 days	N-D: 4 days	
D: 4 days		D: 4 days	D: 6 days	
Brasilia	Novosibirsk	Chennai	Wuhan	
N-D: 4 days	D: 3-4 days	N-D: 3 days	N-D: 4 days	
D: 4 days		D: 4 days	D: 6 days	

Transit Times	(from UK to BRIC countries)
riunon rines	

Source: <http://dhlguide.co.uk/>.

Notes: Consideration: N-D = Non-Dutiable (shipment), D = Dutiable (shipment).

The time of delivery is affected by mode of transportation as well. In generally, the delivery time is 2 months by using water transport in Russia, 1-2 days by using air transport, 1-2 weeks by using rail transport (that means in Europe, it can be more outside Europe), 4 days by using road transport (without snafu at the customs border). We can compare it with Brazil, where the delivery time is 3 weeks by using water transport and several days by using air transport and with China, where the time of delivery is 6-8 weeks by using water transport (maritime transport). In India, the most important mode of international transportation is water (maritime) transport and represents 70% of all value of international trade in this country. The delivery time from Europe to India is about 5-6 weeks. The air transport is only developing industry and the delivery time is 3-5 days. (MZV CR, 2016)

5					
		2007	2010	2012	2014
Brazil	Customs	2,39	2,37	2,51	2,48
	Delivery time	3,1	4,14	3,55	3,39
Russia	Customs	1,94	2,15	2,04	2,2
	Delivery time	2,94	3,23	3,02	3,14
India	Customs	2,69	2,7	2,77	2,72
	Delivery time	3,47	3,61	3,58	3,51
China	Customs	2,99	3,16	3,25	3,21
	Delivery time	3,68	3,91	3,8	3,87

Table 3

Customs and delivery time according to LPI index in BRIC countries

Source: <http://lpi.worldbank.org/international>.

According to LPI index the efficiency of customs and border management clearance was the best in China from 2007 to 2014 and the delivery time (the frequency with which shipments reach consignees within scheduled or expected delivery times) was the best in Brazil in 2010 and in China in 2012-2014, how we can see in table 3.

3. Conclusions

BRIC countries represent a big opportunity for export. The business activities are influenced by many factors such as market potential, customs clearance, transit time, customer's habits / requirements and so on. Entry the market requires analyzing the market opportunities. According to the Logistics Performance Index, the best conditions for business are in China (from BRIC countries), number-two is India, then Brazil and the last is Russia. A customs restriction can be a big barrier, which can lengthen the transit time and worsen the time of delivery. It was a view from a macro level. On the other hand, we can recommend starting export activities in Brazil from BRIC countries because the Brazil Government supports international business. The main instrument of Russian's trade policy is import duty. The certain export barriers are habits in India. Exporters should have problems to protect their intellectual property rights in China. How we can see, the each country is "original", but the best solution is to improve distribution logistics, that means to use indirect distribution strategy. The positive effect of using distributors is avoiding the restrictions but the negative effect represents higher costs. So the common characteristic of BRIC countries is the same entry market strategy, where to use middleman or distributor as the best solution for export to these countries is recommended.

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References

DHL. GOV.UK. McKinsey Global Institute. UKTI. (2014). *Export to India*. [online]. Available at the URL: http://dhlguide.co.uk/export-to-india/. [accessed 20. 1.2016].

DHL. GOV.UK. McKinsey Global Institute. (2014). *Export to China*. [online]. Available at the URL: <<u>http://dhlguide.co.uk/export-to-china/></u>. [accessed 20. 1.2016].

DHL. (2011). *Export to Russia*. [online]. Available at the URL: http://dhlguide.co.uk/export-to-russia/. [accessed 23. 2.2016].

DHL. (2016). *DHL Guide*. [online]. Available at the URL: <http://dhlguide.co.uk/>. [accessed 15. 1.2016].

DHL. The Economist. GOV.UK. World Bank. (2014). *Export to Brazil*. [online]. Available at the URL: <<u>http://dhlguide.co.uk/export-to-brazil/></u>. [accessed 25. 2.2016].

Export.gov. (2015). *Doing Business in Brazil*. [online]. Available at the URL: <<u>http://export.gov/brazil/doingbusinessinbrazil/index.asp</u>>. [accessed 15. 2.2016].

Export.gov. (2015). *Doing Business in China*. [online]. Available at the URL: <<u>http://export.gov/china/doingbizinchina/index.asp</u>>. [accessed 15. 2.2016].

Export.gov. (2015). *Doing Business in India*. [online]. Available at the URL: <<u>http://export.gov/india/doingbusinessinindia/index.asp</u>>. [accessed 15. 2.2016].

Export.gov. (2015). *Doing Business in Russia*. [online]. Available at the URL: <<u>http://www.export.gov/russia/doingbusinessinrussia/index.asp</u>>. [accessed 15. 2.2016].

JANÍČEK, J. – CALÁBKOVÁ, R. – PETERKOVÁ, J. (2012). *Export do Indie*. [online]. Available at the URL: http://www.mzv.cz/public/60/5/af/940056_856534_Indie.pdf>. [accessed 20. 2.2016].

KANDA, F. (2012). *Export do Brazílie*. [online]. Available at the URL: <<u>http://www.mzv.cz/public/f7/bf/90/950521_872190_Brazilie.pdf</u>>. [accessed 25. 2.2016].

KAŠŤÁKOVÁ, E. – RUŽEKOVÁ, V. (2014). *Operácie v zahraničnom obchode: Teória a prax.* Bratislava: Vydavateľstvo EKONÓM, 2014. ISBN 978-80-225-3959-3.

KRS, J. – PYTLÍČEK, J. (2012). *Export do Ruska*. [online]. Available at the URL: http://www.mzv.cz/public/37/dd/45/940066_856542_Rusko.pdf>. [accessed 24. 2.2016].

MZV ČR. (2016). *Praktické návody pro exportéry*. [online]. Available at the URL: <<u>http://www.mzv.cz/ekonomika/cz/servis_exporterum/prakticke_navody_pro_exportery/inde</u> x.html>. [accessed 15. 1.2016].

PRASAD, S. – NARAYANAN, D. – PALANDE, P. (2012). Issues in Forbes India. *BRIC Countries Hit A Wall*. Jun 8, 2012, p. 1.

RENARD, T. (2009). *A BRIC in the world: Emerging powers, Europe, and the coming order*. Gent: Academia Press, 2009. ISBN 978-90-382-1505-1.

Rosstat. (2015). *BRICS Joint Statistical Publication*. [online]. Available at the URL: <<u>http://www.gks.ru/free_doc/doc_2015/BRICS_ENG.pdf</u>>. [accessed 7. 2.2016].

Worldbank. (2016). *Logistics Performance Index*. [online]. Available at the URL: <<u>http://lpi.worldbank.org/international></u>. [accessed 20. 2.2016].

Theoretical Approaches to Tax Efficiency

Jana Kočkovičová

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

Abstract

This article provides a summary of theoretical approaches to measure the effectiveness of tax collection. Approaches of many Slovak and international authors are divided into three categories, depending on which factor in assessing the effectiveness of tax collection is the most critical. The first view is focused on administrative costs of taxation. The second group of authors uses behavioural approach to taxation and tax collection. The next option is the measuring of the shadow economy range.

Keywords: administrative costs, behavioral approach, shadow economy *JEL classification*: H21, H26, H30

1. Introduction

Activities related to the collection of taxes carries out the tax authority. Based on the current legal framework in the Slovak Republic, like tax administration we understand the process associated with the proper finding of tax and ensure payment of taxes and other activities

Tax inspection is in Act no. 563/2009 defined as an activity of the tax authority to ascertain or verify the facts essential for the proper determination of tax or compliance with specific regulations

Efficiency of tax collection resulting from the effective operation of the tax authority. Effective tax administration should have the following characteristics:

- administration costs are several times lower than the resulting effect;
- monotonous precision work without the added creativity of man are done with modern technology, processes are automated;
- excellent tax service is dedicated by staff who convince taxpayers about the purpose of paying taxes;
- electronic communication is readily accessible;
- tax administration is compatible with the highest tax authorities in the world;
- tax administration achieves a high standard of in-house culture while stimulating workers to higher performance;
- assessment of tax administration is set to be competitive employer and attract quality economic, analytical, financial as well as legal and informatics professionals. (Slemrod and Yitzhaki, 2000)

2. Ways of measuring the efficiency of tax collection

In international literature it is much attention paid to measure the efficiency of tax collection. Evaluation of the efficiency of tax collection mainly focuses on the administrative cost of tax collection. On the other hand, another group of economists by measuring the efficiency of tax collection is focused on behavioral economics. Another approach places emphasis on the informal economy and the associated tax evasion.

2.1 Measuring the efficiency of tax collection with an emphasis on administrative costs

In the available literature we notice inconsistencies in the author's views what costs of taxation and how it is appropriate to use in evaluating and measuring effective tax collection. Various authors divide administrative costs into several groups. Some see administrative costs as direct and indirect, other like the social cost and classified them and excessive tax burden, another authors characterize them as fixed and variable costs.

When specifying direct and indirect administrative costs is an estimate of the direct administrative costs significantly simpler, since it is primarily associated with the payroll system of tax administration, respectively. with fixed costs, for which we can consider as the rental of premises, and energy consumption. Measurability of indirect costs is difficult because the private sector is much more diverse. Another reason for the complex measurement of indirect costs is the fact that there is no consensus as to what types of costs should be included in the group of indirect administrative costs.

Until the 1974 models used to optimize taxation without taking into account the administrative costs associated with taxation. Like first tried to include it in its model authors Heller and Shell. High administrative costs are caused by these tax incentives, multiple tax rates, a wide range of exemptions and different tax treatment for taxpayers and tax tax-non-payers.

Breakdown of public sector costs for administrative costs and other expenses used Sanford et al. (1989). Costs arising in the performance management of the tax system are classified as administrative. Costs associated with the creation and application of tax laws and the psychological costs belong to other costs. Mentioned psychological costs related to stress and anxiety that arise by filing tax declaration or other activity merging with the tax system. This phenomenon is called "burden worries" that seek to alleviate taxpayers through the use of services of tax experts, which was linked to additional costs related among other costs.

Authors Chittenden et al. (2010) in its publication very strict distinguish between direct and indirect administrative costs. Although on the one hand, the government can reduce the cost of the private sector associated with the filing tax declarations, but on the other hand, this increases the direct administrative costs of government, for example the introduction of electronic tax declarations.

Pope and Rametse (2001) focused on indirect taxation administrative costs, namely the costs for businesses related to taxation in Australia. Their finding was that for small enterprises administrative costs of taxation are about 2% of the turnover of these enterprises. On the other hand, for large companies, these costs represent only 0.04% of their turnover. The authors therefore recommend the government to propose measures that would have a significant difference reduced or eliminated.

In 2009, the authors Eichfelder and Schorn published a study of indirect administrative costs of taxation, which confirmed that by filling out tax declarations and calculating tax liability SMEs prefer outsourcing. This option appears to them less expensive than performing these activities by own staff. The main reasons are saving time that would be required to fill

in tax declarations and tax calculation, and reduce the risk of errors in tax declarations and tax calculations. Psychologically, they opt for outsourcing companies because the charges for carrying out these actions by external contractors are known in advance, but their own costs associated with filing tax declarations and tax calculations businesses can not appreciate in monetary.

Authors Slemrod and Yitzhaki (1996) in his work suggested that the optimal tax system in the application of tax instruments allow for the "marginal effective tax cost of tax collection". The cost to society is additional cost associated with the selection of additional units of the tax concerned by a particular tax instruments introduced. This indicator authors calculate by the following formula

$$MECF_t \frac{\gamma(X_t - MR_t) + C_t + MR_t}{MR_t - A_t}$$

where $MECF_i$ is marginal effective cost of tax collection for *i*-th tax instrument, MR_i expresses actually collected tax, γ is the amount which taxpayer is willing to sacrifice in order to save one dollar of tax, X_i expressed distortion costs of one unit of collected tax representing an excessive tax burden and A_i are direct administrative costs of one unit of collected tax. Higher values of this indicator reflect less efficiency of tax instruments. As long as the tax system is set up correctly, MECF value should be the same for all used tax instruments.

In 2001, authors Strauss and Hyun perceived costs associated with the management of tax than social costs. These costs of taxation quantified through the following formula:

SC = BC + PC + DWL

while SC (social costs), are the total administrative costs of taxation, BC (budgetary costs) reflects the cost of tax administration, which is paid directly from the government budget, PC (private costs) are administrative costs of taxation paid by the private sector and DWL is deadweight loss representing the indirect administrative costs of taxation. The cost of connecting to the tax administration as the authors also included excessive tax burden and tried to point out that public government is trying to pass on the burden associated with the collection of tax to the private sector.

Distribution of administrative costs to fixed and variable used Polinski and Shavell (1982). For fixed costs were regarded as having depended on the number of taxpayers, while here include for example the cost of preparing a tax declaration. Second, the variable costs were associated with the amount of collected tax. This category includes, for example, costs incurred in detecting crime associated with tax evasion.

2.2 Measuring the efficiency of tax collection with an emphasis on behavioral approach

Behavioral approach to measuring the efficiency of tax collection focuses on the behavioral changes of taxpayers related to tax collection. The theory says about the behavior of taxpayers related to the manifestation of the substitution effect, but the effect on individual pension taxes, too. Yatzhaki and Slemrod in 2000 in their study highlighted the fact that if there is a change in the tax mix, taxpayers choose between structural change of their consumption basket depending on the structure of taxes, and the next steps that reduce tax liability, which may include activities leading to tax evasion.

In 2004 Sandmo was in its work concerned with the behavior of taxpayers depending on the setting of the tax system. He devoted also optimal taxation in the existence of tax evasion. In their study it points out that at present the question arises whether it is more efficient to carry out more frequent tax audits with minor penalties or perform tax audits less often, and penalties would not have been set at a very high level. It does not provide a strong opinion,

(2)

(1)

whichever is more effective. It also states that the slope of the taxpayer to the implementation of tax evasion depends on the social situation. The more tax evasion is widespread in society, the less subjective probability of attachment.

Aizenman and Jinjarak (2005) address the efficiency of tax collection based on data from the years 1970 - 1999. They assumed that the collected tax is higher with increasing probability of audit and punishment. They underlined that the reduction in the efficiency of tax collection also is caused by political instability.

Slemrod study in 2009 focused on behavioral economics. For behavioral approaches there is a fundamental question of whether the state should protect its populations from their irrational decision or individuals aware that the state they handled the same way. He dealt with the complexity of the tax system and bounded rationality of taxpayers, along with the issue of compliance with tax laws. Compliance with tax laws, according to him, depends primarily on the probability of detection of tax evasion and the amount of the penalty for tax evasion. Last but not least for fiscal discipline and conviction taxpayer decides whether they are "his" funds used in the system of public funding for "right" purposes.

Impact of taxes on the behavior of taxpayers in 2009 dealt Congdon, Kling and Mullainathan. For their research they used a behavioral approach. The behavior of taxpayers identified as imperfectly rational, prefer the simplicity of taxation.

In the same year Gahraman (2009) involved in the exploration of how the increased tax rate applied to tax discipline. In his study he was based on research Allingham and Sandmo (1972), as well as publications Yitzhaki (1974), in which the author expressed the view that a higher tax rate encourages greater fiscal discipline.

2.3 Measuring the efficiency of tax collection with an emphasis on shadow economy

Another option for measuring the effectiveness of tax collection is to measure the scope for tax evasion. For this purpose, is used an estimate of the extent of the shadow economy, because this activity is very characterized by the fact that tax evasion is its concomitant. Statistical Office of the Slovak Republic based on the standards System of National Accounts provided for specifying the concept of shadow economy "unrecorded economy". This term is also characterized by economic activity that are not included in the official system for detecting and reporting the official reporting.

The shadow economy is therefore an activity which brings its implementer income appraisable through any statistical sources that are used to calculate gross domestic income. This is an action on the edge or outside the law, whose income derives from activities not captured in the national accounts and is not communicated to the tax authorities.

Tax evasion can be characterized as a result of the overall economic behavior of taxpayers oriented to reduce taxes owed to the state. According Seiffert (1996) may have the evasion two main types, namely the denial to the whole respectively parts of income or overstatement of tax costs. At the same time, it is seen as legal and illegal form of tax avoidance, not only within a country but also internationally.

Orviská (2005) defines tax evasion as a source of potentially serious loss of government revenue, which results in a possible shortage of funds for the public sector and unfair burden on honest taxpayers. Non-compliance with tax laws and illegal activities in one area may also encourage people to illegal activities in other areas. The effort of individuals to avoid tax illegally, mostly deliberate denial of certain income tax declaration is referred to as tax evasion. In general, we can say that tax evasion is a situation where the taxpayer is partially or

completely avoids the fulfillment of tax obligations. The reason for such action is an effort to minimize the tax burden.

Currently, we distinguish legal and illegal tax avoidance. Use of legal options in order to avoid tax avoidance is legal tax evasion. On the other hand, illegal tax evasion is also avoiding the tax liability, which is made beyond legislation. Internationally, tax evasion combines the creation of artificial structures, transfer of profits and fictitious invoicing.

Tax evasion can also be characterized as illegal or fraudulent concealment of tax laws and income denial or concealment of facts relevant for taxation.

The issue of tax evasion in the theory of optimal taxation dealt with several authors.

Optimal linear income taxation in the presence of fraud investigated Sandmo (1981). In his model it distinguishes between two groups of households. One group operates only in the formal sector, while the second part of households only works in the informal sector who understand that part of the economy that is not reported in official reporting. Sandmo uses utilitarian social welfare function and determines optimal probability of detection, penalties and tax rates in a given individual's behavior. Sandmo by increasing the marginal tax rate in the formal market makes all things being equal supply of labor in the informal economy.

Gahvaram and Cremer (1994) expanded this study on the free choice of the extent to which individuals will provide the formal and informal sectors. They noted that if tax evasion robbing the company of revenue, it is understandable that the willingness of the company to redistribute income and therefore the marginal tax rate is reduced. Likewise, these authors also looked at the impact of fraud on the optimal non-linear income taxation. Assuming two households that have a free choice of the scope of the work proposed in both sectors analyzed the optimal marginal tax rate and an audit strategy lies in the probability of a positive audit conferring with individuals on low incomes. The aim is to deter wealthy individuals from conceding low incomes.

As mentioned above, tax evasion is to avoid taxation either legal or illegal means. A closer focus on illegal tax evasion can be found in Slovak legislation characteristic of tax crimes.

Act no. 300/2005 in § 270-280 deals with crimes against currency and tax crimes. According to this act, therefore the tax crimes should be included:

- tax and insurance evasion;
- non-payment of taxes and insurance;
- tax fraud;
- failure to pay taxes and insurance;
- obstruction of tax administration;
- infringement of national technical measures to label goods.

In implementing the Action Plan to fight against tax evasion for the years 2012 to 2016 were, with effect from 1 October 2012 amended to the Criminal Code two tax crimes, including tax evasion and obstruction of tax administration.

Tax fraud is in the Criminal Code defined as a situation where a person unlawfully at large scale claims a refund of value added tax or excise duties intended to procure for himself or other unfair advantage.

Obstruction of tax administration carries out the one who in the documents submitted to the tax administration gives false or grossly misleading information, or conceals the mandatory declaration of facts for the correct assessment of taxes; modify, degrade or destroy documents crucial for the correct assessment of taxes; fails to meet the statutory duty of notification, or to comply with an obligation imposed on him by law during the tax audit.

Measurability of tax fraud is quite difficult. Burak (2002) even states that the measurability of the extent of tax evasion is not possible. According to him, the only available are approximation estimates.

In 1990, the authors Alm, Bahl and Murray pointed out that the complexity of the tax system could increase the cost of taxpayers required to ensure compliance with tax legislation. The complex structure of the tax system is an incentive for tax evasion.

Two kinds of methods for measuring the extent of tax fraud can be found by Martínez (1995). One instrument is approximated methods. This may be a purely political argument, but also the more scientific estimates. If it is a political argument, they are designed solely to impress public opinion. For this purpose, use speculative figures whose estimates are carried out not only by economic but also sociological tools. The second type is a method using a representative sample of taxpayers. It is used along with a public inquiry, or in conjunction with an in-depth tax audit.

Several methods of indirect estimation of the extent of the shadow economy indicate Schneider and Enste (2000). To measure the volume of the gross national product is used the revenue and expenditure approach, and their results should be equal. Provided that there is compliance, inequality may not be due to a mistake, but the excess can be bases to be used to estimate the extent of the shadow economy. Since the existence of tax evasion is closely related to the existence of the shadow economy, this method can serve as a basis for estimating the extent of tax evasion. Assuming a constant labor force in that state, the authors state that if there is a drop in the labor force in the economy can be derived from this decline in growth extent of the shadow economy. The difference between the official and actual labor force that is another way to estimate tax evasion.

In the Slovak Republic is systematically used information from filled tax declaration for risk analysis and identify problem areas through data mining modules of software applications. It performs search dependencies and relationships in the data, detecting link between the taxpayer and the tendency in the past to the implementation of tax fraud. Entities for tax audits are sought intentionally, by controlling tax audits of previous periods. For the detection of risky behavior is the method used decision tree. With respect to the specifics depending on the scope of business are used neural networks. Taxpayers are thus categorized according to behavioral patterns.

3. Conclusions

There are several options to measure the effectiveness of tax collection. Frequently used criterion is the ratio of administrative costs associated with the collection of taxes and overall tax revenues. In general, we can say that the efficiency of tax collection increases with increasing share actually levied and decreasing administrative costs.

The creation of tax evasion significantly affects the formation of the government deficit, as is the cause of lower public budget revenues. In connection with the consolidation of public budgets is growing need to increase tax revenues. It is therefore necessary, while setting the tax system to achieve the highest possible income. Increasing the efficiency is therefore an alternative to raising tax rates. A prerequisite for achieving this goal is the fulfillment of tax

obligations of taxpayers and at the same time its consistent enforcement of efficient management and control of taxes.

The issue of effective tax collection is being examined by many domestic and foreign authors. Wide range of views and approaches on this subject published in recent decades suggests that the question of effective tax collection is always at the most up to date.

References

Act. no. 563/2009. (2009).

AIZENMAN, J. – JINJARAK, Y. (2005). The collection efficiency of the value added tax: theory and international evidence. In: National Bureau of Economic Research. 2005. Available at URL: http://www.nber.org/papers/w11539>.

BEDNÁRIK, R. – DANIHEL, M. – SIHELSKÝ, J. (2003). Nelegálna práca v podmienkach slovenskej spoločnosti. Freidrich Ebert Stiftung, zastúpenie v Slovenskej republike. 2003. Available at URL: http://library.fes.de/pdf-files/bueros/slowakei/04218.pdf>.

CONGDON, W. – KLING, J. R. – MULLAINATHAN, S. (2009). Behavioral Economics and Tax Policy. [online]. In: National Bureau of Economic Research. NBER Working Paper No. 15328. National Tax Journal, 62:3 (September 2009), pp. 375-386. Available at URL: http://www.nber.org/papers/w15328>.

CREMER, H. – GAHVARI, F. (1994). Tax evasion, concealment and the optimal linear income tax. In: Scandinavian Journal of Economics 96, pp. 219–239, 1994.

EICHFELDER, S. – SCHORN, M. (2009). Tax compliance costs: A business administration perspective. Freie Universität Berlin: 2009. Diskussionsbeiträge des Fachbereichs Wirtschaftswissenschaft der Freien Universität Berlin.

CHITTENDEN, F. – FOSTER, H. – SLOAN, B. (2010). Taxation and Red Tape: The cost to British Business of Complying with UK Tax system. London: The Institute of Economic Affair, 167 p. ISBN 978-0-225-36612-0.

HELLER, W. P. – SHELL, K. (1974). On Optimal Taxation with costly administration. Fels Center of Government, Government Study Center, University of Pennsylvania, 1974.

GAHRAMANOV, E. (2009). The Theoretical Analysis of Income Tax Evasion Revisited. Economic Issues, Vol. 14, Part 1, 2009. Available at URL: http://www.economicissues.org.uk/Files/109Gahramanov.pdf>.

KUBICOVÁ, J. (2010). Medzinárodný daňový režim Slovenskej republiky z hľadiska opatrení proti vyhýbaniu sa dani z príjmu. In Financie a riziko : zborník príspevkov z XII. ročníka medzinárodnej vedeckej konferencie : Veľký Meder 29.-30. novembra [elektronický zdroj]. - Bratislava : Vydavateľstvo EKONÓM, 2010. pp. 211-220. VEGA 1/0792/10. ISBN 978-80-225-3089-7.

OECD (2015). *ExplanatoryStatement*, OECD/G20 Base Erosion and Profit Shifting Project, OECD. Available at URL: <www.oecd.org/tax/beps-explanatory-statement-2015.pdf>.

ORVISKÁ, M. (2005). Sociálno-ekonomická a inštitucionálna analýza tieňovej ekonomiky a daňových únikov. Banská Bystrica: Fakulta financií UMB, 2005. ISBN 80-8083-116-5.

Oznámenie Komisie Európskemu parlamentu a Rade o daňovej transparentnosti v záujme boja proti daňovým únikom a vyhýbaniu sa daňovým povinnostiam. 2015. Available at URL: http://www.nrsr.sk/ssez/downloadAgendaDoc.aspx?agendaId=4490>.

POLINSKY, A. M. – SHAVELL, S. (1982). Pigouvian taxation with administrative costs. In *Journal of Public Economics*. Vol. 19, pp. 385-394, 1982.

POPE, J., RAMESTSE, N. (2001). Small business and the Goods and Services Tax: Compliance Cost Issues. Perth: Curtin University, 2001.

REMETA, J. et al. (2015). "Moving Beyond the Flat Tax – Tax Policy Reform in the Slovak Republic", *OECD Taxation Working Papers*, No. 22, OECD. Available at URL: http://dx.doi.org/10.1787/5js4rtzr3ws2-en>.

REMETA, J. – GÁBIK, R. – ALEXOVÁ, M. (2015). *Daňový report Slovenskej republiky 2015*. Inštitút finančnej politiky. Ministerstvo financií SR. 2015. Available at URL: http://www.finance.gov.sk/Default.aspx?CatID=10490>.

SANDFORD, C. et al. (1989). Adminstrative and Compliance Costs of Taxation. London: Fiscal Publications, 1989.

SANDMO, A. (2004). The theory of tax evasion: A retrospective view. Discussion Paper 31/04. 2004. Available at URL: http://www.ntanet.org/NTJ/58/4/ntj-v58n04p643-63-theory-tax-evasion-retrospective.html.

SANDMO, A. (1981). Income tax evasion, labour supply, and the equity efficiency trade-off. In: *Journal of Public Economics*. Vol. 16, pp. 265–288, 1981.

SEIFFERT, M. (1996). Život na hraně zákona aneb jak se neplatí daně. In: *Ekonom*. Vol.18.

SCHULTZOVÁ, A. et al. (2011). Daňová teória a politika I. Bratislava: IuraEdition, 2011. 260 p. ISBN 9788080784072.

SLEMROD, J. (2009). Old George Orwell go backward: Some thoughts on Behavioral Tax Economics. CESifo Workingpaper no. 2777.

SLEMROD, J. – YITZHAKI, S. (2000). Tax avoidance, evasion and administration. National Bureau of economic research: working paper 7473, 2000. Available at URL: http://www.nber.org/papers/w7473.

SLEMROD, J. – YITZHAKI, S. (1996). The Cost of Taxation and the Marginal Efficiency Cost of Funds. In *International Monetary Fund Staff Papers*, no. 43, 1996. pp. 172–198.

STRAUSS, R. P. – HYUN, J. K. (2001). The Evolution of the IRS and Taxpayer Compliance: Some Implications for Korea. Korea Institute of Public Finance. 2001.

VILHELM, D. (2013). Niektoré prístupy k tieňovej ekonomike. Some Approaches towards Informal Economy. 2013. pp. 110-130. Available at URL: http://www.cutn.sk/Library/proceedings/mch_2013/editovane_prispevky/14.Vilhelm.pdf>.

ZUBAĽOVÁ, A. – GERULOVÁ L. – GEŠKO, M. (2012). Daňové teórie a ich využitie v praxi:daňová teória a politika II. 2. preprac. a dopl. vyd. Bratislava : IuraEdition, 2012. 198 p. Ekonómia. ISBN 978-80-8078-487-4.

Energy Cooperation between China and Russia and its Further Prospects

Michaela Královičová, Matúš Žatko

University of Economics in Bratislava Faculty of Commerce, Department of International Trade Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: mk.kralovicova@gmail.com; zatko.matus@gmail.com

Abstract

The energy cooperation between Russia and China has begun right after the dissolution of the Soviet Union. However, the real development of this cooperation can be observed only in the recent years, fuelled by an unprecedented economic boom in China and strained relations between Russia and its customers, which have been caused by the Ukrainian crisis. The EU member states have decided to punish Russia for its behaviour in Ukraine and gradually take steps to reduce their dependence on Russian energy resources. Therefore, it is natural that Russia needs a new customer with favourable prospects for the future. On the other hand, in order to sustain the recent pace of economic growth, China needs to secure sufficient supplies of raw materials. More importantly, China's main interest when it comes to the enhancement of the energy cooperation with Russia, is the trade in natural gas. It has to be pointed out that this relationship is promising for the future of both, the Russian and the Chinese economy. The question is, however, whether these countries would act as equal partners, therefore making this relationship able to endure even during the times of unstable geopolitical situation, or would become rivals, perhaps to the detriment of both sides.

Keywords: China, Russia, oil and natural gas *JEL classification*: F51, Q34, Q37

1. Introduction

In the new millennium, the energy cooperation between Russia and China has become a major driving force, which largely determines the future developmental trends of the entire global economy. The development in the twenty-first century suggests that the center of gravity of the global economy is moving from the west to the east, with the position of China as one of the world's leading economies currently being challenged only by a small minority of the world's most renowned economists.

However, in order to drive her economic expansion and successfully carry out the strategies, China needs significant quantities of crude oil and gas, which are being increasingly secured through the foreign trade. One of the major China's trading partners, not only in foreign trade with energy carriers, but also in trade with machinery and other types of goods, is Russia. The ongoing enhancing cooperation between these two territories is currently perceived by the political leaders of the EU and the US as a threat to their competitiveness. The aim of this paper is to assess the current state of mutual energy cooperation between Russia and China and to point out to the future development trends of this (un)balanced partnership.

2 Dependence of China and Russia on foreign trade in energy resources

Energy resources play an important role in the development of every country operating within the global economy. Therefore it can be inferred that they are also of strategic importance to China and Russia.

2.1 China and its dependence on exports of energy resources

China's influence over the functioning of the global economy is continuously growing, with the spheres of influence as well as interest being also gradually expanded. Chinese economy has undergone a significant shift since the opening up to global economy, which was initiated in the late 1960s (Baláž, 2012). Since then, the structure of Chinese economy has increasingly started to resemble that of developed economies. Furthermore, tertiary sector has finally gained leading position within the structure of Chinese economy in 2011 (Statista, 2015).

In the present, there is no such an economic sector, which would not be influenced by the expansionary policy of the country, with the energy sector being just one of the soundest examples. China has become net importer of natural gas for the first time in 2007. Subsequently, in 2009, the country became the world's second largest importer of crude oil and related products. Five years later, in 2014, China surpassed the US for the first time, thus becoming the world's largest importer of crude oil and related products. The country became the world's largest consumer and producer of energy in 2012 (EIA, 2016).

China's dependence on oil imports increased almost twofold in the period between 2000 and 2014 and nowadays, it reaches up to as high as almost 60%. Additionally, the country's dependence on gas imports now exceeds 30% (Eia.gov, 2016). The share of coal in China's energy mix was, even despite of ongoing attempts to reduce its usage, still considerably high in 2014, when it accounted for 66% of all the energy consumption. Thus coal remains the dominant energy source of the Chinese economy. The share of oil in the same year was 18.4% and natural gas accounted for only 5.8% of China's total energy consumption % (Stats.gov.cn, 2016). The increasing energy consumption also serves as an impetus for the growth of volumes of imported strategic raw materials, with Chinese government officials constantly making decisions that are aimed to achieve a greater diversification of all the supply sources. At present, the vast majority of crude oil and natural gas imports flows to China from the countries of Middle East, with suppliers of major importance also being the countries of Latin America and Southeast Asia.

China, in order to secure the supplies of strategic energy carriers from the countries of the primary interest, have issued two strategic documents, which are establishing a common framework for mutual cooperation with Africa (African Policy Papers of 2006 and 2015). Additionally, the first common framework for the countries of Middle East (Arab Policy Paper) which account for over 40% of crude oil imports to China was issued in January 2016 (News.xinhuanet.com, 2016).

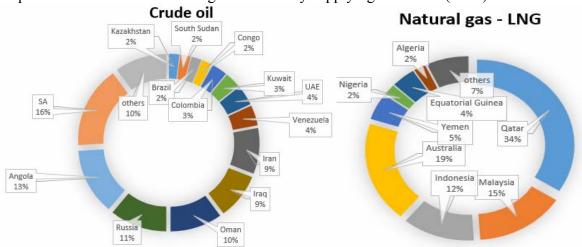


Figure 1



Source: Processed according data of U.S. Energy information Administration. Available at : < http://minenergo.gov.ru/node/1215>

2.2 Russia and its dependence on exports of energy resources

Everywhere in the world, where the main mineral resources are oil and gas, the wealth of economy, businesses and individuals has increased thanks to extraction of these resources. However, the ongoing importance of oil and gas cannot be overestimated. Currently, it is most evident in Russia. Russia is one of the world's leading producers and exporters of oil and natural gas. Its economy, as well as economic growth is heavily dependent on exports of these energy resources. Half of the revenues to the state budget, 70% of export revenues and 25% of GDP is made up of exports of energy raw materials (360, Oil, 2015).

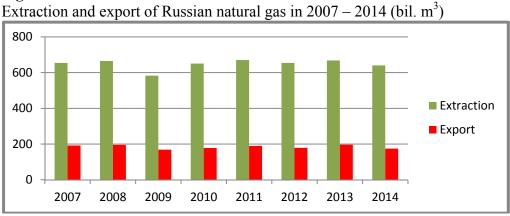


Figure 2

Source: Processed according data of Russian Ministry of Energy. Available at the URL: http://minenergo.gov.ru/node/1215>

Russia has the largest natural gas reserves in the world and is the second largest producer in the world. Russian reserves of natural gas reach up to 47.8 trillion cubic meters. Most of these reserves are located in Western Siberia and make up nearly a quarter of global natural gas reserves. In 2014, Russia was the second largest producer of natural gas (after the USA), with a total annual production of 640.4 billion m3 of natural gas. Total production in 2014 reached 640.4 billion m³ and country exported 174.3 billion. m³.

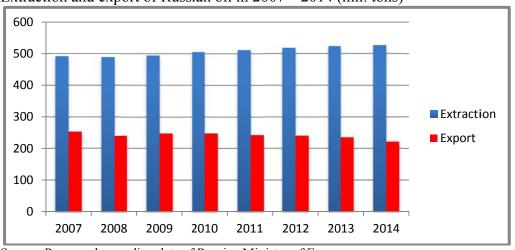
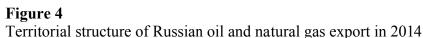
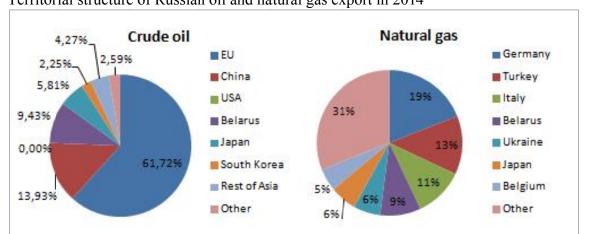


Figure 3 Extraction and export of Russian oil in 2007 – 2014 (mil. tons)

Source: Processed according data of Russian Ministry of Energy

In 2014, Russia was the third largest oil producer (after Saudi Arabia and the US) with an average daily production of 10.9 million barrels per day. Russian oil sector plays a crucial role in its economic development and also in the global energy security. In 2014, Russia produced 526.7 million tons of oil, of which 221.3 million tons were exported abroad (Eia.gov, 2016).





Source: Processed according data of U.S. Energy information Administration. Available at the URL: https://www.eia.gov/beta/international/analysis.cfm?iso=RUS.

In 2014, the majority of Russian oil was exported to EU countries (61.72%), mainly to Germany, the Netherlands, Poland and Italy. Significant importers of Russian oil are also China (13.93%), Belarus (9.43%) and Japan (5.81%). Mainly in case of China and Japan in recent years, there is an increasing trend of demand for Russian oil and gas. Almost 90% of all Russian gas exports in 2014 was directed to Europe. The rest was in liquefied form (LNG) exported to Asia. Specific is the case of Ukraine - while in 2013 it was the third largest importer of Russian natural gas, the situation changed in 2014, with imports falling by a half, which was the result of tensions around payments for the Russian gas (Ukraine did not buy Russian gas most of the second half of 2014). (Eia.gov, 2016)

As a result of the annexation of the Ukrainian peninsula of Crimea and the tense political situation, the EU countries try to seek opportunities for diversifying their demand for energy

and raw materials, thus reducing their dependence on Russia. With the influx of shale gas from the US in the form of liquefied natural gas (LNG), ubiquitous renewable sources and increased competition from other suppliers of energy resources in Europe, it comes to surplus of Russian production capacity. The problem - the fall in demand from the most distinguished customer - is being reinforced by other problems that Russia face in connection with the energy resources:

- Trend of growth of raw materials prices on global markets began had begun in 2000, including oil and gas. Between 2000 and 2008, world oil prices had risen from 30 to as high as 147 USD per barrel. Russian macroeconomists assumed that oil prices will rise to USD 200 per barrel by 2010 and on the basis of this assumption built the principles of growth of Russian economy, which in the 90s of the 20th century had recorded a significant decline. In addition to this erroneous assumption, the Russian politicians committed another mistake. Instead of promotion of domestic research, development and scientific foundation, they focused on purchase of foreign advanced technology. Between 2002 and 2008, the engineering and electrical industries of Russia decreased 4-fold. Russia thus became dependent on oil exports and imports of advanced technology. The first effects of this situation were reflected as early as 2008, when global oil prices fell from 147 USD to 35 USD per barrel. Industry lacked sufficient amount of investments, which resulted in the stagnation and many industries have lapsed (Pospíšilová, 2011).
- Many analysts expect the global power transmission of oil and natural gas market from traditional producers (OPEC, Russia) to consumers (such as Germany, Eastern Europe, China, India) who will benefit from the diversification of the sources of these materials. In particular, Russia's gas exports are facing a serious threat from weakening demand in Europe, more flexible pricing schemes of gas in Europe, the development of unconventional gas extraction in Europe, and the tense geopolitical situation between Russia and Western countries (Kim – Blank, 2014).
- The actual sanctions by the EU and the US. They are twofold: technological and financial. Technological sanctions make it impossible for Western companies to cooperate with their Russian partners in the energy sector through the exchange of technologies used for the exploration and exploitation of underwater arctic or shale deposits, where mining is technologically challenging. Much more negative impact on Russia, however, have the financial sanctions. They are aimed to cut off Russian companies from funding sources, therefore making them unable to develop new projects and grow. Although, the number of affected companies is still relatively little, the fear that the sanction list could be further expanded discourages Western banks to lend money to the Russian companies, whether small, large or state-controlled (Oil, 2015).

In a view of the above the mentioned problems, Russia is getting caught into a difficult situation. One solution is to search for new partners, respectively potential outlets for its raw materials, whose size would be big enough and its markets unsaturated. One of these markets is China. Since the 90s of last century, in which the diplomatic relations between Russia and China were finally released of previously held tensions, the intensification of mutual foreign trade has been of considerable extent, with the trade between the two territories in the period between 2000 and 2010 increasing almost tenfold. In the following part of our paper, we will focus on energy cooperation between the two countries.

2.3 The current state of mutual energy cooperation between Russia and China and its perspectives of development and its development trends

Sources of crude oil and gas in Siberia in eastern Russia were virtually unnoticed by China for a long time. Change has occurred after the collapse of the Soviet Union. Cooperation in energy raw materials is gradually expanding since the 90s of the 20th century and at present it is considered to be the world's largest energy cooperation between countries in terms of the volumes of invested capital.

Table 1

Overview of the major agreements between China and Russia in the energy sector

Agreement on the Energy Cooperation and the establishment the Bilateral			
Commission on Cooperation in the Energy Sphere			
Treaty for Good Neighborliness, Friendship and Cooperation			
Agreement of Strategic Cooperation between Gazprom and CNPC			
Energy Negotiation Mechanism			
MoU on Oil Cooperation			
MoU on Gas Supplies via the Eastern Route			
MoU on Gas Supplies through the West Route			

Source: prepared by the authors based on data from Gazprom, IEA, EIA and Bloomberg.

Despite the frequent declarations about goodwill and bilateral energy cooperation were the Russian-Chinese energy relations were initially hampered by mutual distrust, pricing disagreements, poor infrastructure and competition for influence in Eurasia. Russia is also concerned about the presence of Chinese, Japanese and Korean capital in the Russian energy companies. A source of conflict between Russia and China were also new partnerships of China with the former Soviet Central Asian countries such as Kazakhstan, Turkmenistan and Tajikistan (Grama, 2012).

Despite the disagreements of the past, Russia is increasingly turning to the growing Chinese economy. This happens at a time when the EU and the US imposed an embargo on the import of selected goods from Russia and make efforts to energy secession from Russia. China has, on the other hand, lack of natural gas and strives to reduce environmental impact arising from the combustion of coal. There are several reasons why China is a suitable partner for Russia (Probdes.iiec.unam.mx, 2013):

- Reduction of dependence on the EU market. Currently, 60% oil and 90% natural gas are exported to the EU market;
- According to forecasts of the International Energy Outlook, Chinese share on the worldwide consumption of energy resources will be 25% in 2035;
- The geographical proximity of China and other Asian countries to Eastern Siberia and Russian Far East region, which are rich in oil and natural gas;
- Since Russia and China are direct neighbors, there is no risk associated with transporting passage through a third country.

Russia, via state-owned company Gazprom, is trying to find new outlets for its production to eastern markets, especially China. Unfortunately for Russia, China has already taken the advantage of its weakened position and gained contracts to which Russia would not accede in other circumstances. This fact, along with the weakening demand in China has caused debilitating Russia's position in negotiations with other Eastern Partners. When we take into an account the sanctions from the US and the EU, which were imposed as a retaliation for the Russian intervention in Ukraine, cut off from Western funding sources, deteriorating political relations which are pushing the EU and the US to seek new partners, we can conclude that the prospects for Russian oil and gas industry appear to be at least negative.

Gradual orientation to China has its political base. In the context of the Ukrainian conflict, Russian Ministry of Energy issued the Draft of energy strategy until 2035 on the 24 January 2014. It assumes that by 2035, 23% of the total export of energy raw materials will be directed to the Asia-Pacific region. "The primary task is to speed up entry into the Asia-Pacific markets," the Russian Ministry said. Russia is planning to export 32% of produced oil and 31% natural gas into this region in the year 2035. In the near term, the key markets will remain Europe and CIS countries, but it is expected that the export volumes to these countries will gradually decline.

Table 2

Overview of the major projects in the energy cooperation between China and Russia

The Eastern Siberia–Pacific Ocean	fully functional – launched in two phases (2009			
oil pipeline (ESPO)	and 2012)			
Power of Siberia	anticipated completion: 2019-2022			
Altai	anticipated completion: N/A			
Source: prepared by the authors based on data from Gaznrom DD EIA and Pleambarg				

Source: prepared by the authors based on data from Gazprom, BP, EIA and Bloomberg.

At present, a new Russian-Chinese pipeline is becoming a reality. After the falling of Russia's relations with Ukraine and Europe in May 2014, Russia has committed itself to cooperation with China, through a 30-year contract for the supply of natural gas in the amount of 400 billion USD. In June 2014, Gazprom announced construction of a new pipeline Power of Siberia (Sila Sibiri), which should have a length of 4000 km and should transport to China 38 billion m³ of natural gas annually (Gazprom.com, 2016). China began the construction in June 2015. The Power of Siberia will supply China from two new fields - Irkutsk and Yakutsk. It will link gas fields in Eastern Siberia with China. Consequently, Russia and China signed another agreement on the second pipeline, Power of Siberia 2 (Sila Sibiri II), which is known as the Altai pipeline on October 2014 (Gazprom.com, 2016). This pipeline should connect deposits in the West Siberia to China via the Altai Republic. Power of Siberia 2 should utilize the already existing infrastructure between Western Siberia and Novosibirsk, with subsequent extension to the Chinese border.

The original date of Power of Siberia completion had been set to 2019, however, in the light of the current situation on the oil and gas markets, the assumptions have emerged that the deadline would be postponed to 2022. The implementation of the project also undermines the fact that the price of oil fell after signing of contract by almost 70%. Analysts predict that the minimum price of oil, measured as a reference to Brent oil price, at which the construction of a gas pipeline Russia have been initially calculated, stands at 75-85 USD per barrel. So that is this project less attractive for China at current prices (Reuters, 2016). As more potential project seems now to be the less ambitious Power of Siberia 2, which should transport gas from existing fields into western China (Hospodářské noviny, 2015).

It can be noted that the mutual energy cooperation has a considerable potential for the future. The advantage, when it comes to the intensification of cooperation in particular, is the geographical proximity of the two territories combined with the significant reserves of energy carriers on the Russian side. According to the CEO of the Russian company Lukoil, Vagit Alekperov, Russia has 4 million square kilometers of the continental shelf, which has relatively favorable conditions for the future production of crude oil and natural gas. More

importantly, a substantial area of not yet unutilized fields is located in hardly accessible territories, which lie in a close proximity to China. Bilateral trade with energy carriers has been always hampered by insufficient and underdeveloped infrastructure connectivity between Russia and China, which caused problems during the transport (Grama, Yulia, 2012). As the volume of available capacities increases, the further growth of foreign trade between the two partners can be expected, with this development being potentially to be beneficial for both countries. Nevertheless, the deepening of cooperation also brings a number of challenges, particularly for the Russian economy.

When it comes to the trade in goods, whereas China was the largest trading partner of Russia in 2014, Russia was only the ninth largest trading partner for China in the same year (The Economist, 2016). Additionally, the overall balance of foreign trade has been of significant deficits for Russia. Imports of oil from Russia to China accounted for 11% of China's total oil imports in 2014, whereas the share of the Russian natural gas did not exceeded 1% threshold on the total natural gas imports to China. On the other hand, oil exports to China accounted for 13.93% of total Russian oil exports, while Russian exports of natural gas to China had a similar negligible importance like in the previous case. Based on the presented data, it can be therefore pointed out that the mutual trade between the two is characterized by considerable asymmetry, and to the disadvantage of Russia. The current development of the global economy suggests that this trend will continue in the future and mutual cooperation will be more advantageous for China than for Russia (Eia.gov, 2016).

One of the major factors, which weaken Russia's bargaining power, is the country's sectoral structure of exports, with the dominance of energy carriers. Furthermore, undervalued Chinese yuan combined with the relatively overvalued Russian rubble, do not create the pressure for the much needed structural reforms of the Russian economy. Quite opposite is the case, that given the current state of exchange rates between the two currencies, it is more beneficial for Russian companies to import the goods and services of higher added value from China than to produce them on the their own.

The intensifying cooperation of China with Central Asian countries, which have always been preferred business partners of the Russian Federation, has been of a considerable threat for Russia. The construction of a gas pipeline between China and Central Asian countries, which started in 2007 is now a fully functional and connects China with Turkmenistan, Uzbekistan and Kazakhstan. The whole project challenges the bargaining position of Russia regarding the pricing of natural gas imported to China. Additionally, the issue pricing of oil is currently also one of the most debated aspects of mutual cooperation, and China aims to reduce the purchase prices.

Owing to the current low world prices of crude oil, Russian economy is under considerable turbulences. Moreover, the imposed sanctions that do not allow domestic firms to raise external capital cause major economic problems, which combined together with the lack of profits from oil, benefit the economic interests of China, with China financing infrastructure projects in Russia in exchange for shares in Russian companies. However, these investments also pose a threat for Russia in the form of the loss of control over state owned enterprises. Thus this development directly threaten the country's future as well as the stability of its political system. China's growing interest in the Russian oil companies has been proved by the recent acquisitions. In 2013, China's CNPC acquired a 20% stake in Yamal project realized by the Russian company Novatek (Bloomberg.com, 2013), subsequently, the acquisition of 10% stake in Vancorneft, a subsidiary of the Russian state-owned Rosneft followed in 2014 (Afinancialexpress.com, 2016). It has to be highlighted that the Chinese investments in Russian energy sector already cover a broad scope of activities, ranging from the exploration, transportation, to sales and procurement, whereas there has been a major shift

from the initially outlined goals by mangers of the Russian companies, which is the result of the presence of Chinese investments within these companies. One of the current examples of this development is Gazprom that initially aimed at the higher diversification of territories, with the countries of primary interest being Japan and South Korea. At present, however, Gazprom under the influence of China's pressure abandoned its intentions and decided to commit to the primary orientation for projects serving Chinese interests.

The weak negotiating position of Russia is also illustrated by the case of project Altai, also known as the Power of Siberia 2, whose implementation of currently suspended. Negotiations on the project began back in 2006, and were marked by constant disagreements about the project price, during which the Chinese side refused the price offered by Gazprom as an excessively high.

Another danger arising for Russia is the already ongoing transformation of the Chinese economy where the focus shifts towards the production of services and higher technology, which will result in the future, in which China may not need such a high amount of primary energy sources than it consumes today. This development also poses the risk of Russia finding itself in an irreversible position of the weaker partner, acting as China commands, without any options to promote its own strategic interests. China, on the other hand, engaging in deepening relations with Russia, risks that the deteriorating state of the Russian economy will not allow the country to fulfill the conditions to which it committed itself within the framework of mutual agreements, which may result in the suspension of agreed projects and thus to a significant financial losses for the country.

3. Conclusions

Based on the presented analysis of the current state of energy cooperation between China and Russia and the subsequent synthesis, we have come to a finding that the mutual cooperation between the two territories, is despite of its attractiveness when it comes to the opportunities related to the enhancement of mutual foreign trade, and the ways to strengthen geopolitical influence of both countries, also of a significant risk for the Russian economy, which in the long term is in the position of the weaker partner. The extent to which the benefits obtained for Russia would be enjoyed only in a short-term and how it would affect the political and economic independence of the country, however, would be shown only by the further developments. The most important prospect for mutual cooperation is the cooperation in natural gas (EIA, 2016). China is in the process of eliminating greenhouse gas emissions, and by 2020, the country plans to increase the share of natural gas in its energy mix from 5.8% in 2014 to 10%. Therefore, Russia as a country having the world's largest natural gas reserves could exploit this state of affairs to her advantage and to gain the most out of it.

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References

Eia.gov. (2016). China - International - U.S. Energy Information Administration (EIA). [online]. Available at the URL: http://www.eia.gov/beta/international/country.cfm? iso=CHN>. [Accessed 29.02.2016] BALÁŽ, P. – SZÖKEOVÁ, S. – ZÁBOJNÍK, S. (2012). Čínska ekonomika : Nová dimenzia globalizácie svetového hospodárstva. Bratislava : Sprint dva, 2012. 279 p. ISBN 978-80-89393-89-3.

Stats.gov.cn. (2016). China Statistical Yearbook-2014. [online]. Available at the URL: http://www.stats.gov.cn/tjsj/ndsj/2014/indexeh.htm>. [Accessed 29.02.2016].

Eia.gov. (2016). Russia – International – Analysis – U.S. Energy Information Administration (EIA). [online]. Available at the URL: ">https://www.eia.gov/beta/international/analysis.cfm?iso=RUS""

POSPÍŠILOVÁ, Z. (2011). Závislost ruské ekonomiky na prodeji ropy a plynu. In *Prognózy vývoje naší civilizaceve 21. století*. V. mezinárodní vědecká studentská konference, 2011. pp. 95-97. ISBN 978-80-7314-237-6.

KIM, Y. – BLANK, S. (2014). US shale revolution and Russia: shifting geopolitics of energy in Europe and Asia. *Asia Eur J.* 2014. Vol. 13, no. 1, pp. 95-112. [Springer Science + Business Media.]. DOI 10.1007/s10308-014-0400-z.

Oil. (2015). Will Russia Survive the Oil & Gas Downturn? – Oil & Gas 360. *Oil & Gas 360*. [online]. Available at the URL: http://www.oilandgas360.com/will-russia-survive-the-oil-gas-downturn/. [Accessed 28.02.2016].

GRAMA, Y. (2012). Impetuses and Problems of Sino – Russian Energy Cooperation. *Asian Social Science*. 2012. Vol. 8, no. 7. DOI 10.5539/ass.v8n7p45. Canadian Center of Science and Education.

Probdes.iiec.unam.mx. (2013). The Scope of Economic Cooperation between Russia and China and Future Prospects. [online]. Available at the URL: http://www.probdes.iiec.unam. mx/en/revistas/v45n176/body/v45n176a2_1.php>. [Accessed 28.02.2016].

Gazprom.com. (2016). Power of Siberia. [online]. Available at the URL: http://www.gazprom.com/about/production/projects/pipelines/ykv/. [Accessed 28.02.2016].

Gazprom.com. (2016). Power of Siberia-2. [online]. Available at the URL: http://www.gazprom.com/about/production/projects/pipelines/power-of-siberia2/. [Accessed 28.02.2016].

Reuters. (2016). Exclusive: Russia likely to scale down China gas supply plans. [online]. Available at the URL: http://www.reuters.com/article/us-russia-china-gas-exclusive-idUSKCN0UT1LG>. [Accessed 28.02.2016].

Hospodářské noviny. (2015). Plynovod Síla Sibiře možná do Číny nedorazí. Rusku se stavba nevyplatí. [online]. Available at the URL: http://byznys.ihned.cz/c1-63702960-plynovod-sila-sibire-mozna-do-ciny-nedorazi-rusku-se-stavba-nevyplati. [Accessed 28.02.2016].

The Economist. (2016) Snow job. [online]. Available at the URL: <<u>http://www.economist.com/news/europe/21684809-russias-much-ballyhooed-turn-towards-china-less-it-seems-snow-job>.</u> [Accessed 29.02.2016].

Eia.gov. (2016). China - International – Analysis – U.S. Energy Information Administration (EIA). [online]. Available at the URL: ">https://www.eia.gov/beta/international/analysis.cfm?iso=CHN>. [Accessed 29.02.2016].

Bloomberg.com. (2013). CNPC Buys Stake in Novatek's Yamal LNG Project in Russian Arctic. [online]. Available at the URL: http://www.bloomberg.com/news/articles/2013-09-05/cnpc-buys-stake-in-novatek-s-yamal-lng-project-in-russian-arctic. [Accessed 29.02.2016].

Afinancialexpress.com. (2016). Russia and China have signed 17 documents, including on gas supplies on "Western route" | FINANCIAL EXPRESS. [online]. Available at the URL: http://www.afinancialexpress.com/asset-management/investor-services/1202.html. [Accessed 29.02.2016].

Statista.com. (2015). *China: Distribution of gross domestic product (GDP) across economic sectors from 2004 to 2014*. [online]. Available at the URL: http://www.statista.com/statistics/270325/distribution-of-gross-domestic-product-gdp-across-economic-sectors-in-china/. [Accessed 27.02.2016].

Impact of European Integration on the Development of Employment in Selected Member Countries

Jozef Kubala

University of Economics in Bratislava Faculty of National Economy, Department of Economic Policy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: jozef.kubala@centrum.sk

Abstract

The paper deals with assessing the impact of the European integration process, in particular, the impact of enlargement in 2004 on individual EU member states. It focuses on identifying and quantifying the main determinants of changes in the volume of total hours worked in selected EU member states. The main goal of the paper is the decomposition of changes in the volume of total hours worked in six EU countries over the 1995-2009 period to the changes caused by technological advances, induced by structural changes in the economy and changes induced by final demand (expressed as the total volume and structure).

Keywords: structural decomposition, European Union, employment *JEL classification*: E 61, F 15, F 63

1. Introduction and goals

The process of European integration has had the biggest impact on Europeans economics in the second half of the 20^{th} and the beginning of the 21^{st} century. Trade without taxes and quotas and free mobility of production factors resulted in very tight economic relations between European member countries. European integration has ubiquitous effects in daily life of European citizens: any product produced in the European Union can be bought in any shops settled in another member country; traveling through the borders of European countries is without any control or limit; and even more, in Euro zone you can pay by single currency – euro.

Since economic integration has become relevant topic, it is more than desirable to understand its consequences. We can ask: What is the impact of European integration on member states welfare? Does European integration help to easier diffusion of new technologies among the member countries? What is the impact of the integration process on the structure of integrating economies? Which sectors gained more benefits due to integration processes than other sectors? Are there sectors that did not obtain any benefits, or were even damaged by integration process? What kind of economic policy should policy makers choose, in order to be best for all countries involved in the process? Economic theory doesn't give to those questions satisfactory answers. There are many theories on economic integration, but the conclusions of the theories differ widely.

In addition to the theory, it is necessary to assess integration effects in empirical point of view. The European Union is a very good example to analyse the changes that occurred within the economic systems of the European countries involved in the process of integration. The results from these analyses can be compared with the theory and show which parts of trade theories are in accordance with empirical analyses and which parts are in contrary. So they can be used as additional base for further adjustment and development of economic theories.

For empirical analyses are essential statistical data. Data can be collected from various sources. Over time and across countries definitions of variables may differ significantly. They even may not wholly describe reality, if they are derived from other variables or acquired by complicated mathematical methods. The use of different data or slightly unrealistic data can easily cause conflicting conclusions. As a useful tool for many empirical analyses appear input-output tables. Due to the structure and enormous amount of data in these tables, they can be used for answering a wide range of questions. So, there arises another question: What can be the contribution of input-output tables to the answering questions regarding with integration process? What are the limits and drawbacks of this tool?

There are a large number of studies dealing with international trade and the issue of European integration and its impact on various economic, social and political aspects. But the vast majority of those studies are based on a qualitative point of view. There are just a few works dealing with this issue by quantitative methods that try to measure or estimate the volume of the impact of the integration process on various economic indicators (for example Hoen 2002).

This study sets as a main goal to identify driving forces of progress in employment caused by integration process. The paper is focused on changes caused by the largest enlargement of the EU in 2004, when 10 new countries jointed to the European integration process. The study analyses impact of this enlargement on countries which became new member states, namely Slovakia, the Czech Republic, Hungary and Poland and the countries that were already part of the EU, namely Austria and Germany.

The changes in total hours worked by persons engaged (indicator of employment) are decomposed to four determinants over the years 1995-2009. Therefore can be observed changes in the indicators induced by:

- Changes in used technology (different inputs are used in the production process)

- Changes in efficiency/productivity (changes in value added and total worked hour coefficients)
- Economic growth (express by volume of final consumption)
 - Structure of demand (express by structure of final consumption)

The decomposition of changes in total worked hours is also divided into two sub period to compare the changes in the pre-accession (1995-2004) period with the post-accession period (2004-2009).

2. Methodology and data

Using input-output tables can be derived standard approach to assessing inter-industry linkages. It is based on a model developed by Leontief (1956). This model assumes that the total sector output is determined by intermediate consumption and final consumption (in matrix notation):

$$\mathbf{x} = \mathbf{Z}\mathbf{i} + \mathbf{y} \tag{3.1}$$

where:

x - vector of gross outputs (production)
 Z - matrix of intermediate consumption (intermediate deliveries)
 y - vector of final demand (final consumption)

The matrix of intermediate deliveries can be expressed as a matrix of input coefficients ${\bf A}$

$$\mathbf{A} = \mathbf{Z}\hat{\mathbf{x}}^{-1} \tag{3.2}$$

where the individual elements a_{ij} indicates inputs from sector *i* used to produce one unit of sector *j*. Matrix **A** shows direct links between sectors per unit of production. Substituting the expression (3.2) into the equation (3.1) can be written

$$\mathbf{x} = \mathbf{A}\mathbf{x} + \mathbf{y} \tag{3.3}$$

Now, can be derived the Leontief model, in which exogenously specified final use generates an overall output in the economy

$$\mathbf{x} = (\mathbf{I} - \mathbf{A})^{-1} \mathbf{y} \tag{3.4}$$

The term $(I - A)^{-1}$ is called Leontief inverse matrix. Let denote it L, then the equation (3.4) can be rewritten as follows

$$\mathbf{x} = \mathbf{L}\mathbf{y} \tag{3.5}$$

The individual elements of the Leontief inverse matrix l_{ij} denotes the total amount of extra production in the sector *i* that results from an increase in final demand in sector *j* by exactly 1 unit. Its elements capture both direct and indirect linkages between sectors; direct and indirect production needed to satisfy one unit of final demand for the *j* – sector (for more detailed derivation of the model see Miller and Blair (2009).

By replacing vector \mathbf{x} with vector \mathbf{e} to equation 3.5 relationship between employment and final demand is established. Direct coefficients of employment can be obtained if employment of sector i (e_i) is divided by total production of the sector i.

$$p_i = \frac{e_i}{x_i} \tag{3.6}$$

Equation (3.7) establishes relationship between employment and final demand.

$$e = \hat{p}x = \hat{p}Ly = L^p y \tag{3.7}$$

where:

e - employment vector by sectors

 \hat{p} - direct employment coefficient in diagonal matrix

 L^{p} - matrix of employment cumulative coefficient

The next part describes interregional input-output tables. Isard (1951) developed interregional input-output tables that can be used for interregional analysis. The figure 1 presents full information inter-country input-output table with two countries.

The matrices on the main diagonal of the intermediate part of the table contain domestic intermediate deliveries. They are exactly equal to the intermediate deliveries part of the national input-output table. The off-diagonal intermediate deliveries matrices are the intermediate exports of the two countries to each other. Deliveries in these matrices are imports and exports per sector and country of origin and per sector and country of destination. The final demand part works similarly. On the main diagonal is amount of domestic final demand. The off-diagonal matrices show final demand of one country satisfied by production in second country. In summary, the intercountry input-output table contains the following elements:

 z_{ii}^{rs} - deliveries of sector *i* in country *r* to sector *j* in country *s*

 y_{ig}^{rs} - deliveries of sector *i* in country *r* to final demand category *g* in country *s*

- x_i^r total output of sector *i* in country *r*
- v_i^s the amount of value added created by sector *i* in country *s*

Figure 1

Relations in full information Inter-country input-output table for two countries

$$\begin{pmatrix} z_{11} & \dots & z_{1n} \\ \vdots & \ddots & \vdots \\ z_{n1} & \dots & z_{nn} \end{pmatrix} \begin{pmatrix} z_{11} & \dots & z_{1n} \\ \vdots & \ddots & \vdots \\ z_{n1} & \dots & z_{nn} \end{pmatrix} + \begin{pmatrix} y_{11} & \dots & y_{1n} \\ \vdots & \ddots & \vdots \\ y_{n1} & \dots & y_{nn} \end{pmatrix} \begin{pmatrix} y_{11} & \dots & y_{1n} \\ \vdots & \ddots & \vdots \\ y_{n1} & \dots & y_{nn} \end{pmatrix} = \begin{pmatrix} x_1 \\ \vdots \\ x_n \end{pmatrix}$$

$$\begin{pmatrix} z_{11} & \dots & z_{1n} \\ \vdots & \ddots & \vdots \\ z_{n1} & \dots & z_{nn} \end{pmatrix} \begin{pmatrix} z_{11} & \dots & z_{1n} \\ \vdots & \ddots & \vdots \\ z_{n1} & \dots & z_{nn} \end{pmatrix} + \begin{pmatrix} y_{11} & \dots & y_{1n} \\ \vdots & \ddots & \vdots \\ y_{n1} & \dots & y_{nn} \end{pmatrix} \begin{pmatrix} y_{11} & \dots & y_{1n} \\ \vdots & \ddots & \vdots \\ y_{n1} & \dots & y_{nn} \end{pmatrix} = \begin{pmatrix} x_1 \\ \vdots \\ x_n \end{pmatrix}$$

$$(v_1 & \dots & v_n)(v_1 & \dots & v_n)$$

$$(x_1 & \dots & x_n)(x_1 & \dots & x_n)$$

Source: author's scheme

2.1 The structural decomposition

The structural decomposition analysis (SDA) allows break down the changes in observed variable into changes in its individual determinants including indirect effects on all stages of the production process. Thus, the SDA is used to examine to what extent changes in an economy arise from changes in key factors such as technology, domestic final demand, foreign trade patterns or labour productivity.

The origin of SDA methods on input-output tables goes back to Leontief (1956), but the application of decomposition and detailed description of changes in input coefficient is attributed to Carter (1970). Most current applications used Skolka (1989), although he distinguishes between only two factors. Methods that distinguish between more factors are often a straightforward application of the principles described by Skolka. The original methodology has been extended over time. We can distinguish between more factors and to use different types of decomposition methods. Decomposition for single country was extended to inter-country decomposition. Hoen (2002) decomposed value added changes in six EC countries into six factors. Dietzenbacher and Hoekstra (2002) use structural decomposition to analyse the effects of technological change and trade on the sectoral outputs in the Netherlands.

An issue concerning the decomposition analyses is problem of used weights. Assume that changes in total output are decomposed into the contributions of two factors: the Leontief inverse and final demand. So changes in total output can be written:

$$\Delta \mathbf{x} = \mathbf{x}_{t+1} - \mathbf{x}_t = \mathbf{L}_{t+1} \mathbf{y}_{t+1} - \mathbf{L}_t \mathbf{y}_t$$
(3.8)

By rewriting of this equation, it is possible to decompose the change of total output in terms of changes in the Leontief inverse and changes in the final demand (two options):

$$\Delta \mathbf{x} = (\mathbf{L}_{t+1} - \mathbf{L}_t) \mathbf{y}_{t+1} + \mathbf{L}_t (\mathbf{y}_{t+1} - \mathbf{y}_t) = \Delta \mathbf{L} \mathbf{y}_{t+1} + \mathbf{L}_t \Delta \mathbf{y}$$
(3.9)

or

$$\Delta \mathbf{x} = (\mathbf{L}_{t+1} - \mathbf{L}_t) \mathbf{y}_t + \mathbf{L}_{t+1} (\mathbf{y}_{t+1} - \mathbf{y}_t) = \Delta \mathbf{L} \mathbf{y}_t + \mathbf{L}_{t+1} \Delta \mathbf{y}$$
(3.10)

In both equations the change in total output are weighed with figures of different periods. This raises a time inconsistency problem in the weights of the change. But this can be solved by simply rewriting of the equations:

$$\Delta \mathbf{x} = \mathbf{L}_{t+1}\mathbf{y}_{t+1} \left(-\mathbf{L}_t \mathbf{y}_t + \mathbf{L}_{t+1} \mathbf{y}_t \right) - \mathbf{L}_{t+1} \mathbf{y}_t + \mathbf{L}_t \mathbf{y}_{t+1} \left(-\mathbf{L}_t \mathbf{y}_{t+1} + \mathbf{L}_t \mathbf{y}_t \right) - \mathbf{L}_t \mathbf{y}_t = \Delta \mathbf{L} \mathbf{y}_t + \mathbf{L}_t \Delta \mathbf{y} + \Delta \mathbf{L} \Delta \mathbf{y}$$
(3.11)

or:

$$\Delta \mathbf{x} = \mathbf{L}_{t+1} \mathbf{y}_{t+1} \left(-\mathbf{L}_t \mathbf{y}_t + \mathbf{L}_{t+1} \mathbf{y}_t \right) - \mathbf{L}_{t+1} \mathbf{y}_t + \mathbf{L}_t \mathbf{y}_{t+1} (-\mathbf{L}_t \mathbf{y}_{t+1} + \mathbf{L}_{t+1} \mathbf{y}_{t+1}) - \mathbf{L}_{t+1} \mathbf{y}_{t+1} = \Delta \mathbf{L} \mathbf{y}_{t+1} + \mathbf{L}_{t+1} \Delta \mathbf{y} - \Delta \mathbf{L} \Delta \mathbf{y}$$
(3.12)

The reader can easily notice that by taking the average of equations (3.10) and (3.12) the interaction term cancels out, resulting in the equation (3.13).

$$\Delta \mathbf{x} = \frac{1}{2} \Delta \mathbf{L} (\mathbf{y}_{t} + \mathbf{y}_{t+1}) + \frac{1}{2} (\mathbf{L}_{t} + \mathbf{L}_{t+1}) \, \Delta \mathbf{y} \tag{3.13}$$

So far have been indicated how to decompose production into two factors. Whereas, this study aims to decompose employment into four factors. Decomposition of a variable into more than two factors (k > 2) is not that simple as the case of decomposition into two factors (k = 2). The reason is that one ends up with k! different decomposition solutions. The ideal solution is to take the average of all k! decompositions. Yet, its complexity increases with an increasing number of determinants. For example, with k = 4 one obtains 24 decomposition and with k = 5 one ends up with 120 different solutions. Hence, Dietzenbacher and Loss (1998) recommend a simple solution of taking the average of the two extreme cases of weighting. This method is called polar decomposition. Dietzenbacher and Loss (1997) analyse to what extent the outcomes of a decomposition analysis depend on the method chosen. They conclude that the choice of the method does not have much influence on average results. Therefore, the polar decomposition method is used in this study, to calculate driving forces of changes in value added and employment.

2.1.1 Decomposition of employment

In the decomposition of employment are used some extensions and refinements compared to basic decomposition method of the production described in the previous section. The first refinement involves the application of employment instead of total output.

The second refinement is made by using a final demand matrix instead of a vector. When is distinguished several final demand categories, it is possible to analyse the effects of changes in each final demand category. Hence, the *n* by 1 vector of total final demand **y** is replaced by *n* by *k* matrix that consists of *k* final demand categories. In the world input-output tables, final demand is also known by country of origin and by country of destination. So, if the number of countries is φ , the size of matrix **Y** is $n^*\varphi$ by $k^*\varphi$. Furthermore, it is possible to separate the effects of total final demand growth per category and changes in the composition of final demand (Hoen, 2002). Hence, final demand can be written as the product of final demand coefficients (they can be used for analysis of changes in structure of final demand) and final demand totals (they can be used for description of changes in the amount of final demand):

$$Y^{rs} = B^{rs} \hat{f}^s \tag{3.14}$$

Where the matrix B^{rs} denotes the *n* by *k* matrix with bridge coefficients (see Feldman, McClain, Palmer, 1987). The bridge coefficients provide the division of macro-economic demand over sectors and countries. An element of B^{rs} is computed in the same way as an element of the input coefficient matrix:

$$b_{ig}^{rs} = \frac{y_{ig}^{rs}}{f_g^s}$$
(3.15)

In which an element \mathcal{Y}_{ig}^{rs} of matrix **Y** indicates the demand for commodity *i* produced in country *r* raised by final demand category *g* in country *s*, and f_g^s is total final demand of category *g* in country *s* that is delivered by sector *i* in country *r*.

Substituting the relevant equations above into the equation (3.7) leads to the following identity of employment:

$$e = \hat{p}LYi = \hat{p}LBf \tag{3.16}$$

In which:

 $e = n^* \phi$ – vector with employment per sector and per country

 $\hat{p} = n^* \varphi$ – diagonal matrix with corresponding employment coefficients

B= $n^* \phi$ by $k^* \phi$ -matrix, built up of ϕ identical n by $k^* \phi$ matrices with final demand composition or preference coefficients indicating the total need for products from (worldwide) sector *i*, per unit of final demand of category *h* in country *s*

 $\mathbf{f} = k^* \varphi$ -vector with macro-economic demand per category *h* and per country *s*

 $\mathbf{i} =$ a summation vector of appropriate length, vector containing only ones

 φ = the number of countries in the analysis

n = the number of sectors in the analysis

k = the number of final demand categories in the analysis

To decompose employment uses this chapter the two decomposition methods that are the analogies of equations (3.11) and (3.12). The arithmetic average of these two cases is taken as the final decomposition method and is displayed in the following equation.¹

$$\Delta \mathbf{e} = \frac{1}{2} \Delta \hat{\mathbf{p}} (\mathbf{L}_{t+1} \mathbf{B}_{t+1} \mathbf{f}_{t+1} + \mathbf{L}_t \mathbf{B}_t \mathbf{f}_t) + \frac{1}{2} (\hat{\mathbf{p}}_t \Delta \mathbf{L} \mathbf{B}_{t+1} \mathbf{f}_{t+1} + \hat{\mathbf{p}}_{t+1} \Delta \mathbf{L} \mathbf{B}_t \mathbf{f}_t) + \frac{1}{2} (\hat{\mathbf{p}}_t \mathbf{L}_t \Delta \mathbf{B} \mathbf{f}_{t+1} + \hat{\mathbf{p}}_{t+1} \mathbf{L}_{t+1} \Delta \mathbf{B} \mathbf{f}_t) + \frac{1}{2} (\hat{\mathbf{p}}_t \mathbf{L}_t \mathbf{B}_t + \hat{\mathbf{p}}_{t+1} \mathbf{L}_{t+1} \mathbf{B}_{t+1}) \Delta \mathbf{f}$$
(3.17)

Equation (3.17) shows a decomposition of employment change into four components, which are related to:

- changes in the sectoral total worked hours coefficients $\Delta \hat{p}$
- changes in the sectoral technology $\Delta \mathbf{L}$
- changes in the commodity composition of final demand (structure of final demand) ΔB
- changes in the macro-economic demand of the various components of final demand (amount of final demand) Δy

The first two components relate to technological changes. Mostly the first component is interpreted as an indicator of productivity: a negative contribution of \mathbf{p} indicates an increased efficiency in the use of labour. Contribution of technology is connected with changes of linkages among industries and secondary inputs needed for production. The third

¹ For detailed derivation of this equation see Hoen, 2002

component refers to preference changes. It shows how final demand for commodities changed over time. The last component relates to changes in volumes of final demand.

2.2 Data

The data used for the analysis come from the World input output database (WIOD), which contains world input output tables (WIOT). WIOT covers 40 countries of the world (27 countries of the EU, plus13 most important economies outside the EU). Tables contain one extra economy called Rest of the world, which covers economies that are not included in the previous two cases. Each economy is divided into 35 sectors. Matrix of intermediate consumption has therefore dimension (1435x1435). Tables are recorded in millions of US dollars in current prices and previous year's prices. The database contains data of current prices from 1995 to 2011 and previous year's prices over 1995-2009 time period.

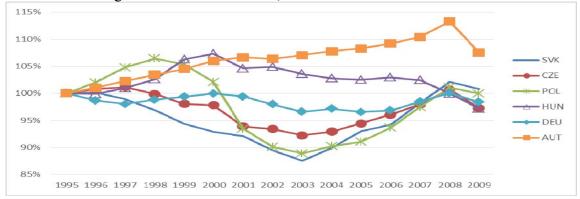
The data of employment were obtained from the socioeconomic accounts of WIOD. As an indicator of employment, it is used total worked hours by persons engaged, because this indicator more accurately reflects the amount of labour that was needed to produce one unit of certain products. Therefore, the WIOT are suitable to analyse the changes of value added and employment in the member states caused by enlargement of the EU in 2004.

3. Results

The present chapter performs an empirical analysis based on formulas and dataset presented in the previous chapter. In the study results are presented for six countries. There are shown the results of decomposition of worked hours change in four determinants.

Graph 1

Cumulative changes of total worked hours, chain linked volumes



Source: author's calculation

The graph above shows cumulative change of total worked hours in six analysed countries over the years 1995-2009.² The development of this indicator is completely different compared to the development of value added during the same period. The amount of total worked hours in the year 2009 is nearly the same compared with the year 1995, the exception is Austria, where the total worked hours increased by 7.5% over the analysed period. In the case of Slovakia, Poland, the Czech Republic and Germany, it is possible to observe the initial decline in the monitored indicator, but after the year 2003 the number of hours worked in these countries increased steadily. This increase was stopped with the onset of financial crisis in 2008. Hungary recorded the different development of total worked hours, the ratio was growing until the year 2000 when the value of this indicator increased by 7.3% compared to

² For more detailed graphs dealing with total worked hours development and development of four determinants of total worked hours see appendix A1-A6.

the year 1995, but after the beginning of the new millennium, the monitored indicator was decreasing over time. The total worked hours was increasing over time in the case of Austrian economy and reached the peak in the year 2008 when the indicator was higher by 13.3% compared to the year 1995, but financial crisis change the increasing trend and the total worked hours dropped by 5.8 percentage points in one year.

Table 4.29 presents the decomposition of total worked hours into four factors for *country totals* over the years 1995-2009. The structure of the table is the same as the table 4.27.

The highest hours worked growth after the enlargement in 2004 is observed in Slovakia (10.9%) and Poland (9.7%). Positive development of total worked hours was also observed in the case of the Czech Republic (4.4%) and Germany (1.2%), decrease in the ratio experienced Hungary (-5.6%) and the indicator was rather stable in the case of Austria (-0.3%) over the 2004-2009 time period.

Analysis shows that change in the amount of final demand was the most important determinant of worked hours change. The growth of amount of final demand had a positive impact on amount of worked hours in all analysed countries. This is the only determinant that had significant positive impact on total worked hours change. The highest growth of amount of final demand showed Slovakia (84.4%) and Poland (75%), and lowest Germany (21%) over the whole analysed period. The positive impact of this factor on the worked hours may be caused by increased consumption of households, raising government consumption or capital investments.

Table 1

	Time Period	Total change ∆e	Value added coefficient $\Delta \hat{p}$	Amount of final demand ∆ y	Structure of final demand $\Delta \mathbf{B}$	Technology ∆ L
SVK	Total	0,8%	-51,2%	84,4%	-19,7%	-12,7%
	1996-2003	-10,1%	-40,3%	47,5%	-9,3%	-10,4%
	2004-2009	10,9%	-11,0%	36,9%	-10,3%	-2,3%
CZE	Total	-2,7%	-48,7%	58,1%	-12,5%	0,4%
	1996-2003	-7,1%	-36,0%	32,8%	-6,4%	1,9%
	2004-2009	4,4%	-12,7%	25,3%	-6,1%	-1,4%
HUN	Total	-2,8%	-36,4%	68,6%	-23,2%	-11,8%
	1996-2003	2,8%	-24,1%	57,5%	-18,1%	-11,6%
	2004-2009	-5,6%	-12,3%	11,1%	-5,0%	-0,1%
POL	Total	0,0%	-51,8%	75,0%	-11,0%	-12,3%
	1996-2003	-9,8%	-39,9%	44,7%	-6,9%	-9,0%
	2004-2009	9,7%	-11,9%	30,4%	-4,1%	-3,3%
DEU	Total	-1,6%	-18,3%	21,0%	-3,7%	-0,6%
	1996-2003	-2,8%	-14,3%	15,9%	-3,6%	-1,4%
	2004-2009	1,2%	-4,1%	5,1%	-0,2%	0,9%
AUT	Total	7,5%	-25,2%	34,7%	-5,6%	3,6%
	1996-2003	7,8%	-12,6%	24,7%	-5,1%	0,1%
	2004-2009	-0,3%	-12,6%	10,1%	-0,5%	3,5%

Decomposition of worked hours - country total; years 1996-2009

Source: author's calculation

Changes in sectoral hours worked coefficients caused negative contribution on hours worked growth in all observed economies. Negative effects of sectoral hours worked coefficients is caused by increased productivity of labour involved in the production process. The higher negative impact of sectoral hours worked coefficients on hours worked was observed during first sub-period in all analysed countries, but Austria, where the impact of this factor on hours worked was equal in both analysing sub-period.

Changes in the structure of final demand had also the negative impact on hours worked a change in all analysed countries, but this factor did not have a so significant negative impact on total worked hours than the increase of productivity. The changes in the structure of final demand mean changes in preferences of demanding goods and services by the agents.

The contribution of technology on hours worked changes is rather ambiguous among analysed countries. The negative effect of technology on total hours worked was observed in Germany and Hungary before the enlargement of the EU in 2004, in the Czech Republic after the enlargement in 2004 and in Poland and Slovakia in both analysed sub-periods. On the other hand, the positive impact of technology on hours worked was recorded in the Czech Republic during the first sub-period, and in Austria and Germany during the second sub period. Tough this positive effect was rather weak. The contribution of technological changes may be caused by a shift in inputs used in the production process.

4. Conclusions

Decomposition of total worked hours showed that although the analysed indicator did not change significantly over the whole monitored period, significant shifts occurred in the factors determining the total worked hours. Changes in the old member countries were not so extensive than in new member countries. Germany and Austria experienced a lower increase in productivity of labour involved in producing process and also lower increase in the amount of final demand than other analysed countries. The highest positive impact on total worked hours, before and also after the enlargement of the EU, had growth of the amount of final demand. On the other hand, most significant negative impact on the amount of hours worked had increase in the productivity (decrease of hours worked sectoral coefficients). The higher negative impact of sectoral hours worked coefficients on hours worked was observed during pre-accessed sub-period in all analysed countries, but Austria. The negative or neutral impact on the amount of the hours worked had the shifts in the structure of final demand and changes in the Leontief inverse matrix.

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References

CARTER, A. P. (1970). *Structural Change in the American Economy*, Cambridge: Harvard University Press.

DIETZENBACHER, E. (2001). An Intercountry Decomposition of Output Growth in EC Countries, In: M.L. Lahr and E. Dietzenbacher (eds.) *Input-Output Analysis: Frontiers and Extensions* (Palgrave, Basingstoke, 2001), pp. 121-142.

DIETZENBACHER, E. – HOEKSTRA, R. (2002). The RAS Structural Decomposition Approach, In: *Trade, Networks and Hierarchies*, pp. 179-199.

DIETZENBACHER, E. – LOS, B. (1998). Structural Decomposition Techniques: Sense and Sensitivity, In: *Economic Systems Research,* Vol: 10, pp. 307-323.

DIETZENBACHER, E. – LOS, B. (1997). Analysing Decomposition Analysis, In: A Simonovits and A. E. Steenge (eds). Prices, Growth and Cycles, London, Macmillan.

HOEN, R. A. (2002). An input-output Analysis of European Integration, North Holand, First Edition, 2002. ISBN 0-444-51088-5.

ISARD, W. (1951). Interregional and Regional Input-Output Analysis: A model of a Space Economy, In: *Review of Economics and Statistics*, Vol. 33, pp. 318-328. ISSN 0034-6535.

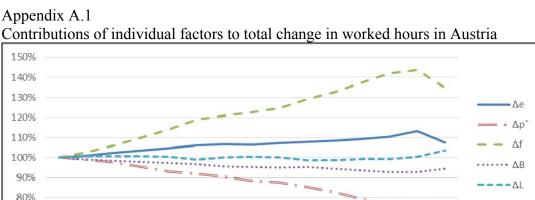
LEONTIEF, W. (1956). Factor Proportions and the Structure of American Trade: Further Theoretical and Empirical Analysis. In: *Review of Economics and Statistics*. Vol. 38, pp. 386-407. ISSN 0034-6535

MILLER, R. – BLAIR, P. (2009). *Input-Output Analysis, Foundations and Extensions,* Cambridge University Press, Second Edition, 2009. ISBN 978-0-511-65103-8.

SKOLKA, J. (1989). Input-Output Structural Decomposition Analysis of Austria, In: *Journal of Policy Modelling*. Vol. 11, pp. 45-66. ISSN 0161-8938.

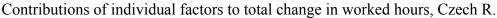
Appendix

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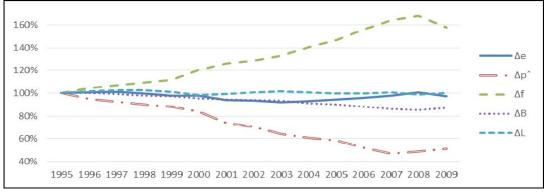


Source: author's calculation

Appendix A.2

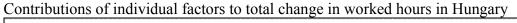


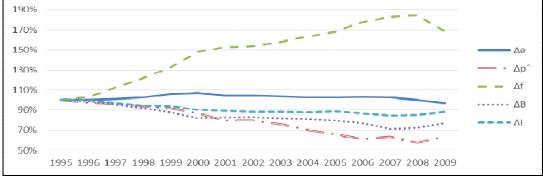
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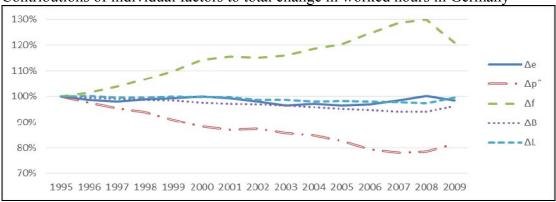
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Appendix A.3



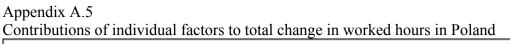


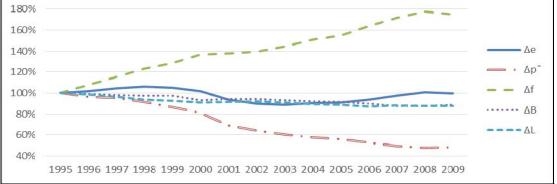
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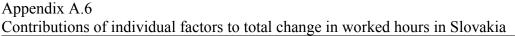
Appendix A.4 Contributions of individual factors to total change in worked hours in Germany

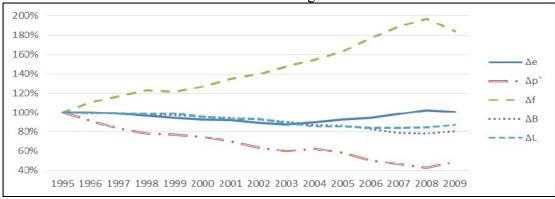
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Source: author's calculation

The Development of Innovation Activity of Enterprises in the Slovak Republic

Zuzana Kubíková

University of Economics in Bratislava Faculty of Business Economics with seat in Košice, Department of Management Tajovského 13 Košice, 041 30 Slovak Republic E-mail: zuzana.kubikova@euke.sk

Abstract

This article is devoted to examination of the development of number of enterprises with innovation activities, which are defined as the enterprises with a process, product, marketing, or/and organisational innovation, operating in the Slovak Republic from 1999 to 2012. We are especially interested in the development of innovation activities in industrial enterprises, where the innovation is a crucial factor for surviving in a strong competitive environment. We use the data from the statistical tables published by the Statistical Office of the Slovak Republic from 1999 to the most recently published dataset. We found an increasing number of enterprises with innovation activity from 1999 to 2008. After economic crisis in 2008, we observed a decrease, however the enterprises seem slowly overcoming the consequences of the crisis. Interestingly, we observed continuous decrease in the number of enterprises with technological innovation, while the number of enterprises with non-technological innovation increased.

Keywords: the Slovak Republic, innovation activity, industrial enterprises *JEL classification*: 0310, L600

Introduction

Innovation is considered one of the engines for economic growth. It leads to development on the national, as well as enterprise level, through creating better working and business conditions, improving life quality, introducing and transferring knowledge, and maintaining the competitiveness of enterprises.

This article is devoted to research of the development of enterprise innovation activity in the Slovak Republic from 1999 to 2012. The development of number of enterprises with innovation activities, which are defined as the enterprises with a process, product, marketing, or/and organizational innovation, are studied. Special interest is in studying the development of innovation activities in industrial enterprises, where the innovations are inevitable for future survival on the global market.

Literature overview

In this section, the literature is briefly reviewed. Innovation is one of the main forces, which influence the economic growth in the countries, as well as in the enterprises (Fagerberg, 2011; OECD, 2007). The increase of enterprises with innovation activity is important for sustainable development of nations. Innovation activity of enterprises leads to creations of jobs, increase of social responsibility, improvement of the quality of life, creation and usage of knowledge, progress in marketing strategies, creation of business benefits, and competitiveness of enterprises on the global market (Krisciunas, 2007; Peyravi, 2015, OECD, 2007). It represents the opportunity for enterprises to differentiate from their competitors and to search for new

and better ways of doing things, what leads to higher profits (Aghion, 1992 and 1998; Grossman, 1994).

Innovation can be a result of a process, focused on solving of a particular problem that develops into an innovation, as well as a result of direct self-motivated innovation activities (Kanter, 2000). Innovation process is often seen as a key element in the transfer of knowledge in the commercialization process (Audretsch, 2001). The innovation activities are, according to Deakins (2003), limited by four factors: information, finance, management, and workforce.

Description of the dataset

As primary source of data, the statistical tables published by the Statistical Office of the Slovak Republic are used. The data set contains enterprises with innovation activity, operating in the Slovak Republic for the period from 1999 to 2012^{1} .

The enterprises are further divided, based on their size, into small and medium enterprises (SMEs) with number of employees from 10 to 49, medium enterprises with number of employees from 50 to 249, and large enterprises with more than 250 employees. Additionally, the separate group of industrial enterprises is analysed, which includes only the classes 05-39 SK NACE Rev. 2, based on the Statistical Classification of Economic Activities SK NACE Rev. 2.

Definition of variable

In this section, definition of our main variable, which is innovation activity of enterprises in the Slovak Republic, is provided. There are several ways to evaluate and measure the innovative activities, behaviour, and development at the level of a whole economy. The number of enterprises with innovation activity is used, as it was similarly studied by Peyravi (2015) in his research, and the development of this variable through time in the Slovak Republic is studied.

Enterprises with innovation activity, according to Statistical Office of the Slovak republic (2010), are called enterprises that have made any kind of innovation activity during observed period. Innovation activities include, according to Statistical Office of the Slovak republic (2010, p. 2), product innovations, process innovations, ongoing or abandoned innovation activities for product and process innovations, organisational innovations, and marketing innovations.

Product innovation Statistical Office of the Slovak republic (2010, p. 2) defines as a new or significantly improved product (good, service) with respect to its fundamental characteristics, technical specifications, incorporated software, or other immaterial components, intended uses or user friendliness, or other functional characteristics.

Process innovation includes new and significantly improved production technologies or methods of supplying services and delivering products, including significant changes of specific techniques, software or equipment for optimization of quality, efficiency or flexibility of production and distribution, or for reduction of environmental or safety risks (Statistical Office of the Slovak republic, 2010, p. 2).

An organisational innovation means the implementation of new or significant changes in firm structure or management methods that are intended to improve use of knowledge in an

¹ The most recent data are only available in the year 2012.

enterprise, the quality of goods and services, or the efficiency of workflows. Organisational innovations involve the implementation of a significant change in business practices, workplace organization, or external relations, intended to improve the enterprise's innovative capacity or performance characteristics (Statistical Office of the Slovak republic, 2010, p. 2).

A marketing innovation is defined as the implementation of new or significantly improved designs or sales methods to increase the appeal of your goods and services or to enter new markets. Marketing innovations cover significant changes in how enterprise offers new goods and services, including changes to design and packaging (Statistical Office of the Slovak republic, 2010, p. 3).

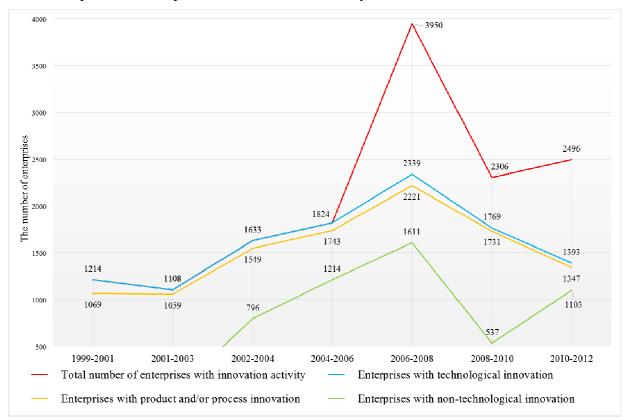
Empirical results

In this section, the empirical results of our paper are presented. The development of the variable innovation activity in the researched period is introduced in general, as well as for industrial enterprises separately.

Graph 1 shows the development of our researched variable in the period from 1999 to 2012 in the Slovak Republic. Red line draws the development of the total number of enterprises with innovation activity. From the year 1999 to 2006 this line is identical with the blue one, which depicts the number of enterprises with technological innovation, because until 2006 the Statistical Office of the Slovak Republic considered only the enterprises with technological innovation as enterprises with innovation activity. After the year 2006, the non-technological innovations (green line) were included into the definition of the enterprises with innovation activity as well. Afterwards, the red line is sum of the blue and green line. Yellow line draws the number of the enterprises with product and/or process innovation, which is considered as the technological innovation. Hence, the difference between the blue and yellow line depicts the ongoing or abandoned innovation activities of enterprises.

In 1999-2001 the total number of enterprises with innovation activity was the half of the number in the most recently researched time period 2010-2012. It implies that enterprises are attempting to innovate more than before. In 2001-2003, there was a declination almost 9 % of the number of enterprises with innovation activity in comparison with previous period. However, after this period there was a rise more than 47 %, 11 % and 116 % in the following periods 2002-2004, 2004-2006, and 2006-2008, respectively. The extreme rise in the period 2006-2008 is partially caused by the above-mentioned change in the definition of innovation activity. In 2008-2010, the number of enterprises with innovation activity declines almost by 42 %. The explanation can be the fact, that after 2008 the enterprises and their decision making process was under the influence of economic crisis in the Slovak Republic. In 2010-2012, the number of enterprises with innovation activity increased by 8 %.



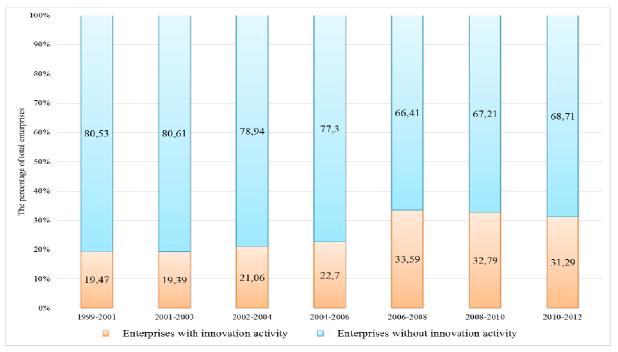


The development of enterprises with innovation activity

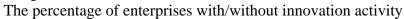
Regarding the number of enterprises with technological innovation, it had the similar development as the total number of enterprises with innovation activity until the time span between 2008 and 2010. Interestingly, after this span between 2008 and 2010 there was continuous decrease in the number of enterprises with technological innovation, even though the total number of enterprises with innovation activity increased. It suggests that enterprises modified a character of innovation activities from technological to non-technological, which can be explained by rising pressure on better marketing and organization of work in enterprises due to rising concurrence among enterprises, that are reflected in non-technological innovations. This is confirmed by the development of the number of enterprises with non-technological innovation, which had after overcoming the crisis in 2008 rising tendency, and the number of enterprises more than doubled from 2008-2010 to 2010-2012.

Graph 2 shows the share of the enterprises with innovation activity as a percentage of all enterprises in a particular period. There was a little rising tendency of the enterprises with innovation activity until 2006-2008, when we can observe the increase more than 10 percentage points. However, after crisis in 2008 the share of the enterprises with innovation activity has a little declining tendency, and is around 31 % of all enterprises in 2010-2012. This finding implies that enterprises are still cautious about investing into the innovations. It implies the recommendation for a government policy to support more innovations of enterprises.

Source: own processing

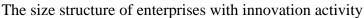


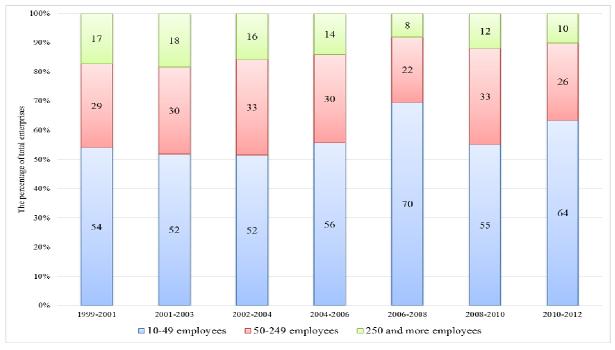
Graph 2



Source: own processing

Graph 3





Source: own processing

Graph 3 shows the size structure of the enterprises with innovation activity. More than a half of enterprises with innovation activity are represented with SMEs, and only 10 % in 2010-2012 are the large enterprises. One of the reasons is the fact, that large enterprises are the multinational or international companies, which tend to transfer innovation activities to the seat of headquarters, or to the countries with comparative advantages in R&D. Another reason

may be that a current government policy and programmes of the European Union (e.g. Horizont 2020) are intended to support the innovation mostly in SMEs, and not in the large enterprises.

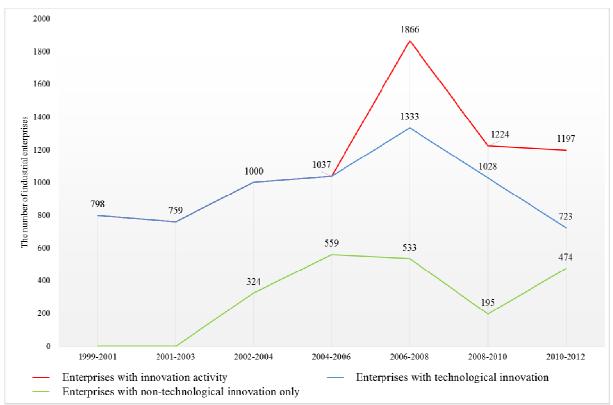
The development of innovation activity in industrial enterprises

Innovation in industrial sector is a crucial factor for surviving in a strong competitive environment. The expanding competition is persistently generating a pressure on the industrial enterprises to invest into innovations in order to keep their market positions and share. That is the reason why we are especially interested in the development of innovation activity in industrial enterprises, which is analysed below.

Graph 4 shows the development of innovation activity in industrial enterprises operating in the Slovak Republic from 1999 to 2012. In 1999-2001, 798 industrial enterprises had innovation activity, measured by only technical innovations. In comparison with this years, in 2010-2012 the number increased by 50 %. However, this rise is mainly caused by the abovementioned change in definition of innovation activities. In 2001-2003, there was a decrease in the number of industrial enterprises with innovation activity almost 5 %. Afterwards, we could observe the increase by 32 % in 2002-2004, by 4 % in 2004-2006, and by almost 80 % in 2006-2008. Although the extreme increase in 2006-2008 was caused mainly by change in definition of innovation activity. After 2008, the decrease in the number of industrial enterprises with innovation activity. After 2008, the decrease in the number by 34 % in 2008-2010, and by 2 % in 2010-2012 could be observed because of the economic crisis in 2008. However, the industrial enterprises with innovation activity seem to be slowly overcoming the consequences of the crisis.

Graph 4





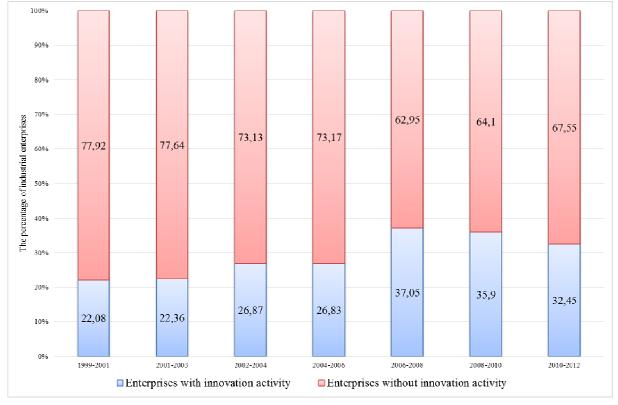
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When we looked at the blue line (Graph 4), depicting the number of industrial enterprises with technological innovation, we could observe that after crisis in 2008 the number is steeply decreasing. On the contrary, the number of industrial enterprises with non-technological innovation (the green line) was increasing in 2010-2012. It means that industrial enterprises in the Slovak Republic tend to invest more to marketing and organizational innovations, compared to product or process innovations, after overcoming the economic crisis. It may be caused by fact that technological innovations in industry are more expensive than non-technological, and industrial enterprises in attempt to innovate choose the less expensive option. Another reason may be the incremental innovation in technologies, which are continuously implemented into products and processes, and does not require larger innovation activity in an enterprise.

Graph 5 shows the share of the industrial enterprises with innovation activity as a percentage of all industrial enterprises in a particular period. In 1999-2006, the average share of the industrial enterprises with innovation activity was 24.5 %. After 2006-2008, the average share was 35 %, but with little decreasing tendency. The rise 10 percentage points compared to previous period was due to inclusion of non-technological innovation into the definition of innovation activities. This graph 5 shows that only one third of industrial enterprises invest into innovation activities. It would be reasonable, if government adjust its policy to support more investments into innovations, since innovation is seen as beneficial for economic growth and development.

Graph 5

The percentage of industrial enterprises with/without innovation activity



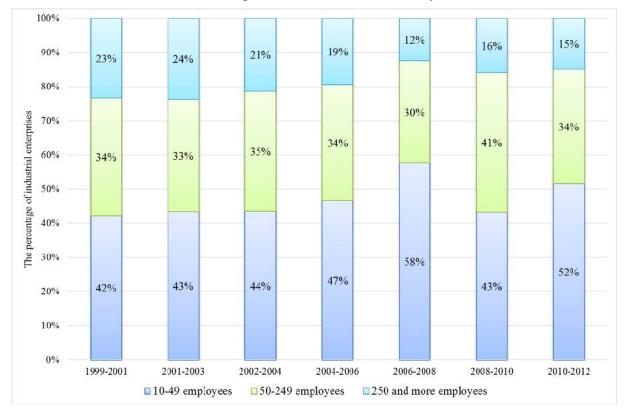
Source: own processing

Graph 6 shows the size structure of enterprises with innovation activity operating in industry of the Slovak Republic. The SMEs represented up to 58 % share of all industrial enterprises with innovation activity. The medium sized industrial enterprises had up to 41 % share, and large industrial enterprises had the share of maximum 24 %. This means that the innovation

activities are in the Slovak Republic mostly performed by SMEs. This finding leads to recommendation for a government policy to support more the innovations in SMEs, as the driving enterprises in innovation activities.

Graph 6

The size structure of industrial enterprises with innovation activity



Source: own processing

Conclusions

In this article, the development of number of enterprises with innovation activities, which are defined as the enterprises with a process, product, marketing, or/and organizational innovation, operating in the Slovak Republic from 1999 to 2012 was examined. Special interest was devoted to the development of innovation activities in industrial enterprises, where the innovation is a crucial factor for surviving in a strong competitive environment.

Overall, in the period from 1999 to 2008, there were an increasing number of enterprises with innovation activity. After the year 2006, the non-technological innovations were included into the definition of the enterprises with innovation activity as well, causing the extreme increase compared to previous period.

After economic crisis in 2008, a decrease in number of enterprises with innovation activity was observed. The explanation can be that the enterprises were not willing to invest into innovations, when they were following crisis-defeating behaviour, and had a survival priority in their strategies. In the last researched period, the enterprises seemed overcame the crisis and their innovation activity had risen. Interestingly, after the crisis we observed continuous decrease in the number of enterprises with technological innovation, while the number of enterprises with non-technological innovation increased. It suggests that enterprises modified a character of their innovation activities from technological to non-technological, which can

be explained by rising pressure on better marketing and organization of work in enterprises due to rising concurrence among enterprises.

When we looked at the share of the enterprises with innovation activity on total number of enterprises, only one third of enterprises investing into innovations were found. It leads to a recommendation of creating some government policies intended to increase a support of innovations for enterprises, especially for SMEs, which represent the majority of innovators in the Slovak Republic, based on our research.

The development of innovation activity in industrial enterprises operating in the Slovak Republic from 1999 to 2012 was found to be similar to the development of innovation enterprises in general.

The suggestions, which implies from our article, are more support for innovation activities from government to enterprises, and special support devoted to SMEs as the innovation drivers in the Slovak Republic.

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References

AGHION, P. – HOWITT, P. (1992). A Model of Growth Through Creative Destruction. In *Econometrica*. Vol. 60, pp. 323-351. ISSN 0012-9682.

AGHION, P. – HOWITT, P. (1998). Endogenous Growth Theory. Cambridge, Mass.: MIT press. 708 p. ISBN 9780262528467.

AUDRETSCH, D. B. – THURIK, R. (2001). *Linking Entrepreneurship to Growth, OECD Science, Technology and Industry.* Working Papers, 2001/02, OECD Publishing.

FAGERBERG, J. – FELDMAN, M. – SHORLEC, M. (2011). Technological Dynamics and Social Capability: Comparing U.S. States and European Nations. In *Proceedings of the 7th European Conference on Innovation and Entrepreneurship: ECIE.* Paper no. 11/2011, Lund University. ISBN 1908272678.

DEAKINS, D. – FREEL, M. (2003). *Entrepreneurship and small firms*. London: McGraw-Hill, 2003. 362 p. ISBN 0077121627.

GROSSMAN, G. – HELPMAN, E. (1994). Endogenous Innovation in the Theory of Growth. *The Journal of Economic Perspectives*. Vol. 1, pp. 23-44. ISSN 1307-1637.

KANTER, R. M. (2000). The social sector as Beta site for business innovation. In *Harvard Business Review*. Vol. 77, no. 3, pp. 122. ISSN 0017-8012.

KRISCIUNAS, K. – GREBLIKAITE, J. (2007). Entrepreneurship in Sustainable Development: SMEs Innovativeness in Lithuania. In *Engineering Economics*. Vol. 4, no. 54, pp. 20-26. ISSN 1547-2701.

OECD. (2007). Innovation and Growth. Rationale for an Innovation Strategy.

PEYRAVI, B. (2015). Innovation activities of enterprises in economic space of the European Union. In *Public Administration*. Vol. 1/2, no. 45/46, pp. 119-124. ISSN 1648-4541.

STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. (2010). Innovation activity of enterprises in the Slovak Republic 2006-2008. 1st edition. Bratislava: Statistical Office of the Slovak Republic, 2010. 210 p. ISBN 978-80-89358-96-0.

Principal-agent Issues

Jakub Lukáč

University of Economics in Bratislava Faculty of Business Management, Department of Corporate Finance Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: jakub.lukac@euba.sk

Abstract

Principal-agent problem is relatively new issue mainly in large corporations. It arises due to the separation of ownership and management. Basic financial objective of any company is to maximise market value, but the interests of owners and managers are quite different. Shareholders like a high profit and high share price, but managers pursue their own interests like prestige, income, pleasant work and other benefits. Both of the parties have other information – managers are generally better informed, but owners bear risk of their decisions. Although the owners have information about company's results, they are not able to measure the performance and effort of their managers. The aim of this article is to refer to general principal-agent issues.

Keywords: principal-agent issues, agency problems, principal-agent theory *JEL classification*: G32, G34

1 Introduction

Basic financial objective of any company is to maximize market value, so we assume managers seek to maximize value for shareholders. For the most part this is true, but managers face situations where their personal utility function conflicts with that of being an agent of the company. A conflict of interest arises when the agent makes decisions on behalf of principal under conditions of uncertainty. The uncertainty is caused by imperfect monitoring of managerial behavior. In publicly held firms, managers make decisions that affect the wealth of shareholders. We do not worry about this problem when the interests of the principal and agent are identical, but issues arise when interests and preferences are not identical. Hence principal-agent issues are not confined to business – we see them arise in most professions.

2 Principal-agent issues

2.1 Information asymmetry in the principal-agent theory

To understand the principal-agent relationship in business, we need to consider the effects of uncertainty and information. One form of uncertainty occurs because the outcomes of managers' actions are not directly linked with their effort. This lack of a direct link is caused by information asymmetry. Agents and principals do not share common sets of information. Information asymmetry is a common problem not only in management, but also in microeconomics. It occurs when one side knows more than the other, so one side is thus favored. A typical example of asymmetric information in practice is situation when the seller knows more about product properties than buyer. It is relatively common market failure that can occur in two ways:

- 1. *Primary* occurs in a situation where some or all market participants do not have necessary information;
- 2. Secondary if one party has information that has none of the other entrants.

The traditional corporate governance structure is straightforward. Shareholders own the company's assets and assume the risks of doing business. Any residual profit from the actions of managers is split among the shareholders. Shareholders hire managers to run the business. Agents (managers) choose actions from a number of alternative possibilities (such as allocating resources within the firm). Actions affect the welfare of both the agent and the principals. However, the interests of the two parties are not necessarily identical. Principals determine rules that assign agent compensation as a function of the principal's observation of company performance. But there is asymmetric information again: Agents have more information about the action than does the principal. The agent's action is not directly observable by the principal and the outcome of the action is not completely determined by the agent's action. The first asymmetric information issue is the hidden action or moral hazard. Moral hazard arises because of insurance considerations. For example, obtaining fire insurance dulls incentives for caution and can even create incentives for arson. The most common hidden action issue in the corporate world is determining the effort of agents. Effort has a disutility to the agent but has a value to the principal because it increases the probability of a favorable outcome.

2.2 Different interests of owners and managers

One of the most important principal-agent issues encountered in business is that between the owners of a company and its managers. The owners typically are shareholders who purchase the stock as an investment, investors who simply buy shares in a mutual fund or pensioners whose assets are invested in many companies. Most investors probably are interested in maximizing the value of their investment, which means either maximizing the income their assets yield or maximizing the value of those assets. Clearly shareholders are concerned about the value of their shares. But do managers really care as much as shareholders about maximizing share value? Probably not. This is list of alternative goals that may prevent managers from always taking actions to maximize company value:

- *maximizing job security* many decisions of managers involve risk. Often risky projects are characterized by a high potential reward or a large potential loss. Managers may be disinclined to make risky choices that could jeopardize their employment. Suppose an investment decision carries a large probability of very high returns and a small chance of failure that would cause the company itself to fail. Shareholders being diversified, might be inclined to accept the risk. Managers however, might be more concerned with the downside. They do not share the upside profit and could lose their jobs given the downside risk, so they might be tempted to avoid such risky choices;
- *minimizing effort* increasing profit often takes hard work. There is always disutility to work given the opportunity cost of leisure. The manager supplies the effort while the owner reaps the profit. Managerial behavior is largely driven by how owners structure compensation. Some examples suggest that many marginal decisions of managers tilt in favor of less effort rather than higher profit;
- *avoiding failure* managers can be rewarded for good performance and penalized for bad results. The manager is rewarded if results (due somewhat to chance) are favorable and penalized if results are unfavorable. Often managers believe that bad

results are much more likely to be noticed than good results. If this is true, they are disinclined to take risks;

- *consuming benefits* examples can include luxury travel, expensive artwork in the office, corporate donations to favorite charities and employing favored people;
- enhancing reputation and employment opportunities although we argue that sometimes reputation is promoted by doing things that benefit shareholders, this is not always so. For example, a CEO with ambition to hold public office might be more concerned about showing himself to be a "good citizen" than maximizing the profit of the company. Manager might conduct contract negotiations with another company partly with a view to establishing a personal relationship that could be a springboard to a new job;
- *pay* the manager works for pay. The level and structure of the compensation package become important parts of the principal-agent story.

On the selfish behavior of managers directly affects the position of manager risk, which results in consumption of certain corporate resources. Risk-averse managers can limit their conduct many profitable opportunities while shareholders would received funds invested and vice versa, so the owners realize that the managers will make decisions contrary to their interests. The basic assumption of the conflict are different interests of shareholders and management:

Table 1

Interests of the parties

Owners	Managers		
- an increase in earnings per share and the current price	 management of the company to achieve its own goals 		
- increase the share of profit in the form of dividend payments	 increasing the wealth and size of the business expansion of activities of the company in order to increase the impact 		
- improving social responsibility	 increasing personal wealth payment of high bonuses and other benefits 		

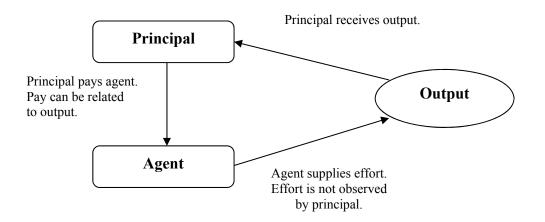
Source: own processing

2.3 The principal-agent situation

The principal employs an agent who performs a task that results in a benefit to the principal. The benefit is called output. The principal must pay the agent. This compensation can be a fixed sum or it can depend on the output. The level of output depends on the quantity and quality of the effort provided by the agent. If this effort were observable by the principal, the principal could simply require a certain level of effort, verify that this level of effort was provided and compensate the agent accordingly. But effort is not always observable or measurable. The principal-agent environment is one in which effort cannot be perfectly monitored by the principal and therefore cannot be directly rewarded. The efficient solution requires some alignment of interests of the two parties. In this way, even if the principals cannot perfectly see what the agents are doing, they still can be assured that what is good for the agent is also good for the principal. The principal-agent problem represents the following scheme:

Scheme 1

The principal-agent problem



Source: Allen, I. – Bruce, W. (2012). *Managerial economics: theory, applications and cases*. New York: W.W. Norton & Company, Inc. 2012. ISBN 978-0-393-91277-7.

Notes: The principal employs an agent to undertake a task (produce output for the principal). The agent must expend effort to produce output. The more effort means more output. Because the principal cannot observe (and therefore cannot reward) the effort, the agent tends to shirk or reduce effort, which in turn reduces the output for the principal.

Practical example

Managers at a life insurance company are thinking about selling a new product through one of two distribution channels. One alternative is to use an existing distribution channel – a network of independent agents who are paid commissions. This approach is safe but has a low expected profit. The other choice is to establish an electronic distribution system. This is new and untried, but if it succeeds, profit could be very high. If the expected profit is high enough for the e-business channel, this system might be best for the shareholders. Shareholders would certainly benefit from the higher expected profit. Moreover, they probably are not too concerned about risk because most shareholders hold a number of securities and can diversify their risk. However, managers might worry more about risk because if the electronic project is chosen and the firm has bad luck, the managers might lose their jobs. Therefore, managers might be tempted to play it safe with the existing distribution network even though electronic distribution could be better for shareholders.

2.4 Agency costs

Agency costs are one of the factors, which influence the firm's capital structure. Thirty years ago, Michael Jensen and William Meckling created a model that examined the impact of agents' cost of equity corporate structure. Jensen and Meckling noted that if shareholders owned 100% shares of the company, does not exist any barrier between governance and management and must therefore bear all the costs and benefits associated with the management of the company. After the entrepreneurs have sold their shares to an outside investor should bear for their actions only a fraction of the cost, with declining values of society. Its examination conclude that the sale of shares outside investor on the one hand leads

to agency costs and reduces the value of assets, on the other hand allows businesses and their owners to raise funds for investment and thereby increase shareholder wealth.

Achieving a target level of profit requires that managers incur some personal cost, which we call effort. This effort might simply be the manager's time required to attain that level of output and the cost to the manager is the value of that time. But time is not the only dimension. Certain tasks require less pleasant work than others. Spending time with clients on the golf course may be valued differently by a manager than spending time bargaining with the union over wages. Managers may sacrifice other things to attain a profit goal. We can divide the cost to the manager into two groups:

- *direct costs* f.e. wage;
- *indirect costs* f.e. hidden salary, monitoring expenses, liquidation costs, opportunity costs.

2.5 Principal-agent issues in other contexts

Similar incentive issue between an insured party and the insurance company is called *insurance moral hazard*. If you are not insured against fire, car crashes or illness, you face the possibility of sudden and possibly crippling financial losses. These uninsured risks should make you cautious. You should take care in driving, look after your health and protect home by installing smoke detectors. Although these safety practices can be costly, you are rewarded by lowering the probability or intensity of a financial loss. You bear the cost of safety (you pay for the alarm) and reap the reward (you avoid the costs of a fire). If you are insured, there is a separation of the costs and benefits of safety. The policyholder may incur the cost and inconvenience of safety devices and preventive behavior, but the main beneficiary is the insurance firm, which now faces lower expected claim payments.

Asset substitution is called a principal-agent issue between equity holders and creditors. We assume the Board of Directors has taken control of managerial compensation and aligned the interests of the shareholders and managers. Therefore, we can be reasonably assured that the managers act on behalf of the firm's owners. The new issue arises because shareholders have gained control of the decision-making process, but creditors have not.

3 Conclusion

A principal-agent relationship is one in which a principal employs an agent to undertake a task such as owners employing managers to run a firm. The objectives of the principal and agent may be quite different. Shareholders like a high profit and high share price. Managers like such things as prestige, income, pleasant work and other benefits. More simply, managers may wish to do as little as possible for the greatest possible reward. Owners cannot perfectly observe the manager's effort. Solution of the problem is motivation - managers are motivated by being given a share of the profit or an equity stake in the company.

References

AGRAWAL, V. K. – RAO, R. K. S. (2015). Corporate Policies in a World with Information Assymetry. Singapore: World Scientific Publishing, 2015. ISBN 9789814551304.

ALLEN, I. – BRUCE, W. (2012). *Managerial economics: theory, applications and cases.* New York: W.W. Norton & Company, Inc. 2012. ISBN 978-0-393-91277-7.

BAKER, H. K. – ANDERSON, R. (2010). Corporate governance. New Jersey: John Wiley&Sons, Inc, 2010. ISBN 978-0-470-49913-9.

BERK, J. – DeMARZO, P. (2014). *Corporate Finance*. Harlow: Pearson Education Limited. 2014. ISBN 978-0-273-79202-4.

BREALEY, R. A. – MYERS, S. C. – Allen, F. (2008). *Principles of corporate finance*. New York: McGraw-Hill. 2008. ISBN 978-007-126327-6.

JENSEN, M. C. – MECKLING, W. (1976). Theory of the firm: Managerial Behavior, Agency cost and ownership structure, *Journal of Financial Economics*. October 1976, pp. 305-360. ISSN 0924-6002.

MANKIW, N. G. – TAYLOR, M. P. (2006). *Microeconomics*. London: Thomson, 2006. ISBN 978-1-84480-667-6.

MARKOVIČ, P. – TÓTHOVÁ, A. – KUBRANOVÁ, M. (2013). Finančný manažment na prahu 21. storočia. Bratislava: Ekonóm, 2013. ISBN 978-80-225-3721-6.

MEGGINSON, W. L. – SMART, S. B. (2008). *Introduction to corporate finance*. Mason: Cengage Learning, 2008. ISBN 978-0-324-65895-5.

SCHNEDLER, W. (2004). *The value of Signals in Hidden Action Models*. New York: Physica- Verlag Heidelberg, 2004. ISBN 3-7908-0173-9.

The Financial Solutions for Exports: the Italian Contracts

Doris Madhi

University "Aleksandër Xhuvani" Faculty of Economics, Department of Economics and Law Rruga "Kozma Naska", 66 Elbasan, 3001 Albania E-mail: doris.madhi@yahoo.com; doris.madhi@uniel.edu.al

Abstract

The reality of Italian enterprises is characterised by the presence of small/medium enterprises; usually family-managed, operating mainly in the clothing and fashion, home decoration, food and wine and automobile sectors. The export trends for the Italian firms during the last years show a slow development, due to systemic problems related to the slow GDP increase, the euro currency appreciation and the lack of competiveness towards Asiatic enterprises. On the other hand, internal management problems related to the lack of capacity to attract foreign investments or to effectuate them, due to a short vision management have sorted out. These difficulties are translated practically in a weak contractual power and capacity to assist foreign clients after the selling process. (ICE-ISTAT, 2015) Also, during the last years the importance of an efficient credit risk valuation and management sensibly increased, because of the increased globalisation regarding commercial relationships between countries and the recent financial crisis. The selling process becomes more complex, passing from the simple export to the realisation of contracts as project finance or investing in conglomerates. In the commercial sector it becomes difficult to realise secure payment transactions. The Italian firms operating in foreign trade basically have the needs to eliminate or transfer sensibly part of the buyer's credit risk and to finance their supply of goods. Thus, to secure the credit risk, the seller should be able to choose the right insurance company, considering the particularity of the commercial operation. The financial form of the transaction regulation is important to be chosen based on the commercialised products, buyer's characteristics, the period or the delay of payment, which do sensibly affect the credit risk. In this context it is absolutely important to have a set of commercial contracts which can help the Italian enterprises increase their competiveness and presence on the international markets.

In this work, we will see different financial contracts in exports used by Italian firms and their characteristics and abilities to accomplish in the better way the needs of the sellers and buyers in the most secure way.

Keywords: export, payment contracts, insurance contracts JEL classification: F 13, K22

1. Introduction

The firms operating in the foreign trade have the fundamental needs to:

- 1. Eliminate sensibly the buyer's credit risk
- 2. Finance the goods supply.

Eliminating risk means trying to transfer it on a subject, whose risk is covered by adequate guaranties or to sell it in the financial market, usually to banks (Di Meo and Garioni 2005).

This is the first step of risk management. The credit risk could not be totally eliminated. The seller should be very secure regarding the importer's guarantee bank ability to pay, in case of the principal debtor insolvency. In order to accomplish this need, the seller should be careful in evaluating the buyer's country risk and to stipulate the adequate insurance contract based on the insurance company profile (short term operations supplied by numerous companies or medium long term supplied only by SACE¹). On the other hand, it is very important to consider the operation characteristics, in order to stipulate an adequate payment and insurance contract:

1. **Multi Export Contracts** used in cases of general consumer goods, towards a large number of buyers and limited amounts.

2. **Supply Credit Contracts** used in cases of medium term operations, large amounts and special commitment contracts.

The financial step, relates to different payment methods regarding to cash or short term delay payment for general consumer goods and long term delay payment for investments, commitments, concessions and similar long term contracts and their accessories. The credit financing market in export is divided in two categories:

• **Trade Finance**: the financial and insurance operations set, which are based on the short term supply contracts (documentary confirmed/not confirmed credit, bank orders, cash, etc)

• **Export Finance**: risk coverage for long term export contracts (Supplier's/Buyers's Credit, Forfaiting, Pro Soluto with SACE contract reverse)

In the following sections, the characteristics of each of the above mentioned contracts will be treated, comparing their particularities and considering the benefices and costs.

2. International Supply Contracts: Methods of Payment

The payment instruments have to be chosen considering the needs of the involved parts in the transaction. These needs are related to the distance between seller and buyer, the lack of awareness between them, the payment execution velocity, the risk coverage, the possibility to false instruments and their technological level (Garioni, 2009).

2.1. Paper Money (Banknote)

The most common, antique and known method of payment. It includes every material mean of value and transaction generally accepted and having legal power. It can be used to realize payment operations at the same moment when goods are delivered or be deposited. Also, it is convertible in other currencies. This method is not the most adequate in foreign transactions, as it can be subjected on legal limits on their import or export; it has high costs on safety and insurance, high grade of risk in interests, convertibility, counterfeiting, and loss.

2.2. Cheques

Orders, given by a subject to a bank, to pay immediately a given amount to the beneficiary, based on a current account named to the paying subject.

The beneficiary deposits the check in its current account near the negotiating bank, which waits for the SWIFT conformation by the debtor's bank. This operation is difficult to be

¹ SACE (Sezione Speciale per l'Assicurazione del Credito all'Esportazione) is an Italian insurance financial group constituted in Rome, on 1977, on special Law Ossola, active in export s credit, investment protection, financial guarantees, deposits and factoring. It is constituted as a joined stock company, controlled at 100% by the Italian Economic and Development Ministry.

executed in short times as it presumes that the bank prepays the beneficiary for the amount owed by the debtor. The credit becomes definitive when the debtor pays in time, otherwise the credit will be cancelled. Usually three types of checks are used:

 \succ <u>Check</u> (usual): involves three subjects in the operation, the principal debtor, the ordered bank, the beneficiary. It may be subjected to convertibility risk, country risk and funding lack.

➤ <u>Cashier's Cheque</u>: unlimited promissory payment notes, approved by the issuing bank, in presence of liquidity. The risk of insolvency is reduced, but still remains the country risk.

 \geq <u>Banker's Draft</u>: these cheques are issued by a bank toward a beneficiary, debiting the own account near a correspondent foreign bank. The usage of this payment method involves the creation of a Collection Account or a Lock Box, in case the beneficiary has a lot of clients using cheques in a certain country.

2.3 Payment Order, Bank Transfer

The most common used international payment method. It is secure, quick and there are reduced possibilities to be counterfeited or stolen. It consists in an order given towards a bank to transfer funds to a beneficiary near the same or different bank.

This operation involves several subjects: the Applicant, the Applicant's Bank, the Beneficiary, and the Beneficiaries' Bank, and eventually the Coverage Bank.

The usage is recommended in cases the solvency capacity of the principal debtor is known, otherwise a payment insurance policy is recommended.

2.4 The Simple and the Documentary Collection

Similar to Cash on Delivery, has the particularity that documents and goods travel separately. In this operation a bank treats all the acceptance and delivery of the documents, consequently collects the owed amount (International Chamber of Commerce, 1995).

 \succ The Simple Collection treats the collection of financial documents not accompanied by the commercial documents.

 \succ The Documentary Collection treats the collection of commercial documents, not accompanied by financial documents or the collection of both.

In this operation the financial documents are represented by bills of exchange, promissory notes, acceptance letters, cheques, and bills. The commercial documents are represented by documents of transport and insurance, bills, custom documents, origin's certificates and similar.

The parts involved in the operation are:

• *Principal Drawer*- the seller- which trusts his bank the collection operation, delivering the documents and the collection or acceptance order;

• *Drawee*-the buyer- which needs the documents to be delivered conform the collection contract rules;

• *The Remitting Bank*, Bank is the trusted sellers bank, which takes the documents and transfers them to the Collecting Bank;

• *The Collecting Bank*, every bank, different by the remitting bank, which collects the amount after it presents the documents to the buyer.

This operation could be realized in two ways:

- 1. *Cash against Documents*, the buyer has to fulfill the payment in order to posses the supply of goods.
- 2. *Documents against Acceptance*, the buyer can posses the goods supply documents when:
 - Accepts the irrevocable payment in line within the programmed period by signing the financial contract;
 - Uses bank guaranties (usually confirmed by the *Presenting Bank*);
 - Uses autonomus banking guaranties

This method of payment offers more guaranties than the previous ones, but the risk still remains. The involved banks do not take any responsibility related to the positive finalization of the operation or any commitment to pay instead of the principal debtor. Thus the beneficiary is exposed to the county and political risk. Sometimes, the bank can guarantee the operation, thus only political risk is counting. The greatest risk regarding this method of payment can sort when the buyer doesn't accept the delivered goods. In this case the limited solutions for the exporter are: to contact the buyer and offer a big discount, to storage the goods supporting the costs, search for another buyer, turn back the goods in the origin country, supporting the transport costs.

This kind of payment has advantages for both parts involved, as the seller has the rational confidence that the buyer cannot posses the goods property documents, without fulfilling the payment or acceptance obligation; the buyer, after acceptance or payment, has the right to posses the goods property documents.

2.5. The Documentary Credit (Letter of Credit)

This instrument offers absolutely the maximum of the guaranties for sellers and buyers. By the seller part, who wonder to eliminate/reduce the buyer's credit risk, using third parties guaranties, which insure the respect of the payment contract terms, and by the buyer part, who wants to avoid paying before the supply of goods is arrived in the destination, fulfilling the commercial contract terms. This instrument suits on different kind of operations and the commitment to pay is taken by a bank. However, a trusty relationship has to exist between parts, as the bank committed to pay, cannot guarantee the conditions of the delivered supply to the debtor (International Chamber of Commerce, 2011).

This is an operation in which a bank (Issuing Bank), takes orders by the buyer (Applicant) and get committed towards the seller (Beneficiary), to make a payment, after the beneficiary has presented the required documents and fulfilled the other conditions and terms of the contract.

The principal characteristics which make the documentary credit different by other payment instruments are:

<u>Autonomous</u>: the contract is separated and distanced by the reference commercial contract. The obligations taken by the bank could not be modified or cancelled, because of disputes not related to the credit contract.

<u>Abstract</u>: the parts are basically based on documents and not on the supply represented or described on them.

<u>Formal</u>: the examination on the credit contract should be formal, excluding every judgment on the document efficiency and the respect of the terms and conditions of the commercial contract (Garioni, 2009).

The parts involved in the operation are:

 \succ The Buyer (importer): gives instructions to the bank to open the credit line. Based on the commercial contract he defines the credit conditions and the necessary documents to access the credit. He takes the obligation to pay back the bank for the reimbursement of the due amount.

 \succ The Beneficiary (exporter): towards the delivery of the documents required has the right to be paid immediately or in the defined terms.

 \succ The Issuing Bank: the bank which takes in its count, on the name of the debtor the obligation to pay the beneficiary.

Depending on the conditions of the contract other banks can take place in the operation, such as: the **Information Bank** (gives notice to the beneficiary regarding the opening of the credit line and its authenticity), The **Confirmation Bank** (takes the obligation in solid with the issuing bank to pay the beneficiary), and the **Elected Bank** (does the required operations like negotiation of the documents, payment etc).

The documentary credit takes several forms such:

• **Stand-By Credit**: irrevocable credit of the issuing bank, typical guarantee, as the beneficiary is insured on the insolvency of the principal debtor, using the required documents, not following the commercial contract conditions (International Chamber of Commerce, 2011).

• **Revolving Credit:** credit line renewed automatically after using the initial amount.

• **Transferable Credit**: gives the right to the beneficiary to transfer the credit line towards another beneficiary, for the whole amount or part of it.

• **Back to Back Credit**: opened credit line to be used by a secondary beneficiary, ordered by the first one.

2.5.1. The Confirmed Documentary Credit

The confirmed documentary credit follows these life phases:

- 1. Issuing
- 2. Modification
- 3. Usage of the noticed credit line
- 4. Usage of the confirmed credit line

This instrument involvles the commitment to pay of two banks: the bank which opens the credit line and the banks which communicate it to the beneficiary. On the moment the Informing Bank, participates in the operation taking the obligation to fulfill all the conditions of the client information, automatically takes the obligation to confirm, pay and negotiate the documents. Thus, the credit risk of the buyer, is transferred initially to the issuing bank and after to the confirmation bank, eliminating the exporter's risk (International Chamber of Commerce, 2011).

Even the positive impact on eliminating/reducing risk, the usage of this instrument has some disadvantages related to:

➢ High financial costs and fees especially for the buyer;

 \succ It is recommended for the exporter to be punctual presenting the documents on the given term, quick on having the documents and careful to verify all. The beneficiary can access the credit line, only following the conditions and terms of the credit contract.

The bank may refuse the presented documents, if not commensurate to the credit line.

In case of acceptance the bank pays the beneficiary and delivers the notification and documents of the debit to the importer.

2.6. The International Payment Guaranties

These are special commitments of a bank guarantor based on the characteristics of autonomy, independence and abstract towards the commercial contract. Also, this guarantee is automatic, thus it can be used on the first beneficiary call (International Chamber of Commerce, 1998)

Different types of guaranties are issued, depending on the commercial transaction phase:

1. In the offering phase: Bid Bond;

2. In the prepayment phase: Advance Payment Bond;

3. In the technical and maintenance guarantee phase: retention Money Bond/Maintenance Bond

4. In the payment phase: Payment Bond

The guarantee is issued by the beneficiary's bank in the first three cases and it is issued by the debtor's bank in the last case.

As a hybrid instrument, similar to the Stand by Letter of Credit it can be used alternatively given the minor costs, considering that it's not a genuine payment method. Thus, it can't insure the credit risk elimination and the finance of the supply.

The difference between the payment guarantee and the stand by letter of credit lays on the fact that the first one is used only in case of insolvency of the principal debtor. The beneficiary is committed to declare and prove through documents the insolvency of the debtor.

The period of validity should be designated in the contract and it has to be materially submitted once expired.

In case of execution, the request has to be accompanied by the insolvency confirm of the buyer and the related reasons.

2.7. The Supplier Credit

The supplier credit is the simplest way to finance a short or long term commercial contract. The Supplier gives the possibility to the buyer to have a delay on payment, at least for part of the designed price. The duration of the payment delay could be some days or some years. This contract can be similar to the documentary credit, to the payment order etc.

The disadvantage of this contract, as similar to a loan given by the seller to the buyer, is related to the fact that the credit risk still is supported by the supplier.

2.8. Buyer's Credit

The buyer's credit is an alternative contract to the supplier's credit. It consists in a bank financing (alone or organized in a pool) towards an importer or a bank acting in his count, intended to finance the supplies related to machines, plants and their accessory related services or the work executions. As the financing is granted directly to the buyer, the credit risk is transferred to the financing bank (Garioni, 2003).

This contract is not very useful in practice, as it is not flexible and does not fully respond to the exporters needs.

2.9. The Forfeiting Contract

The Forfeiting contract is the most appropriate contract used in export credit. The operation consists in buying a medium term credit expressed as a credit instrument, which derives from the export of goods and services pro solute, means without the right of recoupment towards the original credit owner, in case of insolvency of the debtor. The Forfeiter Bank, pays to the exporter a discounted amount and from that moment, the last mentioned does not take any responsibility regarding the delay or lack of payment of the importer (Garioni, 2001).

The forfeiting contract is based on a complex export operation, including several installments and delays designated in the commercial contract. Basically the operation is done through the discount of a credit portfolio (can also be accepted bills of exchange) issued by the exporter or promissory notes, issued by the importer to the exporter.

The main participating subjects in the operation are:

- The exporter: is the assignor of the credit instruments deriving from the commercial contract. The transfer is realized via pro solute, without the responsibility of the exporter after the credit transfer.
- The buyer, importer and the Guarantee bank: are the principal obliged for the payment represented by the credit instruments.
- The Forfeiter usually is a broker, which makes possible the contact between the credit seller and the credit buyer. Also, he designs the discount rate (based on the Libor rate), the required documents, fees etc.
- The Discounting Bank buys the credit portfolio and holds them until the maturity date, when the debtor is obliged to pay. This bank can transfer the credit to another bank, creating a secondary credit risk market.
- The Intermediary Bank which can take functions as above:
 - Is constituted like a Trustee, takes the credit notes and submits them to the exporter, once presented the commercial documents, in order to proceed with the discount.
 - Requires in behalf of the exporter the reimbursement contribute in interests by SIMEST²;
 - Controles the documents compliance
 - ➢ After the credit transfer to the Discount Bank, the discounted amount and eventually the interests contribute is credited on the exporter's account.

2.9.1. The Followed Steps of Forfeiting

During the negotiation phase, if the exporter evaluates a relevant credit risk, can ask to a bank or to a forfeiter to take the discount obligation pro solute of the credit instruments, deriving by the commercial contract. This obligation is assumed by 1 month to 6 months and the exporter pays a monthly interest on the transferred risk based on a fixed rate in case of short terms and an LIBOR rates in case of long term obligation.

² SIMEST, Società Italiana per le Imprese all'Estero, constituded by the Italian Ministry of International Commerce on 1999. The aim objective is to assist and participate the Italian firms operating in the foreign markets.

During the subscription phase the payment details have to be designated accurately such as deposits (minimum 15%), securities issue, interest rates, terms, documents needed to posses the credit securities etc. The discount contract is designated similar to a simple letter submitted by the forfeiter to the exporter, including all the discount conditions (Garioni, 2009).

The documents are deposited near the intermediary bank. Is recommended to transfer the credit securities to the exporter before the supply delivery, to protect him in case of contract terms violations by the importer. The credit instruments are held in safety by the intermediary bank until the submission of the delivery documents by part of the seller.

After the supply delivery, the credit becomes accessible and it is transferred to the discounting bank.

The current account of the seller is credited and the interest contribution by SIMEST is required.

The eventual interest contribution is credited by the intermediary bank to the sellers account.

2.9.2. The Particularities of the Forfeiting Contract

The minimum amount considered in this operation is 100.000 Euro, as the burden of costs for minor amounts is very high, mostly the fees paid to the forfeiter. The duration of the operation goes from 2 years to 6 years, based on the designated contribution terms of SIMEST (Auletta and Salanitro, 2010).

The typical supplies are related to capital goods and machinery. The forfeiting market is very flexible and fits to different kind of suppliers.

The operation is restrained in cases when the debtor's evaluated risk is very high, as the pro solute discount becomes impossible. This is the principal disadvantage when facing high risk clients. Also, operation costs are much expensive as riskier the debtor is. The forfeiting market limitation is present for countries or debtors not risk rated and not assisted by bank guaranties.

The advantages of this operation are related to the materialization of a delayed credit, which gives the possibility to the exporter to unburden the financial statement components, improving the liquidity ratio and the lending capacity. Also, the credit risk, the interest rate risk and the currency risk are eliminated. The documents to be treated are simple and the receivables control procedure is also eliminated for the exporter. The contribution on interest, delivered by SIMEST, unburdens the operational costs and stimulates the usage of this operation.

2.10. The Insurance Contract SACE

This contract was created by SACE, to eliminate the buyer's and its guarantor risk for the covered amount, but it does not solve the problem of the supply financing, in the Supplier's Credit contracts. The credit transfer is realized via pro solvent towards a bank, means the exporter still is financially responsible, in case of the principal debtor insolvency.

This insurance policy presents different problems related to the duration of the used credit line (medium/long term) and to the burden of the credit on the financial statements. Also, still remains the possibility of the financial bank regress towards the exporter, while the debtor is insolvent. First, the regress action will affect the insured part of the contract and after the uncovered amount. The sole solution stands in transferring the contract via pro solute, reversing the beneficiary effects of the insurance contract towards the financial bank (Garioni, 2009).

This operation is realized in three steps:

- 1) The exporter insures its credit through SACE insurance contract.
- 2) The exporter requires the pro solute discount credit to the financial bank, transferring also his insurance contract. Thus, a financing contract is created through parts.
- 3) Considering the relationship between the exporter and the financial bank, SACE delivers the Insurance Reverse Appendix (Garioni et al. 2002), considering now, as a new beneficiary the bank, in case of debtor's insolvency.

SACE has designed several conditions regarding both commercial and insurance contract, in order to proceed towards pro solute discount:

First, the delayed credit has to be represented by a Bill of Exchange or Promissory Note and the forms and ways of credit titles issue has to be designed in the contract. The commercial contract also should contain clauses related to the buyer's signed report, which certificates the full compliance between ordered goods and received ones. In cases of conflicts, an arbitrage country has to be designed in the contract. The products delivery has to respect the INCOTERM's standards³.

The banks are submissive to the separation principle between the commercial contract and the discount contract. Thus, banks prefer to discount only SACE assisted operations. The exporter, after receiving the supply acceptance confirmation, is not obligated anymore to guarantee the discounting bank in relation to the possible regression of the buyer. The bank discounts via pro solute the covered amount and pro solvent the uncovered remaining part. Thus, the bank supports the SACE risk and the exporter's risk, for the uncovered part of the amount, only if the last one has big dimensions and faithful. On the exporter's part, the operation is financed at 100%, but still remains a part of uncovered risk, which burdens the active budget.

In conclusion the operations steps are:

- 1) The negotiation and the conclusion of the commercial contract;
- 2) The exporter requires a Supplier's Credit Contract to SACE, containing all the insurance conditions;
- 3) The exporter requires the pro solute discount of credit and the insurance reverse SACE contract;
- 4) The financing contract becomes effective only after the SACE acceptance to sign the Reverse Appendix, towards the new beneficiary, the Discounting Bank.
- 5) The discounted amount is credited on the exporter's account.

3. Conclusions

The commercial and financial firms, thanks to globalization have increased their internalization grade, thus the transaction contracts have become more complex. The internalization has brought to an increased trading volume, especially facing foreign partners. In this point of view, the needs to finalize successfully each commercial transaction are also increased and new contracts formats are needed to fulfill the needs.

³ See the International Chamber of Commerce publication n.560, INCOTERMS 2000.

Basically, when foreign commercial transactions are effectuated is important to stipulate contracts which allow realizing a secure payment (in order to reduce/eliminate the buyer's risk) and finances the supply, as much transactions are delayed on time, depending on the supplied goods and it's duration.

In Italy, multiple contracts are created to fit the different transactions depending on the buyer's risk grade, the supplied goods, the contract duration and the financing needs. The credit financing market in export is divided in two categories:

• **Trade Finance**: the financial and insurance operations set, which are based on the short term supply contracts (documentary confirmed/not confirmed credit, bank orders, cash, etc).

• **Export Finance**: risk coverage for long term export contracts (Supplier's/Buyers's Credit, Forfaiting, Pro Soluto with SACE contract reverse).

The trade finance contracts and payments methods, especially the basic ones as cash, cheques and accepted bills are not very safe, are not able to finance the supply and to avoid the credit and country risk. Usually, these payment methods are used when the awareness about the buyer's risk is high and also the distances between parts are short, but are not recommended. The most popular contract is the Bank Order, much safe, but is recommended to stipulate also an insurance contract, to be covered in case of the debtor's insolvency. The most complete payment method and supply financing contract is the Letter of Credit (Simple and Confirmed). The participation of a financial institution as a payment guarantor and document negotiator makes the operation trustful. It reduces the insolvency risk to the exporter and the appropriate supply delivery to the buyer.

The basic export finance contracts, the Supplier's Credit and the Buyer's credit are used to finance the long term operations, but it is recommended to use them only if the parts are well known and the supplies treat general consumer's goods. These contracts do not fully respond to the risk elimination needs and are not flexible. The most complex contract used to ensure payment and which fully responds to the financing needs is the Forfeiting contract. The typical supplies are related to capital goods and machinery, the duration is 2-6 years and the operation amount has to be at minimum 100.000 Euro. The cost of the operation is very high. At least four parts are involved in this contract: the seller, the buyer, the forfeiter and the discounting bank. Basically the discount bank discounts a credit portfolio (can also be accepted bills of exchange) issued by the exporter or promissory notes, issued by the importer to the exporter. The discounting contract is autonomous, separate and abstract towards the commercial contract. It fulfills the need to eliminate the debtor's insolvency risk, by submitting via pro solute the credit and also finances the supply.

Another contract, which is used mostly to eliminate/reduce the credit risk is the contract supplied by SACE, which is an accessory contract to the Supplier's Credit Contract. This contract was created to fully respond to risk elimination need for the covered part of the commercial contract amount. Usually, a part of the amount still remains uncovered and burdens the seller's financial statements until payment. The exporter has the possibility to reverse to a discounting institute the benefice derived by SACE insurance contract, in order to finance the supply. This operation is recommended to save in interest and administrative costs.

References

AULETTA, G. – SALANITRO, N. (2010). *Diritto Commerciale*, Giuffrè Editore, 2010. ISBN 88-14-15489-9.

Di MEO, A. – GARIONI G. (2005). *Rischio di Credito e Soluzioni Finanziarie per l'Export,* API, Ravenna, 2005. ISBN 978-88-217-4413-6.

GARIONI, G. (2007). PMI e Finanziamenti per l'Internalizzazione, IPSOA, 2007. ISBN 978-88-217-2579-1.

GARIONI, G. (2003). *I Crediti Acquirente nel Quadro dell'Export Credit Italiano*. Commercio Internazionale, vol.14, IPSOA.

GARIONI, G. (2001). *Il Forfaiting: Struttura, Mercato, Agevolamento*. Commercio Internazionale, Vol.14, p. 9, IPSOA.

GARIONI, G. – CIFALINO, S. – CORRIERO, G. (2002). *La Nuova Appendice per la Voltura Pro Soluto della Polizza SACE*. Commercio Internazionale, vol.3, p.42, IPSOA.

ICE-ISTAT. (2015). Annuario-Commercio Estero e Attività Internazionale delle Imprese, 2015. ISBN 978-88-458-1847-9.

International Chamber of Commerce. (1995). *Uniform Rules for Collections*. [online]. Available at the URL: http://store.iccwbo.org/Content/uploaded/pdf/ICC-Uniform-Rules-for-Collections.pdf. [accessed 28.02.2016].

International Chamber of Commerce. (2010). *International Standby Practices ISP98*. [online]. Available at the URL: http://store.iccwbo.org/content/uploaded/pdf/ISP%2098-International-Standby-Practices.pdf>. [accessed 28.02.2016].

International Chamber of Commerce. (2011). *Guide to ICC Uniform Rules for Demand Guarantees URDG* 758 [online]. Available at the URL: http://store.iccwbo.org/content/uploaded/pdf/ICC-Guide-to-ICC-Uniform-Rules-for-Demand-Guarantees-URDG-758.pdf>. [accessed 28.02.2016].

SACE S.p.a. (2016). *Internalizzazione*. [online]. Available at the URL: http://www.sace.it/prodotti-e-servizi/famiglia-prodotti/internazionalizzazione. [accessed 28.02.2016].

SIMEST. (2016). Crediti all'Esportazione. [online]. Availble at the URL: http://www.simest.it/page.php?id=54. [accessed 28.02.2016].

The Position and the Role of Gazelles in the Tourism Industry

Laura Markovičová

University of Economics in Bratislava Faculty of Commerce, Department of Services and Tourism Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: markovicova.laura@gmail.com

Abstract

The aim of this paper is to emphasise the relationship between the number of gazelles and created value added in the tourism industry. The significant position of these young highgrowth enterprises in the tourism and hospitality sector in Slovakia is confirmed by international statistics obtained from the database of the European Commission and the OECD. The number of gazelles in tourism, both as measured by employment or turnover growth, and the creation of value added are classified according to the statistical classification of economic activities in the European Community NACE Revision 2. The results of the polynomial regression analysis confirm the strong correlation between the number of gazelles and the amount of value added in the tourism sector.

Keywords: tourism, gazelles, value added *JEL classification*: L 83, M 13

1. Introduction

Increasing productivity in manufacturing industry and associated services in order to recover the economic growth, create new jobs, restore heath and sustainability within the EU area is one of the main objectives of the European Union (European Commission, 2012). Supporting fast-growing SMEs relates to the Europe 2020 strategy, highlighting the share of innovative, fast-growing companies as a key indicator to measure the strategy's progress (Daunfeldt et al., 2016). Net job creation, innovation, increasing labour productivity and firms' turnover growth have a particularly important role due to slow economic growth of Slovakia after economic crisis. The key to improve macroeconomic indicators and the situation on the labor market is increasing the competitiveness of companies (Békés, Muraközy, 2012).

Acceleration of economic growth is a challenge especially for fast-growing SMEs. Birch and Medoff first noted the fact that creating a large proportion of all jobs in the US is due to only a small number of companies (Tracy, 2011). Analyzing data from 1988 to 1992 they came to the fact that approximately 4% of all firms provided 70% of all new jobs across ongoing companies and 60% of jobs among the whole population of enterprises. The young fast-growing companies known as "gazelles" employed on average 61 people and were represented roughly equally in each economic sector (Birch, Medoff, 1994).

According to Buss, fast-growing enterprises (2002):

- a) are much less likely than other small firms to fail,
- b) are able to attain higher profit, generate higher value and make a larger sale,
- c) pay employees higher wages and provide on average more employee benefits,
- d) export more products and services,
- e) spend more on research and development than other companies.

Higher investments on research and development lead to innovative activities, higher labour productivity and job creation.

Significant position of dynamically growing companies in the market economy indicates their mapping also in Slovak Republic. The study focuses primarily on gazelles in the tourism sector, where the number of young high-growth companies increases each year, supporting innovative activities, job creation, improving labour productivity and increasing value added.

1.1 Methodology

The main goal of our research is to identify the existence of statistically significant dependence between the number of gazelles in the tourism sector in Slovakia by business activities and the amount of value added produced in tourism industry. In other words, whether created value added refers to the number of existing young fast-growing companies within a certain business activity.

Value added is defined as the difference between total revenue and expenses of the company. It provides a basis for assessing the contribution of individual companies or a whole industry to gross domestic product. Crnogaj claims that gazelles' value added is much higher than the average productivity of all Slovenian companies. Innovative and high-growth enterprises are a great potential for creating value added and they make a valuable contribution to growth and the development of the economy (Crnogaj et al., 2014). Following the arguments above we assume that the economic activities with highest number of young fast-growing enterprises produce the highest value added.

The number of young high-growth enterprises and the amount of value added in the tourism industry are divided by divisions based on the NACE Rev. 2. statistical classification of economic activities in the European Community.

Division	Economic activity
H49	Land transport and transport via pipelines
H50	Water transport
H51	Air transport
155	Accommodation
156	Food and beverage service activities
N77	Rental and leasing activities
N79	Travel agency, tour operator reservation service and related activities
R90	Creative, arts and entertainment activities
R91	Libraries, archives, museums and other cultural activities
R93	Sports activities and amusement and recreation activities

Table 1

Classification of business activities in tourism industry

Source: own processing after Eurostat (2016a). NACE Rev. 2. Statistical classification of economic activities in the European Community.

For the purpose of the research we obtained data about the number of gazelles in each division from the European Commission's statistic database - Eurostat and data about the amount of value added by economic activities in tourism industry from the Statistical Office of the Slovak Republic.

In order to evaluate the impact of the number of gazelles on value added in tourism industry in Slovakia we used polynomial regression. Statistical analysis was conducted through econometric program Gretl.

2. Who are gazelles?

The literature of business' dynamics distinguishes three types of companies (Békés, Muraközy, 2012a):

"Gazelles": Fast-growing companies.

"*Elephants*": A few large companies employing a high number of employees, contributing only a small extent to the employment growth in the economy.

"Mice": Newly established small enterprises with slow growth.

The definition of gazelles is most often distinguished on two methods. The first method envisages absolute values for defining the percent of annual growth of businesses: the lowest growth limit shall be determined and businesses with higher percent of annual growth are classified as gazelles. Another method is based on the relative annual growth: in this case as a gazelle are considered companies with the highest percent of annual growth within a certain industry (Békés, Muraközy, 2012b).

Literature offers many different definitions of gazelles. The term was first mentioned by Birch circa 30 years ago as a type of business contributing significantly to employment growth in a particular economy. According to Birch, gazelles are enterprises with a sales growth greater than 20% a year in a certain period of time, and with an income of at least 100.000 \$ in the initial year (Birch, 1995).

According to a study of Stangler, gazelles despite their low incidence in the economy generate a disproportionately high percentage of jobs. These young fast-growing companies representing only 1% of businesses worldwide create around 10% of new jobs each year (Stangler, 2010). In 2012, 36.000 high-growth companies in the USA employed more than 8.000.000 persons (OECD, 2015a).

OECD defines these enterprises as a part of high-growth enterprises, which are the ones with average annual growth in turnover (or number of employees) greater than 20% p.a., over a three-year period, and with at least 10 employees at the beginning of the observation period. Fast-growing companies represent only a small part of all businesses - between 5% and 15% when measured by turnover growth, and a smaller share, from 2% to 6%, when measured on the employment basis. Gazelles are defined as young high-growth businesses, which have been employers for a period of up to 5 years. In the most of surveyed countries, gazelles represent around 2% of the whole enterprise population with 10 or more employees, whether measured by employment or turnover growth (OECD, 2015b).

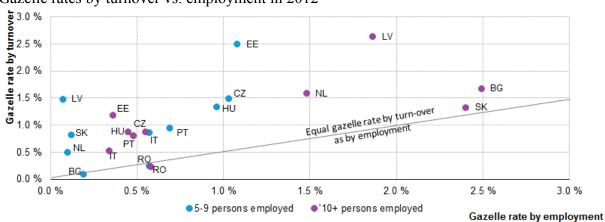


Figure 1

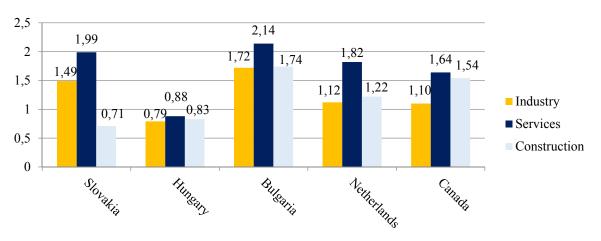
Gazelle rates by turnover vs. employment in 2012

Source: Eurostat (2016b). Entrepreneurship - statistical indicators.

As shown on Figure 1, the gazelle rates are higher in average when measured by employment growth. Bulgaria and Slovakia have a dominant position in terms of gazelle rates measured on the basis of growth in employment. The number of gazelles with 10 or more employees in Bulgaria is roughly 2,5% of the total business population, in Slovakia around 2,4%. Regarding the gazelle rates measured by turnover, the number of gazelles with 10 or more employees is the highest in Latvia, in case of young fast-growing companies with 5-9 person employed, in Estonia.

Figure 2

Gazelles' share (measured by turnover growth) in the main sectors

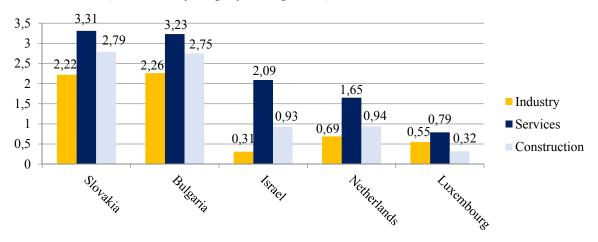


Source: own processing after OECD (2015). Entrepreneurship at a Glance 2015.

In the most of countries, gazelles dominate in the services sector at the expense of industry and construction sector (Figure 1 and 2). On the other hand, there are some countries where the high-growth firms mostly appear in the construction sector, e.g. Brazil, New Zealand, Lithuania and Latvia (OECD, 2015c). Figure 1 shows the share of gazelles with a turnover growth greater than 20% p.a. on the total number of enterprises in each country with 10 or more employees. Measured by turnover growth, Bulgaria is distinguished by the highest share of gazelles in the services sector (2,14%).

Figure 3

Gazelles' share (measured by employment growth) in the main sectors



Source: own processing after OECD (2015). Entrepreneurship at a Glance 2015.

Figure 2 illustrates the number of gazelles measured by employment growth in the main sectors of economy as a percentage of the population of enterprises with 10 or more

employees. In this case Slovakia has the highest gazelles' share in the services sector (3,31%) among surveyed countries.

3. The role of gazelles in tourism industry

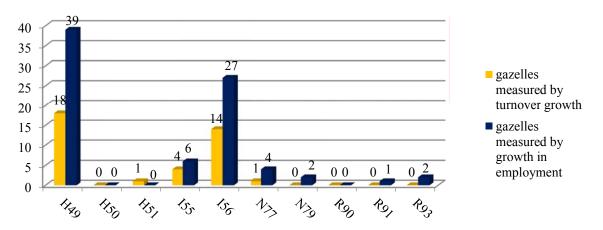
Unless young high-growth businesses arose mainly in high-tech sector, their importance is steadily increasing also in the tourism industry. According to the findings of UNWTO, an increasing number of tourism destinations worldwide have opened up to, which was accompanied by substantial investments, establishing businesses, creating new jobs, increasing profits from export and development of infrastructure. The expansion and diversification in the tourism industry is continuing in order to become one of the largest and fastest-growing economic sectors in the world (UNWTO, 2015).

Beside the increasing importance of tourism destinations it is important to note the dominant position of SMEs in the tourism sector, which are the main driving force of the modern innovative economy. Innovation, the key to improve productivity, increase value added and create jobs is playing an increasing role in hospitality industry, and is especially important for the SMEs (Yüzbaşıoğlu et al., 2014). Tuinstra also confirms the importance of SMEs in the tourism sector - in the Netherlands 99% of the entire business population is represented by small and medium-sized enterprises (Tuinstra et al., 2012).

Gazelles as young fast-growing businesses, usually represented by SMEs, play a key role in order to increase the growth of tourism industry in Slovak Republic. The significant position of these innovative companies in Slovakia also corresponds to their high representation in the services sector compared to other countries. Measured by employment growth, the total number of gazelles in the tourism sector in 2012 was 81, measured on the basis of turnover growth, their amount was 38 (Eurostat, 2016c).

Figure 4

Number of gazelles in tourism industry in Slovakia in 2012 according to business activities (based on the NACE Rev. 2. divisions)

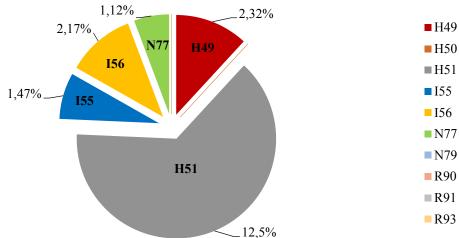


Source: own processing after Eurostat (2016c). Structural business statistics.

Within tourism industry in Slovakia, gazelles are mainly represented in transportation and storage section. Measured by turnover growth, 18 enterprises from the division *land transport and transport via pipelines* belongs to young high-growth businesses. There are 14 gazelles operating in *food and beverage service activities*, 6 young fast-growing enterprises providing *accommodation* services, 4 companies involved in *rental and leasing activities*, also 2 firms doing business as a *travel agency, tour operator reservation service and related* activities or in sports activities and amusement and recreation activities. On the employment growth basis, most gazelles are operating in land transport and in food and beverage service activities.

Figure 5

Gazelles' share measured by turnover growth in Slovakia in 2012 according to business activities (based on the NACE Rev. 2. divisions)

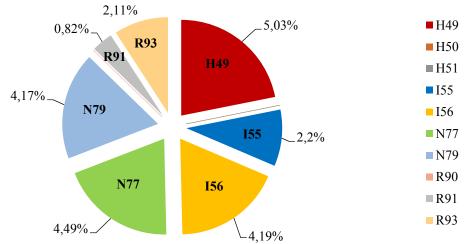


Source: own processing after Eurostat (2016c). Structural business statistics.

In terms of gazelles' share measured by turnover growth within the tourism and hospitality sector in Slovakia, *air transport* activities are characterized by its highest share (12,5%) among the total enterprise population in the certain sector. 2,32% of all businesses in *land transport*, 2,17% in *food and beverage service activities*, 1,47% in *accommodation* services and 1,12% in *rental and leasing activities* belongs to young fast-growing enterprises.

Figure 6

Gazelles' share measured by employment growth in Slovakia in 2012 according to business activities (based on the NACE Rev. 2. divisions)



Source: own processing after Eurostat (2016c). Structural business statistics.

In case of gazelles' share measured by employment growth, the highest share (5,03%) belongs to the division *land transport and transport via pipelines*. 4,49% of the total sum of enterprises in *rental and leasing activities*, 4,19% in *food and beverage service activities*, and 4,17% in *travel agency, tour operator reservation service and related activities* are gazelles. *Accommodation* and also *sports activities and amusement and recreation activities* are

characterized by a gazelles' share roughly 2%. Measured by the basis of employment growth, there are no gazelles operating in *water transport*, *air transport* or *creative*, *arts and entertainment activities*.

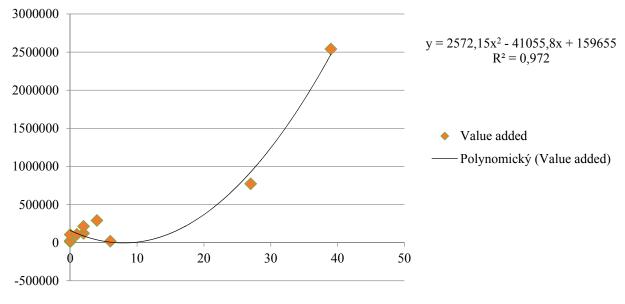
4. The relationship between gazelles and value added

4.1. Gazelles measured by employment growth

Model 2: OLS, usingobservations 1-10 Dependentvariable: ValueAdded						
	Coefficient	Std. Err	or	t-ratio	p-value	
const	159655	63707,	,1	2,5061	0,0406	**
PocetGaziel	-41055,8	17994,	,1 -	-2,2816	0,0565	*
PocetGaziel2	2572,15	481,37	6	5,3433	0,0011	***
Meandependent var	421	526,0	S.D. depend	dent var	,	777976,0
Sumsquaredresid	1,54	4e+11	S.E. ofregre	ession		148201,1
R-squared	0,97	71775	AdjustedR-	squared	(0,963711
F(2, 7)	120	,5057	P-value(F)			3,78e-06
Log-likelihood	-131	,4693	Akaikecrite	erion	,	268,9385
Schwarz criterion	269	,8463	Hannan-Qu	inn	,	267,9427

Figure 7

The relationship between the number of gazelles measured by employment growth and value added in the tourism industry in Slovakia



Source: own processing

$$y = b_0 - b_1 * x + b_2 * x^2$$

y = 159 655 - 41 055,8 * x + 2 572,15 * x²
R² = 0,972

The constant b_0 represents the amount of value added at zero value of the independent variable x (in our case the number of gazelles in the tourism industry). If the number of gazelles would be 0, the value added would amount to 159.655 thousand Euros. The p-value for the constant is less than 0,05 (0,0406 < 0,05), what indicates its statistical significance.

Using the regression coefficients b_1 and b_2 we can calculate how many units increases / decreases the value added in the tourism industry, when the number of gazelles increases. In our case, when in the number of gazelles occurs a one-unit increase, value added would be decreased by 38.483,65 thousand Euros. If the number of young high-growth businesses would be 50, value added would be increased by 4.377.585 thousand Euros.

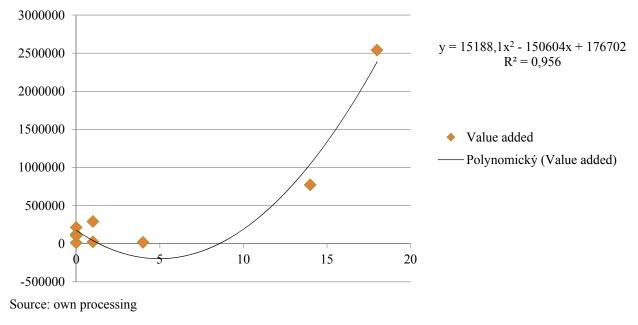
In accordance with the result of t-test we can conclude that the estimate of the variables' parameters is statistically significant. The result of F-test confirms the statistical significance and the relevance of the chosen model. The value of the R^2 correlation coefficient indicates a strong correlation between the number of gazelles measured by employment growth and the created value-added in the tourism industry. The polynomial regression function explains the variability of value added to approximately 97%, the rest is unexplained variability, the impact of random factors and other unspecified factors.

4.2. Gazelles measured by turnover growth

Model 2: OLS, usingobservations 1-10 Dependentvariable: ValueAdded						
	Coefficient	Std. Erre	or t-rat	io	p-value	
const	176702	74518,0	6 2,37	12	0,0495	**
PocetGaziel	-150604	49500,4	4 -3,04	25	0,0188	**
PocetGaziel2	15188,1	2899,64	4 5,23	79	0,0012	***
Meandependent var	421	526,0	S.D. dependent	var	7	777976,0
Sumsquaredresid	2,42	2e+11	S.E. ofregressio	n	1	186014,7
R-squared	0,9	55535	AdjustedR-squa	red	(),942831
F(2, 7)	75,2	21371	P-value(F)		(),000019
Log-likelihood	-133	,7418	Akaikecriterion		2	273,4836
Schwarz criterion	274	,3914	Hannan-Quinn		2	272,4878

Figure 8

The relationship between the number of gazelles measured by turnover growth and value added in the tourism industry in Slovakia



$$y = b_0 - b_1 * x + b_2 * x^2$$

y = 176 702 - 150 604 * x + 15 188,1 * x²
R² = 0,956

The constant b_0 indicates the value of the dependent variable y (value added), when the independent variable x (number of gazelles measured by turnover growth) is 0. If the number of gazelles measured on the basis of growth in turnover would be 0, the value added would amount 176.702 thousand Euros.

Thanks to regression coefficients b_1 and b_2 we can calculate the rate of increase / decline of the dependent variable y (value added), when the independent variable x (number of gazelles measured by turnover growth) increases. When in the number of gazelles occurs a one-unit increase, value added would be decreased by 135.415,9 thousand Euros. If the number of gazelles measured by turnover growth would be 50, value added would be increased by 30.440.050 Euros.

The result of t-test confirms that the estimate of the variables' parameters is statistically significant. According to the result of F-test we can conclude that the chosen model is statistically significant. In accordance with the value of R^2 correlation coefficient we can claim that there is a very strong dependency between the number of gazelles measured by turnover growth and the amount of value-added in the tourism sector. The chosen polynomial function explains the variability of value added to roughly 99%, the rest is impact of random factors or unexplained variability and other unspecified factors.

In summary, we can claim that there is a strong correlation between the number of gazelles measured by both employment and turnover and the created value added in the tourism industry. The number of gazelles in each business sector positively improves the amount of value added. The young high-growth companies increase the share of tourism industry on the gross domestic product.

3. Conclusions and policy implications

Young fast-growing companies are key drivers of economic growth and job creation. These enterprises are the source of innovative networking in a region, they support the rise and development of supplier and partner entities (Kubičková et al., 2015). Activities of high-growth enterprises are closely linked to R&D, quality, productivity and professionalism of their teams (Čukanová, Fúrová, 2015). Dynamic enterprises by increasing the amount of value added, increasing sales and labour productivity, introducing innovative elements in business, are important players in enhancing the economic growth of Slovakia.

Following the goals of the government of Slovakia in response to the strategic document Strategy for the development of tourism in Slovakia in 2020, tourism should be a competitive economic sector through fostering better exploitation of its potential, equalizing regional disparities and creating new jobs. (MDVRR SR, 2013). In order to achieve this national strategic objective significantly grows the demand for dynamic, fast-growing companies. The tourism and hospitality sector in Slovakia offers many unused opportunities for business, particularly in less developed regions with high potential for realization of tourism activities. Gazelles are a good prerequisite for improving the quality of provided services, employing educated and qualified personnel and creating advanced, competitive tourism industry particularly in the abovementioned regions.

The survey results show that gazelles have a positive impact on the value added created in the tourism sector. Young fast-growing enterprises have a positive contribution to the tourism's share on the gross domestic product. Due to this fact, supporting gazelles by government bodies becomes a strategic goal in order to attain the vision in the tourism industry at national level.

The subject of further research could be evaluation of the impact of gazelles on labour productivity and innovation activities in tourism industry.

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References

BÉKÉS, G. – MURAKÖZY, B. (2012). Magyar gazellák: gyors növekedésű vállalatok jellemzői és kialakulásuk elemzése Magyarországon. *Közgazdasági Szemle*. Vol. 59, Issue 3, pp. 233-262. ISSN 1588-113X.

BIRCH, D. L. – HAGGERTY, A. – PARSONS, W. (1995). *Who's Creating Jobs?* Boston: Cognetics Inc., 1995.

BIRCH, D. L. – MEDOFF, J. (1994). Gazelles. In L.C. Solmon & A.R. Levenson: *Labor Markets, Employment Policy and Job Creation*. Boulder, CO and London: Westview Press, pp. 159-167.

BUSS, T. F. (2002). Emerging High-Growth Firms and Economic Development Policy. *Economic Development Quarterly*. Vol. 16, Issue 1, pp. 17-19. ISSN 1552-3543.

CRNOGAJ, K. – SIREC, K. (2014). Employment and value-added contribution of Slovenian high-growth companies (gazelles). *Economic Horizons*. Vol. 16, Issue 1, pp. 17-29. ISSN 2217-9232.

ČUKANOVÁ, M. – FÚROVÁ, T. (2015). Slovak gazelles in tourism as a driver of innovation. In *EDAMBA 2014. International scientific conference. EDAMBA 2015:* proceedings of the international scientific conference for doctoral students and young researchers: 21st - 23rd October 2015, Bratislava, Slovak Republic. Bratislava: Publishing House EKONÓM, pp. 43-49. ISBN 978-80-225-4005-6.

DAUNFELDT, S. – ELERT, N. – JOHANSSON, D. (2016). Are high-growth firms overrepresented in high-tech industries?. *Industrial and Corporate Change*. Vol. 25, Issue 1, pp. 1-21. ISSN 1464-3650.

European Commission (2012). *Knowledge-intensive (business) services in Europe*. [online]. Available at the URL: http://ec.europa.eu/research/innovation-union/pdf/knowledge_intensive_business_services_in_europe_2011.pdf>. [accessed 22.2.2016].

Eurostat. (2016a). *NACE Rev. 2. Statistical classification of economic activities in the European Community*. [online]. Available at the URL: http://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF. [accessed 18.2.2016].

Eurostat. (2016b). *Entrepreneurship - statistical indicators*. [online]. Available at the URL: <<u>http://ec.europa.eu/eurostat/statisticsexplained/index.php/File:EIP_Gazelle_rates_by_</u>turnover_vs_employment.png>. [accessed 24.2.2016].

Eurostat. (2016c). *Structural business statistics*. [online]. Available at the URL: <<u>http://ec.europa.eu/eurostat/data/database?p_p_id=NavTreeportletprod_WAR_NavTreeportl</u>etprod_INSTANCE_nPqeVbPXRmWQ&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-2&p_p_col_count=1>. [accessed 9.2.2016].

KUBIČKOVÁ, V. – KROŠLÁKOVÁ, M. – BREVENÍKOVÁ, D. (2015). Qualifying connections between innovations and existence of gazelles in the service sector of the Slovak Republic. In *Naukovij visnik Užgorods kogo universitetu: serija ekonomika. Užgorod: Užgorods kij nacional uij universitet.* Vol. 3, Issue 1, pp. 97-102. ISSN 2409-6857.

MDVRR SR. (2013). *Stratégia rozvoja cestovného ruchu do roku 2020*. [online]. Available at the URL: http://www.telecom.gov.sk/index/open_file.php?file=cestovnyruch/Legislativa/Strategia_CR_SR_2020rev1.pdf>. [accessed 25.2.2016].

OECD. (2015). *Enterpreneurship at a Glance 2015*. OECD Publishing, Paris. ISSN 2226-6941. [online]. Available at the URL: http://www.oecd-ilibrary.org/docserver/download/3015021e.pdf?expires=1456568654&id=id&accname=guest&checksum=CD040987A9C67B C6EC51AF49121C8F99>. [accessed 12.2.2016].

STANGLER, D. (2010). *High-Growth Firms and the Future of the American Economy*. [online]. Available at the URL: http://www.kauffman.org/~/media/kauffman_org/research% 20reports%20and%20covers/2010/04/highgrowthfirmsstudy.pdf >. [accessed 20.2.2016].

TRACY, S. L. Jr. (2011). *Accelerating Job Creation in America: The Promise of High-Impact Companies*. Corporate Research Board, LLC Washington. [online]. Available at the URL: https://www.sba.gov/sites/default/files/HighImpactReport.pdf>. [accessed 22.2.2016].

TUINSTRA, T. – MEKKES, J. – KOLDIJK, H. (2012). Experience of growth and continuity in SMEs: A study on the growth aspects of the tourism industry in the Netherlands. *Current Issues of Business and Law.* Vol. 7, Issue 2, pp. 351-364. ISSN 2029-574X.

UNWTO. (2015). UNWTO Tourism Highlights, 2015 Edition. eISBN: 978-92-844-1689-9. [online]. Available at the URL: http://www.e-unwto.org/doi/pdf/10.18111/9789284416899>. [accessed 25.2.2016].

YÜZBAŞIOĞLU, N. – ÇELIK, P. – TOPSAKAL, Y. (2014). A Research on Innovation in Small and Medium-sized Enterprises in Tourism Industry: Case of Travel Agencies Operating in Antalya. *Procedia-Social and Behavioral Sciences*. Vol. 150, pp. 735-743. ISSN 1877-0428.

Theoretical Aspect of the Game Theory on the Labour Market

Alžbeta Martišková

University of Economics in Bratislava Faculty of National Economy, Department of Social Development and Labour Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: alzbetamartiskova@gmail.com

Abstract

This paper focuses on using game theories on the labour market. The game theory deals with situations on the market where one agent is either more informed, or neither of them are informed about the behaviour of the other agent. On the labour market this situation happens when the demand side (firms) does not have all the information about the supply side (employees) such as if they are productive workers or not. This article tries to find out how employer can solve situation while finding and hiring new employees, and how to determine the level of wages.

Keywords: game theory, labor market, wages *JEL clasiffication*: J 01, J 49

1. Introduction

Game theory is well known as aspect of deciding in conditions of imperfect competition without perfect information between all the actors. This point of view is very important also in the labor market where many situations exist with agents which do not have perfect information. Such situation happens during finding and hiring employees, where employers have to calculate and find the best solutions during finding employees and somehow find the productive and sufficient labor force. This can be realized through the game theory which analyses situations where one side has better information than the other.

2. Behavioral economy - Game Theory - Nash equilibrium

In addition to game theory, economic theory has three other main branches: decision theory, general equilibrium theory and mechanism design theory. All are closely connected to game theory.

Decision theory can be viewed as a theory of one person games, or a game of a single player against nature. The focus is on preferences and the formation of beliefs. The most widely used form of decision theory argues that preferences among risky alternatives can be described by the maximization of the expected value of a numerical utility function, where utility may depend on a number of things, but in situations of interest to economists often depends on money income. Probability theory is heavily used in order to represent the uncertainty of outcomes, and Bayes Law is frequently used to model the way in which new information is used to revise beliefs. Decision theory is often used in the form of decision analysis, which shows how best to acquire information before making a decision. (Simon, 1959)

General equilibrium theory can be viewed as a specialized branch of game theory that deals with trade and production, and typically with a relatively large number of individual consumers and producers. It is widely used in the macroeconomic analysis of broad based economic policies such as monetary or tax policy, in finance to analyze stock markets, to study interest and exchange rates and other prices. In recent years, political economy has emerged as a combination of general equilibrium theory and game theory in which the private sector of the economy is modeled by general equilibrium theory, while voting behavior and the incentive of governments is analyzed using game theory. Issues studied include tax policy, trade policy, and the role of international trade agreements such as the European Union. (Carmerer, 2011)

Mechanism design theory differs from game theory in that game theory takes the rules of the game as given, while mechanism design theory asks about the consequences of different types of rules. Naturally this relies heavily on game theory. Questions addressed by mechanism design theory include the design of compensation and wage agreements that effectively spread risk while maintaining incentives, and the design of auctions to maximize revenue, or achieve other goals.

In 1950 John Nash gave unification to the theory of equilibrium. He based his theory on the work of Cournot, Bertrand, Hotelling and Walras. The Nash equilibrium is a concept of game theory where the optimal outcome of a game is one where no player has an incentive to deviate from his or her chosen strategy after considering an opponent's choice. Overall, an individual can receive no incremental benefit from changing actions, assuming other players remain constant in their strategies. A game may have multiple Nash equilibria or none at all. Game theory analyses conflict situations and decisions making. Analyzing 4 basic types of Games there is possible find the Nash equilibrium in every of them.

"Policeman and Thief" situation

		Thief	
		B 1	B2
Policeman	B1	(1,-1)	(-1,1)
	B2	(-1,1)	(1,-1)

This table illustrate situation when policeman and thief have both 2 possible strategies B1 and B2. Parenthesis represent: (profit of policeman, profit of thief). Nash equilibrium exists when both strategies are useful. That means a pair of strategies which are:

$$\prod 1 (S_1^N, S_2^N) > \prod 1 (S_1, S_2^N)$$

and

 $\prod 2 (S_1^N, S_2^N) > \prod 2 (S_1^N, S_2)$

That means that the strategy is favorable for both sides. In this situation we can see that in every situation one of the participants is not content. So <u>this is not Nash equilibrium</u>.

2 firms: "producer of wine and football club"

		Football club	
		investment	No invest.
Producer of wine	investment	(10,10)	(8,5)
	No invest.	(5,8)	(3,3)

This game we can mark as <u>cooperative</u>. If we are finding equilibrium, we will search for that combination when the wine producer maximizes his utility (we look on the left-side profits in lines) and also football club maximizes utility (we look on the right-side profits in columns).

For wine producer are the best situations 10 and 5, for football club it is 10 and 5. That means that both meets in point 10,10 and <u>this point is Nash equilibrium</u>.

"Battle of sexes"

This table refers to situation when woman and man are planning what to do in free time. They can choose between see a box match or go dancing. Also there is a possibility to go not together, which is not pleasant for any of them.

		SHE	
		boxing	dancing
HE	Boxing	(2,1)	(0,0)
	Dancing	(-1,-1)	(1,2)

In this situation we can apply the same steps and we will obtain 2 points of Nash equilibrium: (2,1) and (1,2).

"Prisoners' dilemma"

The most discussed example of Game theory is prisoners' dilemma.

		Prisoner 2	
		cheat	respect
Prisoner 1	Cheat	(1,1)	(3,0)
	Respect	(0,3)	(2,2)

Here is a dominant strategy, because both prisoners know that 1 year is better than 3 and 0 is better than 2, so that means there is only one Nash equilibrium which is in point (1,1). This dominant strategy can be defined as:

 (S_1^D, S_2^D) : $\prod 1(S_1^D, S_2) > \prod (S_1, S_2) \forall S_1, S_2$ and $\prod 2(S_1, S_2^D) > \prod 2(S_1, S_2)$

Concept of "prisoner dilemma" comes from this situation: police caught 2 thieves, both of them have possibility to cooperate with police and get 1 or 3 years if they tell the truth, if they keep the secret they get 0 or 2 years. According to this they will choose to respect each other because 0 or 2 are both better than 3(in case of cheating). In this situation Nash equilibrium which would be better for both of them will be not realized.

3. Application of Game theories to labor market

Game theory with asymmetric information is often used in economic research and for more than two decades is necessary tool for the researchers. Its origins are in 1970, when George Akerlof published his work The Market for Lemons in which the market with used cars is asymmetric information and spoke about its consequences. The second turning point was 1973, when Michael Spence published his work Job Market Signalling, which described the behavior of workers and employers in the labor market. In 2001 Akerlof, Spence and Stiglitz received Nobel Prize for their analysis of markets with asymmetric information. (Talwalkar, 2014)

Labor market can be described with non-cooperative games and asymmetrical information, participant of these "games" do not cooperate and they are trying to maximize their own profit. Asymmetry consists in situation in which one participant has information unknown to

another participant. Example applicable for labor market in Game theory is job interview. Job interview can be example of game with asymmetric information, also this type of game we can call adverse selection. Adverse selection means that there is one group of participant of game which is in disadvantage. Typical situation is insurance company: if nonsmoker is opening insurance, the company does not know if it is smoker or nonsmoker so the price for insurance will be as high as it was smoker. In fact if the company should know this fact the price for nonsmoker should be lower. Another example which is interesting for my research on labor market is productivity of workers. The employer cannot determine the level of activity of the candidate and therefore offer a lower salary to employee as if he knew his productivity. These described situations can be resolved with signals that individual market participants may send. For example, if someone goes to university, it is assumed that is highly productive, even if he barely passed. The action that he had studied is for employer sign that the candidate is highly productive. Employer can also create a situation where the employee is forced to reveal something about you. (Akerlof, 1970)

Adverse selection situation can be described simply Principal - Agent model where the agent has an information advantage. In these models, the point is that the principal offers to agent contract that the agent accepts or rejects.

In games like adverse selection, "nature" begins the game and determines the type of agent. The agent may send a signal to principal. If he does it before offering contracts it is a Signalling, if the signal sent after the conclusion of the contract, it is a Screening. Categories are not clearly distinguishable, mutually overlap.

Specifics of labor market according to adverse selection in example:

- The market has two different qualities of workers -- first-class and second-rate. The first-class workers are productive and efficient, always on time and willing to put forth extra effort. The second-rate workers unproductive and inefficient arrive late and leave early.
- Employers have an equal chance of hiring first-class and second-rate workers and have no way of knowing which is which until after they are hired. The first-class workers generate for example 1500€ of annual production. The second-rate workers generate only 500€ of annual production.
- Applying employees know if they are first-class or second-rate workers and they know how productive they are. The first-class workers know they can generate 1500€ worth of production and second- rate workers knows they can generate 500€ worth of production. (Akerlof, 1970)

What wage should the employer offer to applying workers? Without knowing the quality of a worker, the employer will offer a wage equal to the expected productivity. With an equal chance of hiring a first-class worker as a second-rate worker, the wage offered is $1000 \in$. That is, if the employer hired 100 workers, half first-rate and half second-class, the average productivity is $1000 \in$.

What will the applying employees do? The second-rate workers, who generate only $500 \in$ are more than willing to accept the $1000 \in$ wage. The first-class workers, who generate $1500 \in$ are not willing to accept the $1000 \in$ wage. They would lose basing on their productivity. Conclusion of this is that the market selects the lower quality "product."

Labor market therefore creates such situation where the lowest paid jobs are only applying non-quality workers. The higher quality of workers can be obtained by increasing wages or by signalling or screening. Signalling is the operation where employer gives the signal to employee by the brand name (for example the "big" name of company means stable and superior wage condition). Screeing is realized after taking new employee by differentiate potential superior worker of low standard worker. This is possible by some grade point averages, aptitude tests, or school quality.

4. Conclusion

Labor market is place where the game theories could be applied. Game theory is such situation in economy, known as aspect of deciding in conditions of imperfect competition without perfect information between all the actors. This happens in labor market when employers do not know the quality of workers and they cannot offer appropriate wage. This situation can be complained to the situation described by George Akerlof "Lemons Market", where the quality of goods traded in a market can degrade in the presence of information asymmetry between buyers and sellers, leaving only "lemons" behind. A lemon is an American slang term for a car that is found to be defective only after it has been bought.

This also happens in the labor market: Suppose buyers (employer) can't distinguish between a high-quality worker (a "peach") and a "lemon" (low quality employee). Then they are only willing to pay a fixed wage that averages the value of a "peach" and "lemon" together. But employee know whether they hold a peach or a lemon. Given the fixed price at which employer will pay, employee will sell only when they hold "lemons" and they will leave the market when they hold "peaches".

The problems caused by adverse selection at the labor market caused by uninformation o one agent can be reacted through signalling and screening. Signalling through the brand names established over long periods (example for market of goods and services). Screening in labor market can be made by employers, for example, commonly use grade point averages, aptitude tests, or school quality as a means of screening out high quality from low quality prospective employees. Screening differs from signalling in time aspect. Screening is realized after accepting the contract.

References

AKERLOF, G. A. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism. In *The Quarterly Journal of Economics*, 84(3), 488–500. Availabe at the URL: http://www.jstor.org/stable/1879431. [accessed 19.02.2016].

CAMERER, C. F. – LOEWENSTEIN, G. – RABIN, M. (2011). Advances in Behavioral Economics. Princeton University Press, 2011. Availabe at the URL: ">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&hl=sk#v=onepage&q&f=false>">https://books.google.sk/books?id=sA4jJOjwCW4C&printsec=frontcover&printsec=frontcover&printsec=frontcover&pri

SIMON, H. A. (1959). Theories of Decision-Making in Economics and Behavioral Science. In *The American Economic Review*, 49(3), 253–283. Available at the URL: http://www.jstor.org/stable/1809901>. [accessed 15.03.2016].

TALWALKAR, P. (2014). The Joy of Game Theory: An Introduction to Strategic Thinking, CreateSpace Independent Publishing Platform, 2014. ISBN 150049744.

Random Development of Financial Assets Modelling

Daniela Matulová

University of Economics in Bratislava Faculty of Economic Informatics, Department of Mathematics and Actuary Dolnozemská 1 Bratislava, 852 35 Slovak Republic E-mail: dmatulova@gmail.com

Abstract

This paper deals with simulation of financial assets based on usage of stochastic methods in finance and their application to the Dow Jones Industrial Average index (respectively shares designed to copy the development of this index) as random evolution of the share price. Afterwards analysis and interpretation using stochastic methods follows. The result of this paper is that modelling by stochastic processes, in absence of regulatory intervention, or unexpected disasters, describes reality quite efficiently.

Keywords: Stochastic methods, risk management, random evolution of stock price *JEL classification*: C630

1. Introduction

Risk and uncertainty are taking place everywhere we look around. The possibility of managing the risk or making its impacts as less as possible, has developed significantly during past 10 years. Effective identification, quantification and risk management gives competitive advantage for the company not only in area of finance but also all the areas of company doing.

The term risk makes the area of stochastics more relevant according to its relationship to randomness. Stochastics models, as we can call them real world imitations) are describing the processes and forecasting the results better than deterministic models. As well as with some changes it is possible to use stochastic models in variety of fields due to its flexibility and generality. Its relevance comes up with the broad and common usage of informatics in science. On the other hand difficulty of stochastic methods, for the implementation or time for results analysis, size of samples, which could make view of lack of model precision.

After 1st of January 2016 when solvency II comes into relevance will be stochastic modeling used in internal models of insurance companies. Before Solvency II was Solvency I valid. Solvency I used deterministic models and European Union decided to go for Solvency II, because Solvency I was not enough to make Solvency capital requirement or preventing the collapse of the insurance company. The main reason to implement Solvency II is protection of the clients and more realistic predictions and modeling of the risks, which insurance company faces.

Insurance company invests the assets of technical reserves, therefore comes in financial market, where it faces mainly financial risks and its components - liquidity risk, credit risk, market risk, operational risk and business risk. Change of interest rate and share price volatility are the most impactible risks for insurance company on financial market.

1.1 **R**isk

Risk is everyday around the life of people, state or private organizations. Coming from the fact, that we cannot forecast for sure what outcome we will get from the event. The term risk is commonly associated with this uncertainity present during impacts of events. It is about the probability and impact of the events with potencial to influence aims of the organization. As the surrounding world evolves and becomes more volatile and less forecasting, we have to come to grips with more uncertainity every day.

Market conditions are uncertain and it is not possible to say forward hoaw the situation evolves and how positive or negative changes it will bring with. Therefore it is necessary for companies to look into their own processes analytically and identify the opportunities and influences which can cause negative development.

According to The Institute of Risk Management is risk defined as combination of event probability and its impact. Impacts can be positive or negative.

Risk management is taken into account by more and more companies' managements and identification, prevention, elimination or moderate impacts of risks are the terms often used. Risk management is characterized as systematic process of acknowledgement, assessment and addressing the risks for maximalizing the chances of achieve the aims and sustainability of the company.

The risk management contain of these phases:

- 0. Aims and strategies of company, risk appetite
- 1. Risk identification

Main risk groups, which insurance company deals with:

- External risks insurance company cannot control or manipulate with
- Finance risks- risk minimalization of not sufficient financing of the financing the liabilities resulted from insurance contracts with the yields from financial asset.
 - o Liquidity risk
 - o Credit risk
 - o Market risk (FX risk, Interest rate risk)
 - o Operational risk
 - o Business risk
- 2. Risk evaluation
- 3. Risk management strategies
- 4. Monitoring

1.1.1 Methodology of the simulation

For modeling of events, which random changes in time we use random processes. Despite of fact that data recorded in time and in finance are detected in dicrete time intervals and discrete units for its modeling are according to (Pollock, 2007) used often continuous processes in continuous time. In finance it is common usage of Markov processes – interest rates and share's price modeling. For these kinds of processes it is typical, that only value relevant to forecast of future values is his current value regardless on past values of the

process. But it is also necessary to know past values to analyze and estimate the parameters of the model, which we will forecast next development with.

It is known that price of the share follows the geometric Brownian motion. Assume that stochastic process St, share's price, follows the geometric Brownian motion when (Yang, 2013):

$$dS_t = \mu \cdot S_t \cdot dt + \sigma \cdot S_t \cdot dz \tag{1}$$

 μ is difference of share's yield - percentage drift a σ is residual deviation for that interval percentage volatility, let's assume they are constants. The term $\mu \cdot St \cdot dt$ describes trend of process development and represents deterministic part of the equation. The term $\sigma \cdot St \cdot dz$ describes random component in process development.

After application of variables separation and usage of Ito lemma we get analytical solution of this geometric brownian motion (Yang, 2013)

$$S_t = S_0 \cdot e^{\left(\mu - \frac{\sigma^2}{2}\right) \cdot t + \sigma dz}$$
⁽²⁾

And for use of the simulation we will use according to (Zmeškal, 2013):

$$S_{t+\Delta t}^{(j)} = S_t^{(j)} \cdot e^{\left[\left(\mu - \frac{\sigma^2}{2}\right) \cdot \Delta t + \sigma \cdot \varepsilon_t^{(j)} \cdot \sqrt{\Delta}\right]}$$
(3)

With expectation and variance made by moment generating function (Yang, 2013):

$$E(S_T) = E(S_0 \cdot e^{X(t)}) = S_0 \cdot M_{X(t)}(1) = S_0 e^{\left(\mu + \frac{\sigma^2}{2}\right) \cdot t}$$
(4)

$$D(S_T) = E(S_T^2) - E(S_T)^2 = S_0^2 \cdot e^{2 \cdot \mu \cdot T + \sigma^2 \cdot T} \cdot (e^{\sigma^2 \cdot T} - 1)$$
(5)

According to the fact that $\frac{dS_t}{S_t}$ has lognormal distribution we can determine value of the quantile of lognormal distribution, which determine future value with usage of inverse function to distribution function of standard normal distribution according to (Zmeškal, 2013) with ρ probability:

$$S_T^{\rho} = S_0 \cdot e^{\alpha \cdot T + \Phi^{-1}(\rho) \cdot \sigma \cdot \sqrt{T}} \tag{6}$$

2. Simulation

For purpose of simulation of random development of share's price it was used the knowledge about the Brownian geometric motion mentioned in 1.1.1 chapter. The process of the simulation was according to (Zmeškal, 2013). Application is on Dow Jones Industrial Average (DJIA) and we compared the results with real share's price process The SPDR® Dow Jones® Industrial Average SM ETF Trust (DIA) in time 26.3.2014 to 26.3. 2015, which is constructed to copy the development of index DJIA.

DJIA is composed by 30 "blue-chip" shares of chosen big American organizations which are freely tradeable. Set up from 1896 and its name has after Charles Dow and Edward Jones, who created it. Description average in the name of the share is because it is weighted mean with weights of share's prices.

Into this index is taken into account shares like Exxon Mobil Corp., Johnson & Johnson, McDonald's Corporation, Procter & Gamble Co., Visa Inc, Coca-Cola Co., General Electric,

Goldman Sachs Group Inc., Wal-mart Stores Inc., also Nike, Apple, Microsoft, Intel, Hewlett-Packard, Boeing or AT&T.

With the Monte Carlo simulation we used 7000 scenarios which gives us the error of forecast 0,117%. Comparing the real data of DIA in timetable 26.3.2014 to 26.3.2015 with average value of the scenarios. From the picture you can see that our predicted development of the index undervalues the real values, which indicates positive development of the bluechips companies' economy. We can also see two major drop downs in real DIA's price and that in step 88 and 141, which is correspond to the dates 30. 7. 2014 and 11.10.2014. These two drop downs we can describe with the situation on American market and its reaction to the situation in the world, which made the volatility of the DJIA.

In the end of July was series of reactions to the message about the awaited increase of the interest rate should come earlier than expected. In media there was a message that growth of American economy is more than 4% during the second quarter 2014. Also the uncertainty in the market was higher because of apprehension of the Russia's reaction to the fines against.

Figure 1

Comparison scenarios vs real DIA AVG Real

Comparision of the prices of the forecasted scenarios and real prices of DIA

Source: Excel, own work usage of equation (3)

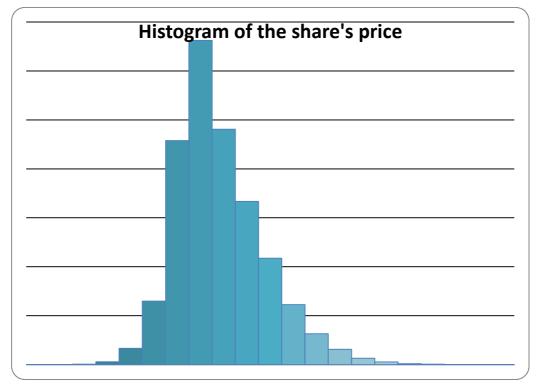
In the half of the October was second big series of apprehensions about global economy growth and uncertainty on the market was fulfilled by Europe's apprehensions about Greece insolvency, there was big thread of Ebola's epidemic in Africa, armed conflicts in the Middle East and Ukraine and also dropping the petroleum's prices.

According to the histogram of the share's prices, we can assume that share's prices are alike lognormal distribution, what confirms also coefficient of skewness equal to 0,8235. That shows up to be positive skewed, what we can confirm also by position of the modus, median and average.

Modus < Median < Average

 $168,\!04<\!\!170,\!307<172,\!78$

Figure 2



Histogram of the estimated share's prices forecasted by simulations

Let verify the hypothesis about lognormal distribution with Pearson chí-quadrat test, with usage of equations (5) and (6)

H0: Data follow Lognormal distribution (172,78; 13,572)

H1: Data do not follow Lognormal distribution (172,78; 13,572)

Parameters are forecasted by maximum likehood method according to (Pacáková, 2004)

Comparing the value of $\chi^2 = 186990,0572$ with $\chi^2_{0,95,,2561996} = 200000$, so it takes place $\chi^2 < \chi^2_{0,95,,2561996}$ and H0 hypothesis we assume is right.

We can ask the question what would be the probability, that we can earn money on DIA share which we bought by \$163,2306 and we would decide after the year if we want to sell it. We can see those facts in Table 1. We have to say that DIA is a share with a really good potential to earn some money (according to growth and economy of the companies involved).

The probability that we lose more \$20 is 0,27%. Also we can see that we can lose or earn anything with the probability 24,518%. Probability of the earnings on the investment more than \$22 is 17,837 %, and more than \$50 is only 0,865%.

From this we can confirm the saying about the markets, that if the economy grows, bought shares are for buyer profitable. Therefore probability that buyer earns something on the DIA share during the year is 75,482 %.

Source: Excel, own work usage of equation (3)

Table 1

Empiric distribution funktion and probability of investor's earnings.

Intervals	Empiric	Probability
of the	distribution	earns more
price	function	than (interval)
120	0,000%	100,000%
127	0,004%	99,996%
135	0,042%	99,958%
142	0,270%	99,730%
149	1,574%	98,426%
156	6,648%	93,352%
163	24,518%	75,482%
170	50,372%	49,628%
178	69,143%	30,857%
185	82,163%	17,837%
192	90,647%	9,353%
199	95,437%	4,563%
206	97,905%	2,095%
213	99,135%	0,865%
221	99,648%	0,352%
228	99,871%	0,129%
235	99,946%	0,054%
242	99,984%	0,016%
249	99,994%	0,006%
256	99,998%	0,002%
264	100,000%	0,000%

Source: Excel, own work, usage of equation (3)

3. Conclusions

Random share price development was based on geometric Brownian motion with the application of the theoretic apparatus on the model and comparison with DJIA respectively DIA in timetable 26.3.2014 to 26.3. 2015.

With 7000 scenarios we kept the error of the model on 0,117%. We indicated lognormal distribution in results which confirms the theory used to create the model. Histogram also showed that it is positive skewed, confirmed with skewness coefficient and also by the place of the mean, modus and median.

Based on the histogram of the share prices we can assume that the probability earning anything during the timetable is estimated on 75,482%, what confirms the motivation to invest finance into the shares because of appreciation of the investment.

According to the results of the problem we can assume that the usage of the stochastic methods is effective and advantageous.

References

POLLOCK, D. (2007). *Itoo Lemma*. [online]. Available at the URL: http://www.le.ac.uk/users/dsgp1/COURSES/DERIVATE/ITOLEMMA.PDF>. [accessed 30.2.2015].

YANG, Z. (2013). *Geometric Brownian Motion Model in Financial Market*. [online]. Available at the URL: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.449.7204&rep=rep1&type=pdf>. [accessed 27.3.2015].

ZMEŠKAL, Z. – DLUHOŠOVÁ, D. – TICHÝ, T. (2013). *Finanční modely*. Praha: Ekopress, s.r.o., 2013. ISBN 978-80-86929-91-0.

PACÁKOVÁ, V. (2004). *Aplikovaná poistná štatistika*. Bratislava: Iura Edition, 2004. ISBN 80-8078-004-8.

The Life Cycle of a Start-up

Ráchel Matušková

University of Economics in Bratislava Faculty of Business Management Dolnozemská 1 Bratislava, 852 35 Slovak Republic E-mail: rachel.matuskova@gmail.com

Abstract

Start-ups are not the same as small businesses. Start-ups have different needs and different opportunities. They are driven by rules different from small businesses. Academics and practitioners have already described phases for business development. Small businesses usually come through known phases. On the other hand, development of start-ups is still under investigation. For now, we can say, there are differences between life cycle of a small business and a start-up.

Keywords: startup, lifecycle, company, stage JEL classification: M13, D91

1. Introduction

The issue of life cycle appears in several scientific fields. At first look, we can say that business has nothing common with life cycle. The opposite is true. Many authors compares life cycle of business to life cycle of human or plants. Gardner (Gardner, 1965) wrote: "Like people and plant, organizations have life cycle. They have green and supple youth, a time of flourishing strength, and a gnarled age. "But organizations differ from people and plant in that their life cycle isn't even approximately predictable. An organization may ho from youth to the old age in two or three decades, or it may last for centuries."

"In 1950 Kenneth Boulding first suggested the concept of organizational life cycles. Since that time, discussion of the organizational life cycle have taken place within many disciplines, including management, public administration, education, sociology, psychology and marketing." (Ionescu, at all, 2007)

In past few years are one of the hottest topics in business world, startups. Startups are not the same as businesses as we know them. Startups have different needs, they work in different way. Steve Blank (Blank, 2012), one of the most known startup author says that "startup is not a smaller version of a large company. Startup is a temporary organization in search of scalable, repeatable, profitable business model. "

In these terms it is only understable, that there are differences between life cycle of classic organization and startup. There is a lot of authors working with several business life cycle models. Even issue if classic business life cycle, the are some differences among authors. The authors view the issue differently and bring different models of life cycle.

2. Life cycle models of organizations

Authors Perenyi, Selvarajah and Muthaly (Investigating the Applicabality of the Firm Life-cycle Model to the SMEs in the Hungarian ICT Sector, 2011) identified three distinguishable phases in development of firm life cycle models. "The first wave of concept development ranged from the 1950s to the 1970s (Adizes 1979; Greiner 1972; Kimberly 1979; Lippitt & Schmidt 1967; Lyden 1975; Mueller 1972; Penrose 1952; Steinmetz 1969).

The second wave of re-conceptualization based on empirical research took place in the 1980s and 1990s (Churchill & Lewis 1983; Hanks et al. 1993; Kazanjian & Drazin 1989; Miller & Friesen 1984; Quinn & Cameron 1983; Scott & Bruce 1987; Smith, Mitchell & Summer 1985). This focus shifted, and a range of empirical induced studies discussed the specification of the firm life-cycle theory to SMEs. This stage of the theory development is closed by Hanks et al. (1993). A new wave of life-cycle theory development started around the millennium, when the emergence of the information and communications technologies (ICT) highlighted the relevance of the organic development of SMEs (Müller 1999). With the sophistication and developments within qualitative methodologies, greater emphasis and deeper understanding of the life-cycle phenomenon was made possible (Massey et al. 2006). This expansion of the research methodology utilizing both quantitative and qualitative methodologies have enriched studies of the life-cycle phenomenon."

2.1 Simple model of business life cycle

The most known and most used model of life cycle is very simple and contains three basic phases - Simple model of life cycle (Ionescu, at all, 2007). There is birth, youth and maturity/decline phase in life cycle of business.

Birth. It means beginnings of business. New firm can be started when a single-person craft expands or an aggressive entrepreneur assembles people to help promote a new idea, product or service. The motive in both cases is usually the desire for profits.

Youth. When professional management taken over, unencumbered by a family with a controlling interest, the organization's primary goal often shifts from profit to growth. The new management team wants to demonstrate its competence, and growth is the most obvious way to do so. Growth means status: a manager of a large company is respected – even it the company's return an investment is low. This new concern with growth has served results. First, goals became less specific, less measurable. Second, the organization places increasing emphasis on marketing, hoping for the increased sales that will justify the expansion of plant and acquisition of new, more efficient tools and equipment.

Maturity/Decline. As an organization matures and starts to decline, a desire to survive overshadows the organization's earlier goals: profit and growth. Organization in this phase is large, its technology is complex, has some structures.

Simple model is called by its name right, because is very elementary and do not reflect complexity of life in firm.

2.2 Life cycle model by Adizes

Model made by Adizes (Adizes) is very complex and largely hard to understand. Adizes's model includes 10 phases of life cycle of business and it is very complicated at the first sight. On the second sight, after longer thinking, all of the 10 phases make sense. Combination and sequence of these phases gives detailed view on business development.

Courtship. At this stage, the company is not yet born. It exists as a gleam in the founder's eye. The focus is necessarily on dreams and possibilities. The primary goal of this stage is to build the founder's enthusiasm and commitment to this dream. The higher the risk, the deeper the commitment needed. In case, when new business had no testing of the harsh realities, founders can easily disappear at the sign of firs difficulty. Adizes calls this situation *Affair*.

Infancy. Infancy begins the moment financial risk has been undertaken and the founder quits paying job, signs the loan documents or promises 40% of the company to outside investors. Infant organizations are necessarily action-oriented and opportunity-driving. The focus instantly changes from ideas to action. The time for talking is over; it is time to get to

work and produce results (sales and cash.) In case when company has black numbers in financials, it is not possible to fund negative cash flow any more, founders make bad decisions constantly. All this leads to infant mortality, it is also resulting of prolonged infancy. Founders realize, they have nothing or very little to show as result of their work and it is time to close the business. Adizes called this situation as *Infant Mortality*.

Go-Go. A Go-Go organization is a company that has a successful product or service, rapidly growing sales and strong cash flow. The company is not only surviving, it's flourishing. Key customers are raving about the products and ordering more. Even the investors are starting to get excited. With this success, everyone quickly forgets about the trials and tribulations of Infancy. Continued success quickly transforms this confidence into arrogance, with a capital A. Trap in Go-Go phase are founders. This situation occurs when founder are not capable to run their company any longer. They don't have skills which are needed by developed company, but they are also not capable to admit it. *Funder or Family Trap* also can also occur because the rounder is either unwilling or unable to delegate effectively and decentralize more.

Adolescence. During the Adolescent stage of the organizational lifecycle, the company is reborn. This second birth is an emotional time where the company must find a life apart from that provided by its Founder. This critical transition is much like the rebirth a teenager goes through to establish independence from their parents. The Adolescent company teeters on the brink of both success and disaster. For this stage are common inside conflicts in organizations, sales are dropping and quality is not good enough for customers. Consequence of this phase can be *Divorce*, in meaning of *premature aging* and *unfulfilled entrepreneurs*.

Prime. Prime is the optimal position on the lifecycle, where the organization finally achieves a balance between control and flexibility. Prime is actually not a single point on the lifecycle curve. Instead, it is best represented by a segment of the curve that includes both growing and aging conditions. This is because flexibility and self-control are incompatible and there is no stable equilibrium. Sometimes the Prime organization is more flexible than controllable, and sometimes it's not flexible enough.

The Fall. The Fall is positioned at the top of the lifecycle curve, but it is not the place to be. That position is Prime, where organizational vitality is at its maximum. Companies that are in the Fall phase have started to lose their vitality and are aging. When an organization first begins to age, the symptoms won't show up on its financial reports. In fact, the opposite is true. Companies in the Fall stage are often cash rich and have strong financial statements.

Aristocracy. The effects of the steady decline in flexibility, which began in Prime, start to become more obvious in Aristocracy. Because it has neglected to pursue long-term opportunities, the company's focus becomes increasingly short-term. For the most part, its goals are financially-oriented and low-risk. With less of a long-term view, the climate in an Aristocratic organization is relatively stable.

Recrimination. When an Aristocracy is unable to reverse its downward spiral and the artificial repairs finally stop working, management's mutual admiration society abruptly ends. The good-old-buddy days of the Aristocracy are gone, and the witch-hunts of Recrimination begin. Companies in this stage focus on who caused the problems, rather than on what to do about them. Recrimination is also called *Early Bureaucracy* (Adizes, 1996). It is phase, when situation in company looks like witch hunt. The main goal is to find every person fault, instead of finding the reason of problems. Cost reducing is more important than increasing incomes. Founders separate them from managers and colleagues.

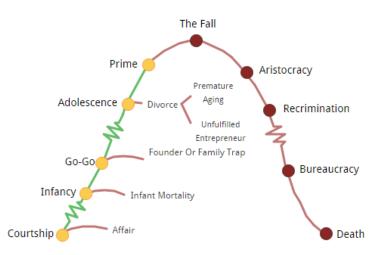
Bureaucracy. Although it should be dead, the company in Bureaucracy is kept alive by artificial life support. The company was born the first time in Infancy, it was reborn in Adolescence, and its third "birth" is in Bureaucracy when it gets an artificial continuance on its life. Death occurs when no one remains committed to keeping the organization

alive. "Although it should be dead, the company in Bureaucracy is kept alive by artificial life support. In the Bureaucratic stage, a company is largely incapable of generating sufficient resources to sustain itself." (The Organization's Change through it's Lifecycle, 2007)

Death. Death occurs when no one remains committed to sustaining the organization. Monopolies and government agencies that are quarantined from competitive pressure and provide a large employment base, often live long and very expensive artificially prolonged lives.

Picture 1

Adize's Corporate Lifecycle



Source: http://www.adizes.com/lifecycle/

The first three stages by in corporate life cycle make up the growing stages. Company comes from idea in founder head, through creation and birth to third stage, when idea is verified by the customers of entrenched on the market. After growing stage is done, company enters stage, which Adizes calls Go-Go and Adolescence. Company is reborn in stage Prime a goes through some growing pains. Last five stage Adizes calls as Aging phases or Aging organization. Flexibility from Growing phases is replaced by bureaucracy and systems. (Tokarczyk, a iní, 2008)

2.3 Seven stage life cycle model by Janssen

Seven stage life cycle model contains, as its name shows, seven stages. This model is detailed and shows every phase in development in business. In every phase manager should apply different methods and has different problems to solve.

This model is interesting for this paper, mostly for the phases seed and start-up. It is not so usual to put these phases into life cycle models. Commonly life cycle model of organization starts with phase of birth or phase when business really starts work.

There are seven stages in this model (Janssen) (AddisonandCo):

Seed stage. In this stage exists only idea. Business is not really working. This is the very conception or birth of a new business. At this stage main focus goes to matching the business opportunity with your skills, experience and passions, deciding on a business ownership structure, finding professional advisors, and business planning. Business has no proven market or customers and has no income except for owner's money.

Start-up stage. In this phase business has legal existence. Products or services are ready for sale and business has some real customers. The most important goal in this stage is to

establish customer base and convert them to positive cash flow. In this phase is flow of Money from owners, customers and banks.

Growth stage. Business generates some incomes and customer base is growing. Profits are strong, but competition is surfacing. With new problems and issues, become need for management and possible new business plan. Running business is more formal, and there is need from new employees. Business is profitable.

Established stage. Business has matured into thriving company and has places in market and loyal customers. Sales growth is not explosive but manageable. Business life has become more routine. Focus in this stage is on improvement of productivity.

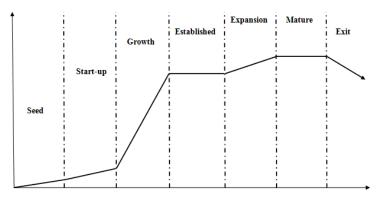
Expansion stage. This life cycle is characterized by a new period of growth into new markets and distribution channels. This stage is often the choice of the business owner to gain a larger market share and find new revenue and profit channels. Moving into new markets requires the planning and research of a seed or start-up stage business. Add new products or services to existing markets or expand existing business into new markets and customer types.

Mature stage. Year over year sales and profits tend to be stable, however competition remains fierce. Eventually sales start to fall off and a decision is needed whether to expand or exit the company. Businesses in the mature stage of the life cycle will be challenged with dropping sales, profits, and negative cash flow. The biggest issue is how long the business can support a negative cash flow. Search for new opportunities and business ventures. Cutting costs and finding ways to sustain cash flow are vital for the mature stage.

Exit stage. This is the big opportunity for business to cash out on all the effort and years of hard work. Or it can mean shutting down the business. Selling a business requires your realistic valuation. It may have been years of hard work to build the company, but what is its real value in the current market place.

Picture 2

Seven stages life cycle by Janssen



Source: http://www.justintimemanagement.com/en/The-7-stages-of-business-life-cycle

3 Life cycle of startup

Steve Blank (Blank, 2012) said that startup is not smaller version of large company. Startup usually enters market with some innovation. That means new product or service that was not proven by market and customers yet. Startup brings innovation to other parts of business, which must be tested first. This aspect of startups brings some differences to life cycle of business. It is obvious, that some new phases or stages need to be added into life cycle. In issue of startups still exist several incompatibilities among authors. Different authors have different opinions on startups and issues connected with them.

3.1 Startup life cycle by Max Marmer

Max Marmer (Marmer, 2012) and his colleagues worked on startup research and in report they said that for startup is crucial to know in which phase are currently in. Because it could help them to define needs of startups and they can consider development of startup. Development of startup has six stages and each stage is made up by some sub-stages. These stages are called Marmer Stages. Firs four stages are based on Steve Blank's Four Steps to epiphany. But Marmer Stages are product centric, rather than company centric.

Discovery. Startups are focused on validating whether they are solving a meaningful problem and whether anybody would hypothetically be interested in their solution. Founding team is formed, many customer interviews are conducted, value proposition is found, minimally viable products are created, team joins an accelerator or incubator, Friends and Family financing round, first mentors and advisors come on board. This stage lasts 5 to 7 months.

Validation. Startups are looking to get early validation that people are interested in their product through the exchange of money or attention. Startup has in this phase some first paying customers, product market fit, eventually goes through some pivots. Startup has seed funding and starts to use new analytics and metrics. This phase lasts 3 to 5 months.

Efficiency. Startups refine their business model and improve the efficiency of their customer acquisition process. Startups should be able to efficiently acquire customers in order to avoid scaling with a leaky bucket. Startup refines value proposition in this phase, achieve viral growth, has repeatable sales process and possible scalable customers. Phase last 5 to 6 months.

Scale. Startups step on the gas pedal and try to drive growth very aggressively. Typical for this stage is massive customer acquisition, back-end scalability improvements, first executive hires, process implementation, establishment of departments. Scale stage stands from 7 to 9 months.

Last two phases Profit Maximization and Renewal or Decline are not included in report.

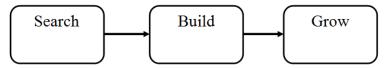
Marmer in his report said that startups that don't move through the stages consistently, show less progress. Last two phases, Profit Maximalization and Renewal or decline, are not in report probably because in these phases startups in big company.

3.2 Life cycle by Steve Blank

Life cycle of startup by Steve Blank (Blank, 2015) is based on fact that many startups has new product/service for the market. He links product/service development with life cycle of business. Three basic stags of startup development are Search, Build, and Grow.

Picture 3

Life cycle of startup by Steve Blank



Source: http://steveblank.com/2015/02/12/what-do-i-do-now/

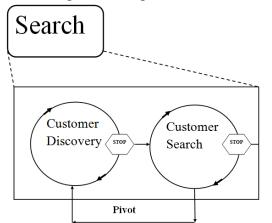
Blank (Blank, 2015) said that startup goes through some stages before it become a large company. In this visualization of startup lifecycle Blank connects his methodology of Customer Development with three basic stages of startup development. Blank wrote that Customer Development model embraces the way startups actually work, with moving backward playing a natural and valuable role in learning and discovery. Startups will cycle through each step of the Customer Development process until the achieve "escape velocity" -

enough measurable progress in finding the business model as defined by board and team - to propel forward to the next step.

Search. In this phase startup looks for repeatable and scalable business model. Startup takes multiple iteration and pivots to find match between what it is building and who will buy it, they call it product/market fit. In this stage is also important to focus on customers. Size of the company in phase of Search is typically less than 40 people and may be funded with a seed round and/or Series A. I it is known fact based on experiences that most startups died in this phase.

Picture 4

Search stage following the Customer Development



Source: http://steveblank.com/2015/02/12/what-do-i-do-now/

Customer Discovery first captures the founder's vision and turns it into series of business model hypotheses. Then developers test a customer reaction to those hypotheses and turn them into facts.

Customer validation tests whether the resulting business model is repeatable and scalable. If not, the cycle turns back into Customer Discovery.

Pivots may happen in the customer discovery phase. A pivot is a major change to one of the nine business model hypotheses based on learning from customer feedback. Pivot happen often in the Customer Development process. A pivot is not a failure. (Blank, 2012)

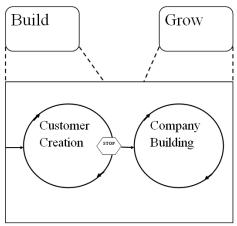
Build. In this phase startups tries to scale by growing customers/users and wants to achieve positive cash flow and/or generate users at a rate that can be monetize. With this growth causality is replaced by working culture, otherwise more that 40 people become chaotic and less effective. New department need to be put into structures of company. This phase begins with around 40 employees and will last at least 175 and even in some cases up to 700 employees. Startups with previous venture capital, will have a Series C or D or later rounds during this phase.

Grow. In this phase the company has achieved liquidity (an IPO, or has been bought or merged into a larger company event) and is growing by repeatable processes. The full suite of Key Performance Indicators (KPI's) processes and procedures are in place. In this phase startup has scalable business model. Blank wrote that startups go from Search to Build to Scale. (Blank, 2012) We can say that in this phase startup has grown into regular company.

Blank did not explicit connect this last two startupe life cycle with Customer Development, but we can say that phases Build and Grow contain part Execute from Customer Development model.

Picture 5

Build and Grow stage following the Customer Development



Source: author

Customer creation is the start of execution. It builds end-user demand and drives it into the sales channel to scale the business. Customer creation varies by startup type. Some startups enter existing markets well-defined by the competitors, others create new markets where no product or company exists.

Company Building transitions the organizations from startup to a company focused on executing a validated model. This phase begin when startup finds scalable, repeatable business model. We can say that startup is a company (Blank, 2012).

4. Conclusion

Issue of startups is quite new and one sign of startup ecosystem is looseness and unpredictability. That is the reason to lack of literature and most of the resources are just some experiences of founders. Mission to find one life cycle of startup, which would be valid for all types of startups, is impossible. Authors work with their own methods of research and they work with various types of startups. Diversity of startups types is also the reason for confusions in terminology and various life cycles. Life cycle of startups is often based on product development, since startups work with new products or with innovations. The other approach can be life cycle based on financing cycle of startup. This issue is not clear yet.

Differences in development stages of startups exist otherwise they are not significant. Usually phases from various authors have the same contain, they have only different name. Differences are also made by finance. It is only understable that if startup have more money, founder can go through phases faster, as they are not limited and slowing down by lack of money. Also, complexity and type of product is important fact. Development of mobile applications is faster and easier that development of some high tech product.

Some life cycle models are basic and some are more detailed. What is most important in development of startups is speed which runs the development stages. Duration of stages is rated for months, not for years as it is typical for companies. We can say that startups are one of life cycle company. But it is hard stage of development, because it is known fact that most startups die before they become company. Few years ago startup phase did not appear in lifecycle models, as in Adizes's model or Simple model. But in recent year it is more common to add startup stage of development into life cycle model of company, as Janssen. Startup authors are focusing on life cycle especially for startups.

One interesting thing in startup life cycle, in contrary to classic life cycle, is that startups do not go smooth from one phase to other. Startups work in one phase until they do not have

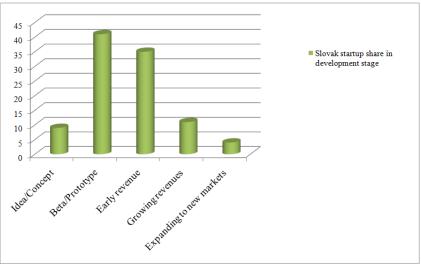
great results. They validate their assumptions with customers many times and they are trying to do it with minimum of money. In my opinion this is the biggest difference in development of startups and classic companies.

Based on literature, we can say that knowledge about life cycle of startups will be worked out in the future and we can expect a lot of new important informations.

KPMG (KPMG-The Startup Studio, 2014) for the second time created survey about Slovak startups and startup ecosystem, in year 2014. In one part they examinated stages of development of Slovak startups. In this survey they work with 5 phases: Idea/Concept, Beta/Prototype, Early revenue, Growing revenues, Expanding to new markets.

Figure 1

Percentage share of Slovak startups in life cycle stages



Source: author based on KPMG-The Startup Studio, 2014

Based on KPMG Startup Survey we can say that in year 2014 41% of Slovak startups were in *Beta/prototype phase*, 35% were already *generating early revenue*, meanwhile what 11% had *Growing revenues*. 9% of startups had only *idea/concept*. An only 4% of startups were in phase where they *expanded into new markets*.

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References

AddisonandCo. (2006). *The seven stage of business life*. Addisonandco. [online]. Available at the URL: ">http://www.addisonandco.co.uk/the-7-stages-of-business/#5>. [accessed 6. January 2016.]

ADIZES, I. (2016). *Adizes Corporate Lifecycle*. Adizes - web location. [online]. Available at the URL: http://www.adizes.com/lifecycle/. [accessed 25. January 2016.]

ADIZES, I. (1996). *The 10 Stages of Corporate Lifecycle*. Inc.com - web locality. [Online] 1. October, 1996. Available at the URL: http://www.inc.com/magazine/19961001/1847.html. [accessed 5. January 2016.]

BLANK, S. (2015). *What Do I Do NOw? The Startup Lifecycle*. steveblank.com. [Online] 12. February 2015. Available at the URL: http://steveblank.com/2015/02/12/what-do-i-do-now/. [accessed 04. February 2016.]

BLANK, S. (2012). *The Startup Owners Manual*. Pescadero : KS Ranch, Inc., 2012. 571 p. ISBN 978-0-9849993-0-9.

GARDNER, J. W. (1965). *How to prevent organizational dry Rot*. Rice Thresher. 14. October 1965, Vol. 53, 5, pp 2. Available at the URL: https://scholarship.rice.edu/handle/1911/45418>.

PERÉNYI, Á. – SELVARAJAH, Ch. – Muthaly, S. (2011). *Investigating the Applicabality of the Firm Life-cycle Model to the SMEs in the Hungarian ICT Sector*. Stockholm, 2011. Swedish Agency for Economic and Regional Growth. pp. 1-20. Available at the URL: http://hdl.handle.net/1959.3/226508.

IONESCU, Gh. – NEGRUSA, A. L. (2007). The Study about Organizational Life Cycle Models. *Review of interternational Comparative Managment*. 2007, Vol. 8, 4, pp. 5-17. Available at the URL: http://www.rmci.ase.ro/Login/no8vol4/Vol8_No4_Article1.pdf>.

JANSSEN, T. (2016). *The 7 stages of business life cycle*. Just in time management. [online]. [Available at the URL: http://www.justintimemanagement.com/en/The-7-stages-of-business-life-cycle. [accessed5. January 2016.]

KPMG-The Startup Studio. (2014). Startup Survey Slovakia 2014. *KPMG-Studio*. [Online]. Available at the URL: http://www.kpmg-studio.sk/publications/KPMG_Startup_Survey_2014.pdf>. [accessed 08. January 2016.]

MARMER, M. et al. (2012). *Startup Genome Report. A new framework fro understading why startups suceed.* Startup Genome. [online]. Available at the URL: https://s3.amazonaws.com/startupcompass-public/StartupGenomeReport1_Why_Startups_Succeed_v2.pdf.

NAZZARI, I. – FOROUGHI, H. (2007). *The Organization's Change through it's Lifecycle*. 2007. System Dynamics Society conference. pp. 1-24. Available at the URL: http://www.systemdynamics.org/conferences/2007/proceed/papers/NAZZA263.pdf>.

TOKARCZYK, T. – APPELMAN, J. (2008). Corporate Lifecycle: Leading Organization to Perpetual Life. *FMI Quarterly*. 2008, 4, pp. 52-62. Available at the URL: http://www.fminet.com/media/pdf/quarterly/2008_4_lifecycle.pdf>.

A Critical Note on Bankruptcy Prediction Models Usefulness

Matúš Mihalovič

University of Economics in Bratislava Faculty of Business Economics with seat in Košice, Department of Economics Tajovského 13 Košice, 041 30 Slovak Republic E-mail: matus.mihalovic@euke.sk

Abstract

The research in the field of bankruptcy prediction is also moving through the unstable period due to ongoing global financial crisis. The incidence of the financial crisis gives rise to questions about usefulness of bankruptcy prediction models for their users. The extant literature lacks some critical viewpoint on this issue. To close these research gaps, our objective is to contribute to discussion concerning sample design, financial ratios and external factors that significantly affect bankruptcy prediction models.

Keywords: usefulness, bankruptcy prediction, applications, financial distress, sample design *JEL classification*: G32, G33, G34

1. Introduction

Admittedly, the term "crisis" is the most common used term not only among practitioners. The wide-world financial and economic downturn has become an element increasing interests of the academics. The effects arising from such a downturn yield significant constraints for all of the economic subjects. From the perspective of individuals, they cannot afford buying the same goods as before; some of them lose their jobs and thus lose their savings. Additionally, the consequences of adverse economic development also experience government bodies. These relates increased social costs that Smrčka et al. (2012) see as increasing unemployment, losing qualification of the former employees, additional costs of the social security.

Taking these elements into consideration, corporations are those that are concerned by crisis in the most significant way. Financial distress leading to bankruptcy represents absolute threat for numerous firms. Following Shuai and Li (2005), corporate bankruptcy could bring extensive economic losses to stakeholders, as investors, suppliers, financial institutions, together with a substantial social and economical cost to a nation. While bankruptcy of a single firm is still not very harmful for economic environment and do not have systemic implications, if several firms related to each other experience financial distress of one firm give rise a distress of another one, Balcaen and Ooghe (2006) call contagion effect. Correspondingly, Bun and Redwood (2003) use the term knock-on effect.

Corporations can not to stay passive to external and internal factors affecting their activities. Therefore, they have to take some actions to precede potential threats. A default economic theory suggests that preventive actions are markedly more effective than corrective actions. Obviously, an insight of this theory has led to a development of prediction models capable to predict impeding financial difficulties in advance.

It was previously shown that financial crisis hit nearly all economic subjects. Just to convince ourselves that it is not the only one insight for this issue, it is worthwhile to give some positive mind. In many respects, financial crisis has been useful for economic theory

development. This consideration establishes a field of research focused on comparing the validity of economic models given the period prior and during the crisis. In this sense, numbers of models have had to be evaluated, calibrated and upgraded. Likewise, bankruptcy prediction models experience these changes. Many models proven to be accurate in the period prior to the crisis indicate poorer results at present as indicated by the Bauer and Agarwal (2014); Jackson and Wood (2013); Laitinen and Suvas (2013) and many others.

Nevertheless, there have been recorded boosted attempts to develop new models, in the field of bankruptcy prediction, it is not so apparent. Since recently recession discloses some deficiencies of bankruptcy prediction models, question that need to be addresses is to examine causes and reasons of relative international applicability of such models.

2. Literature review

The origin of the study on financial distress and bankruptcy prediction went back to the early thirties of the last century. But it was not precisely bankruptcy prediction, since there were using just tools to analyze financial ratios on the univariate baseline. Substantial reinvention in the area of bankruptcy prediction is delivered by Altman (1968) who construct a bankruptcy prediction model called Z score. This model employs multiple discriminant analysis to describe in what way the model is able to predict impeding bankruptcy by pooling some independent variables. The main objective of Altman's model is to get a linear combination of financial ratios maximizing deviations among the firm's groups. In this period, there were strengthening ideas about violation of assumptions required by the discriminant analysis. Precisely, it was the major reason to develop models not required restrictive assumptions, including logit and probit method. The particular methods are applied in several studies, e.g. Ohlson (1980); Zmijewski (1984); Neophytou et al. (2001).

Even though aforementioned methods and models can provide valuable and appropriate information about corporate financial situation, nowadays it is more common to use models applying artificial intelligence. In this regard, it is worth mentioning study by Kumar and Ravi (2007) reviewing bankruptcy prediction models that use programming and artificial intelligence to predict impeding failure of firms. In this context, the pioneering method applying artificial intelligence has become neural networks. This method has distinct variations. The most employed including the multi-layer perceptron. As another neural network variation should be noted Cascor, probabilistic neural networks, self-organizing maps (SOM) or learning vectors. The literature on prediction models with neural networks is reviewed in Odom and Sharda (1990); du Jardin (2010); Cho et al. (2010); Li et al. (2010).

The compelling tendency in related research is moving from statistical methods toward prevalence of complex hybrid programming techniques, expert and intelligent systems. It is worth to mention that a diverse set of methods such as case-based reasoning (Li and Sun 2011); support vector machines (Trustrorff et al. (2010); genetic algorithm (Daralos et al. 2010); fuzzy set theory (Zarei et al. 2011); integer programming (Xu and Papageorgiou 2009).

There seems to be bankruptcy prediction research is dynamic evolved discipline. We agree with this fact. However, it have to be stressed there is lack of research on limitations, constraints, drawbacks, problems or ambiguities associated with the bankruptcy prediction models utilization. Thus, it is of importance to contribute to extant literature in this sense and open the discussion on this topic. This paper aims to make some ground for opened discussion and find also contradictory view on examined issue.

3. Some criticism of prediction models

This section is dedicated to ensure some critical points on bankruptcy prediction models that make it more difficult to properly interpret their results. Our points will be divided into particular categories characterized by similar properties. These includes categories (i) focused vs. unfocused models; (ii) deficiencies in sample and variables; (iii) external factors; (iv) otherwise unclassified factors.

In the study by Agarwal and Taffler (2008), bankruptcy prediction models are classified as accounting or market-based models. According to this study, accounting-ratio based models are typically built by searching through a large number of accounting ratios with the ratio weightings estimated on a sample of failed and non-failed firms. In addition to accounting models, there are market-based models using the Black and Scholes (1973) and Merton (1974) approach.

The largest amount of studies uses statistical models. Regarding this approach, it is required to highlight some distortions involved in these types of models. It encompasses following: (i) accounting statements provide past information and may not be extrapolated in the future; (ii) it is generally used historical cost accounting leading to difference between true asset values and book values; (iii) accounting statements are commonly submitted by accounting malpractices known as creative accounting. Furthermore, prediction models apply different accounting conventions and principles, implying that financial variables and ratios in different models across countries yield significant numerical values.

The following issue based on accounting matters concerns accounting distortions. This problem is properly addressed in Tilden and Janes (2012). They have found that during the recession period there is a expanded tendency of financial distressed companies to omit the bad and exaggerate the good items in the accounting data. In this case, companies are motivated by the benefits of concealing failure signs to the stakeholders. Couchan (2014) also demonstrates that nowadays there is a highlighted attempt to manipulate accounting data than previously. They provides some evidence that reported earnings were higher and leverage was lower than economic reality. The identified facts enable us to state that the models includes some weaknesses of not being unaffected to accounting malpractices. For common user of prediction model it is not observable to explore information hidden in accounting statements. Moreover, a different accounting procedure across various countries allows employing legal accounting tricks to reduce reported earnings and other accounting items. The implication is that various accounting conventions discourage international comparability of the models.

One of the features of bankruptcy models is to be sensitive to industry. Sensitivity of models to industry has been examined more times and results of studies by Grice and Dugan (2001); Platt and Platt (1990), Chava and Jarrow (2004) or most recently Calabresi and Osmetti (2013) or Karas and Režňáková (2015). Conclusions of these studies show that a prediction model including industry-adjusted variables yield higher prediction accuracy to a model not included industry-relative ratios. It raises a question whether model involves companies from a wide range of industries has a power to detect financial issues of particular firm. The resulting issue invokes dilemma about the precise selection of firms in sample. For example, oversampling of firms from one industry diminishes the accuracy of classification of firm not so markedly represented in the sample. There are possible some solutions. The first one is the proportionate sampling according to the industry. The second one is to develop bankruptcy model focused on particular industry. However, the former is restricted by bankruptcy occurrence since each of the industry exhibits different level of bankruptcy occurrence. The latter solution is, in turn, limited by the data access.

Another limitation of international comparability of models is its sensitivity to definition of bankruptcy and difference between financial distress and bankruptcy. This problem explores for the first time Gilbert et al. (1990) and the research has simultaneously proceeded to confirm their results. According to hypothesis of cited authors, although corporations experience financial distress are more likely to file bankruptcy than other corporations, most financially distressed corporations do not file a bankruptcy. Bankruptcy is the joint result of financial results and other actions ahead of legal action.

Laitinend and Suvas (2013) pointed that firm goes through several stages prior to the legal bankruptcy. One of these stages is financial distress. If financial distress cannot be resolved, situation is followed by the legal action of bankruptcy. This is consistent with study of McKee and Lensberg (2003) declaring that poor income and liquid assets are indications of bankruptcy. Poston et al. (2011) even impose the term "turnaround phenomenon". They discuss that prediction methodology neglects the possibility that a organization, which exhibits a potential signs of failure, may reverse a negative tendency before bankruptcy. From this point of view, prediction models often employ financial distress as definition of failed firm. Because of turnaround phenomenon, it is therefore inadequate to use such a definition. As an alternative, it seems to be appropriate a legal definition of bankruptcy. Finally, even legal definition is not perfect. The limitation of this definition is speculative incentives. These relates to fraudulent bankruptcies by which companies seeks to get rid out of their debts. A common practice is that, subsequently original executives run other businesses. Considering the sources of corporation financial distress need not be the same as ones that lead to bankruptcy declaration. Therefore, there is no evident reason to assume that a prediction model would be able to discriminate distressed firms that declaring bankruptcy from others. In line with the Pastena and Ruland (1986), we can identify four options faced by corporations in financial distress: (i) bankruptcy; (ii) maintain operation including solvency in the future, restructuring the debt or the sale of assets; (iii) merger; (iv) liquidation.

Nonstationarity and instability of data causes some obstacles in prediction models applications. Grice and Ingram (2001) were the first researchers to come with this hypothesis. As indicated by the study, the accuracy of the models declined significantly when applies to time periods different from those used to develop the models. Moreover, the significance of coefficients of models varies from those reported earlier. This evidence necessitates right caution. One reason is that up to this day there is extensively used Altman model developed in 1968 on the sample of 66 companies. First of all, it is needed to emphasize that economic conditions, dynamics or financial ratios have gone through substantial changes. Model developed in 1968 is not able to predict impeding financial distress of current corporations. It is offered the solution in re-estimating the model's coefficients. Grice and Dugan (2001) points out that the relative importance of the variables may change over time, and, consequently, the coefficients may not be stable even if the variables included in the model are accurate predictors. The major discrepancies with regard to other period are differences in economic environment or changing the values of financial ratios as a implication of financial crisis. Such a discrepancy clearly contradicts the application of Altman and similar models developed in the periods far away from now.

Some results concerning time period in bankruptcy prediction models demonstrates Zhou and Elhag (2007). As reported by these authors, prediction accuracy is seriously degraded when bankruptcy is predicted more than two years in advance. Additionally, Chava and Jarrow (2004) stressed that data on monthly basis can markedly boost accuracy of business failure.

Prediction accuracy would be deteriorated by improper sample and variable selection. In analyzing research sample, it is supposed we encounter to one of the following complication: (i) bias of hold-out sample tests; (ii) search bias (sample specific variables); (iii) oversampling of bankruptcy firms. In this context, bias stands for that the hold out sample accuracy rate is significantly higher than the expected rates in applying the model. The first one deficiency is bias of hold-out sample test that occurs if estimation (training) sample and hold out sample are not considerably different or the hold out sample is formed by the companies from the same limited set of industries as those in the estimation sample. The latter deficiency was highlighted by earlier studies, e.g. Zavgren (1985) or Begley et al. (1996). This fact is also conforming to study by Grice and Ingram (2001) examining Atman' model with the statement that hold out sample accuracy rates of the model is potentially upwardly biased.

Proportionately, the search bias should be issue to be addresses in the process of financial variables selection. The common practice is to develop models based on so-called reduction form. Within this practice, firstly, researcher keeps initial set of variables. Next, by the statistical testing, the initial set of variables is reduced to the most accurate subset. This subset is proved to be sample specific indicating variables able to predict financial distress in one sample need not to be accurate for prediction of other sample. It should be noted here that the vast majority of bankruptcy prediction studies use variables popularity and its frequency in earlier studies as general criterion in variables selection. It is naïve to believe that variables functioning thirty years before could be conformed on the sample consisted of companies operating at present. Last but not least, application of models makes it difficult the phenomenon of oversampling of failed firms. The problem is that the sample formed in this way does not take into account the representativeness of population. While the incidence of bankruptcy in the population rarely achieves 1 %, proportion of bankrupt firms in bankruptcy prediction samples is the same as those of healthy firms. Subsequently, results of oversampling include inaccuracy of Type I and Type II errors.

There is of interest dispute on (no) including financial versus non-financial variables. Chouhan (2014) noted that not only financial variables but also non-financial measures should be incorporated into the bankruptcy model development. They provide that union problems or lawsuits could be the factors resulting in bankruptcy declaration. It is rationale to agree with this statement. Take the example. Suppose, we have a medium-sized company whose financial indicators like earning, revenues or other liquidity or profitability ratios prove to be satisfying. However, within our modeled company there are working disappointed employees. This circumstance will not emerge in the form of financial ratios, but general strike and ceasing the production can lead to bankruptcy. The same concern would be the result of a losing lawsuit. The other example comprises a bank's refusal to extend credit. If a company is not granted by credit, there is a sign of potential financial difficulties of observed company. However, this fact is barely notable since any financial institution does not provide some private data.

Entirely the contrary case is one that company use bankruptcy filing as strategic tool in negotiations with potential creditors or court proceedings, even though the company is not in serious financial difficulties. Therefore, the modeling effort need not capture all cases precipitating legal action of bankruptcy. In other words, a company experiencing minor difficulties asks for judicial protection and, on the other hand, company fighting with serious difficulties does not ask for protection. In either case, it is of daunting task to explore the economic reality of examined companies. Therefore, even though prediction model employs the legal definition of bankruptcy, it is not guaranteed that the sample is representative.

There is other set of non-financial measures able to record impeding financial difficulties of companies. Some wealthy companies are built on their brand equity and customer loyalty which is measurable only with difficulty. It is of importance in the case when wealth of company solely depends on one great supplier or purchaser. One misunderstanding could be source of the companies' downfall. Thus, from this point of view, models do not dispose the hallmark to properly discriminate among the companies with one hundred of suppliers and those with one supplier.

Creating sample is closely related to variables selection represented by financial ratios. Chen and Du (2009) argue that with radical changes taking place in corporate finance and the global economic environment, critical financial ratios can change dynamically. In addition, Chouhan (2014) reports that the research in bankruptcy prediction is moving forward to elimination of using of traditional statistical (accounting) prediction models. These assertions are supported by the research, which result is that theorists and practitioners downgrade the company ratio comparisons as a tool for corporate bankruptcy prediction. As for financial ratios, we have reported some anomalies not reported in bankruptcy studies till now. It is appropriate to refer to variable selection process. A standard procedure captures the variable reducing form of model, as presented previously. In our opinion, it is mistaken approach, since variables alone may be useful in predicting failure and backed by statistical testing, but the set of variables jointly do not have to appear to be a good predictor.

Non-normal distribution may be additional obstacle of some models utilization. Many studies, e. g. Karas and Režňáková (2015); Mc Leay and Omar (2000) or Nikkinen and Sahlstrom (2004) establish the fact that financial ratios are not normally distributed. It makes normality assumption violation in models like multiple discriminant analysis and other statistical methods.

The following issues concerning financial ratios are associated with its misinterpretation and misunderstanding. The first one presents negative working capital in financial ratios in Altman model and other models. The very negative working capital is considered to be an indicator of financial difficulties. We can see negative working capital as a situation in which current liabilities exceed current assets. At first glance, for example, low or even negative working capital undervalues the financial ratios but in some industries there is a convention to consider with low or negative working capital. For instance, a restaurant often gets cash from their customers, but suppliers allow them to payable for the longer period and the inventory (food in this case) turns over rapidly. Therefore, a negative working capital can be a signal of business efficiency. The model tends to recognize such a company as a distressed, but it would be a prosperous company that does not require raise equity capital from the company or bank credit.

When we are discussing to low or negative working capital, it is convenient recalling that negative working capital can also be the result of high inventory turnover. Take the example, Wal-Mart. They operate with high leverage against their suppliers, so their current liabilities exceed current assets. Similarly, high working capital is not ever good sign. It may be demonstrated by high level of inventory or company is lacking invest their cash. Another measure taking into account is net profit before taxes. When executive do not pay themselves benefits or bonuses that is considered to be common practice, net profit can be overstated or understated. This fact negatively influences the level of Altman Z-score, since it does not consider measure Net profit before taxes.

It seems to be there are some irregularities in Retained earnings over Total Assets in Altman model. This ratio presents a proxy for age of company. It holds true theorem that older corporations are tend to have higher level of accumulated earnings. It may not be generally valid because a company may increase Retained earnings over time, even though we do not know the company age. In addition, in the four of the five financial ratios composing Altman Z-score, Total Assets present the denominator. Based on primary linear algebra, it should be said that when Total Assets are decreasing, all other things being equal, Z-score will be increasing. As long as assets are decreasing and there is only little impact on the numerators, it will be positive for financial strength of the business, but it concerns more to managing the business efficiently than a more limited interpretation. The concluding misinterpretation of financial ratio may get on assessment of liquidity. Low values of short-term liquidity need not to be an adverse signal, since current low level of liquidity measure can be reflection of long-term strategy. Short-term computations of Z-score may alter attention from long-term financial position to short-term effects.

The final aspects precluding relative comparability of models have nature of external factors. The most emergent appears to be the inconsistency of bankruptcy law and its differences across many

countries. While in one country companies are allowed to enter restructuring process, in other countries company has to file a bankruptcy. The significant shortage represents not including macroeconomic variables, even though Chieng (2013) pointed out that aggregate factors (such as interest rates, FX rates, inflation) in the macro economy can substantially affect the viability of a company. Notwithstanding the use of accounting information as a primary predictor has a major fault lying in its ability to account for uncontrollable macro elements. The euro area has become particularly prone to volatile stocks and with the ever-deteriorating investor confidence it is a very unpredictable market. Unstable macro variables in the global economy have significant effects on the going concern of euro companies.

4. Conclusions

This paper attempts to give some critical point on imperfections in bankruptcy prediction models. By analyzing these imperfections, we have sorted them into four categories including focused versus unfocused models, sample and variable biases, external factors and another elements. Each of them has the power to significantly impair prediction accuracy of model.

The most serious drawbacks of prediction models regarding bankruptcies could be considered oversight of macroeconomic variables in models. Since, at present any company is not closed system and its running notably depends on external factors, macroeconomic effects are those which conclude about going concern of company.

Evidence suggests that bankruptcy prediction models developed in the period different of those when it is used, is not able predict impeding financial distress in advance. Additionally, we have to admit that global financial crisis caused serious changes in economic environment and many financial models have to be evaluated, calibrated and validated. On the other hand, it is good opportunity for researchers to capture dynamic effects and develop new economic models valid both in the period of economic wealth as well as during the recession. Therefore, we would like to encourage both academicians and practitioners to employ bankruptcy prediction models with caution and to consider properly sample design, time period and external elements.

The future research intends to be some empirical searching of bankruptcy prediction models imperfections comprising industry, time period and accounting effects on bankruptcy prediction accuracy.

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References

AGARWAL, V. – TAFFLER, R. (2008). *Comparing the performance of market-based and accounting-based bankruptcy prediciton models*. In Journal of Banking and Finance, 2008. Vol. 32, no. 8, pp. 1541-1551.

ALTMAN, E. I. – HOTCHKISS, E. (2006). *Financial Distress and Bankruptcy*. New Jersey: John Wiley & Sons, 2006. ISBN 0-471-69189-5.

BALCAEN, S. – OOGHE, H. (2006). 35 years of studies on business failure: An overview of the classic statistical methodologies and their related problems. In British Accounting Review, 2006. Vol. 38, no. 1, pp. 63-93.

BAUER, J. – AGARWAL, V. (2014). Are hazard models superior to traditional bankruptcy prediction approaches? A comprehensive test. In Journal of Banking & Finance. 2014, Vol. 40(2014) pp. 432-442.

BEGLEY, J. – MING, J. – WATTS, S. (1996). Bankruptcy classification errors in the 1980s: An empirical analysis of Altman's and Ohlson's models. In Review of accounting Studies, 1996, 1.4: pp. 267-284.

BUNN, P. – REDWOOD, V. (2003). *Company accounts-based modeling of business failures and the implications for financial stability*. 2003.

CALABRESE, R. – OSMETTI, S. A. (2013). Modeling small and medium enterprise loan defaults as rare events: the generalized extreme value regression model. In Journal of Applied Statistics. 2013, 40.6: pp. 1172-1188.

GILBERT, L. R. – MENON, K. – SCHWARTZ, K. B. (1990). Predicting bankruptcy for firms in financial distress. In Journal of Business Finance & Accounting. 1990, 17.1: pp. 161-171.

GRICE, J. S. – DUGAN, M. T. (2001). The limitations of bankruptcy prediction models: some cautions for the researcher. In Review of Quantitative Finance and Accounting. 2001.vol. 17, pp. 151-166

GRICE, J. S. – INGRAM, R. W. (2001). *Tests of the generalizability of Altman's bankruptcy prediction model*. In *Journal of Business Research*. 2001, vol. 54, no. 1, pp. 53-61.

CHAVA, S. – JARROW, R. A. (2004). *Bankruptcy prediction with industry effects*. In *Review of Finance*. 2004, 8.4: pp. 537-569.

CHEN, W. S. – DU, Y. K. (2009). Using neural networks and data mining techniques for the financial distress prediction model. In Expert systems with applications. 2009, 36.2: pp. 4075-4086.

JACKSON, R. HG. – WOOD, A. (2013). The performance of insolvency prediction and credit risk models in the UK: A comparative study. In The British Accounting Review. 2013, 45.3: pp. 183-202.

JARDIN, P. 2009. Bankruptcy prediction models: How to choose the most relevant variables? In Bankers, Markets & Investors. 2009, no. 98, pp. 39-46

KARAS, M. – REŽŇÁKOVÁ, M. (2015). A parametric or nonparametric approach for creating a new bankruptcy prediction model: The Evidence from the Czech Republic. In International Journal of Mathematical Models and Methods in Applied Sciences. 2014, 8: pp. 214-223.

KUUMAR, P. R. – RAVI, V. (2007). Bankruptcy prediction in banks and firms via statistical and intelligent techniques – A review. In European Journal of Operational Research. 2007, vol. 180, no. 1, pp. 1-28.

LAITINEN, E. K. – SUVAS, A. (2013). International applicability of corporate failure risk models based on financial statement information: comparisons across European countries. In Journal of Finance & Economics. 2013, 1.3: pp. 1-26.

LI, H. et al. (2011). The random subspace binary logit (RSBL) model for bankruptcy prediction. In Knowledge-Based Systems. 2011, 24.8: pp. 1380-1388.

McLEAY, S. – OMAR, A. (2000). The sensitivity of prediction models to the non-normality of bounded and unbounded financial ratios. In British Accounting Review. 2000, Vol. 32, pp. 213–230.

MCKEE, T. E. – LENSBERG, T. (2003). Genetic programming and rough sets: A hybrid approach to bankruptcy classification. In European Journal of Operational Research. 2003, 138.2: pp. 436-451.

NEOPHYTOU, E. – CHARITOU, A. – CHARALAMBOUS, CH. (2001). Predicting corporate failure: empirical evidence for the UK. 2001.

NIKKINEN, J. – SAHLSTROM, P. (2004). Distributional properties and transformation of financial ratios: The impact of the accounting environment. In Advances in International Accounting. 2004, Vol.17, pp. 85-101.

ODOM, M. D. – SHARDA, R. (1990). *A neural network model for bankruptcy prediction*. In: 1990 IJCNN International Joint Conference on neural networks. 1990. pp. 163-168.

OHLSON, J. A. (1980). *Financial Ratios and the Probabilistic Prediction of Bankruptcy*. *Blackwell Publishing*. In *Journal of Accounting Research*. 1980. Vol. 18, no. 2, pp. 109-131.

PLATT, H. D. – PLATT, M. B. (1990). *Development of a class of stable predictive variables: the case of bankruptcy prediction*. In *Journal of Business Finance & Accounting*. 1990, 17.1: pp. 31-51.

POSTON, K. M. – HARMON, W. K. – GRAMLICH, J. D. (2011). A test of Financial Ratios As Predictors of Turnaround Versus Failure Among Financially Distressed Firms. In Journal of Applied Business Research. 2011, Vol. 10, no.1, pp. 41-56.

SHUAI, J. J. – LI, H-L. (2005). Using rough set and worst practice DEA in business failure prediction. In: Rough sets, fuzzy sets, data mining, and granular computing. Springer Berlin Heidelberg, 2005. pp. 503-510.

SMRČKA L. – STROUHAL, J. – SCHONENFELD, J. (2012). *Reasoning Disqualification of Financial Rehabilitation: Current Practices*. In Insolvency Process. In PANIAN, Z. (ed.). Recent Research in Business & Economics. Athens: WSEAS Press, 2012. pp. 89-94.

TILDEN, C. – JANES, T. (2012). Empirical evidence of financial statement manipulation during economic recessions. In Journal of finance and accountancy, 2012, 10: 1.

ZHOU,Y. – ELHAG, T. M. S. (2007). *Apply Logit analysis in Bankruptcy* Prediction. In Proceedings of the 7th WSEAS International Conference on Simulation, Modelling and Optimization, Beijing, China, September 15-17, 2007. pp. 301-308.

Application of the Input-Output Model on the Enterprise Level

Michaela Mináriková

University of Economics in Bratislava Faculty of Economic Informatics, Department of Econometrics and Operation Research Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: michaella.minarikova@gmail.com

Abstract

The aim of paper is application of the Input-Output Model on the enterprise level, which is based on Leontief's Input-Output Model, where real data are used. The main target is analysis of enterprise processes, technologies and application of the Input-Output Model for the internal environment of the enterprise. Results of this are the documentation of work processes, during which inputs are transformed into outputs, where costs, profit, results, and performance of the enterprise are defined. The second target is creation of the Price Input-Output Model on the enterprise level, which explains balance between inputs and outputs based on explanation of shadow prices. By using of the Price Input-Output Model on the enterprise level total costs of marketed production and individual costs of direct and nondirect inputs to production, where there is possibility to compare planned and real costs for marketed production, were analysed.

Keywords: Input-Output Model, Cost of production, Shadow prices *JEL classification*: C 67, D 24

1. Introduction

The Input-Output analysis is primarily concerned with the analysis and synthesis of relations and inter-flow production in the macroeconomic level but last years is recorded the great progress in the microeconomic level, where are analyzed the structural relationships, flows of goods and semi-finishes goods, flows of raw materials and others primary inputs at the enterprise level. This is named as the analysis of the Input-Output Model at the enterprise level, where model offers the analysis of flows inside of enterprise.

For facilitate understanding the Input-Output Model is possible to imagine the model as matrices whose elements are the labor consumption standards and vectors represent production volumes. Every individual vector is broken down by technological advances in production.

In paper is used the Input-Output Model at the enterprise level with feedback flows of production (Goga, 2009). This model consists from four quadrants (Stahmer, 2000). The first quadrant displays the production flows x_{ij} created within the enterprise in the production department (plant, technology process) and individual flows of production are characterized as inputs as well as outputs. In the second quadrant is captured volume of marketed production y. In the third quadrant are described statues of exogenous inputs of different primary sources to a company (raw materials and energies). In the last quadrant are total values of volumes of individual exogenous inputs. Data of the Input-Output Table are expressed in financial units. Exogenous inputs of the Input-Output Table have totals in rows expressed as

$$\sum_{j=1}^{n} s_{kj} = s_k, \text{ pre } k = 1, 2, ..., m; \ s_{kj} \le 0, s_k < 0 \tag{1}$$

and endogenous inputs with distribution character of production have totals in rows expressed as

$$\sum_{i=1}^{n} x_{ii} = y_i, \text{ pre } i = 1, 2, ..., n$$
(2)

The mathematical model, which expresses balance sheet relationships between marketed production y, total production x and consumption of exogenous and endogenous inputs is expressed as

$$s_{kj} = a_{kj}^{s} * x_{j}$$
, pre k = 1, 2, ..., m a j = 1, 2, ..., n (3)

$$x_{ij} = a_{ij}^{p} * x_{j}, \text{ pre } i = 1, 2, ..., n a j = 1, 2, ..., n$$
 (4)

where

 a_{ki}^{s} - Consumptions coefficients of exogenous inputs,

 a_{ii}^p – Consumptions coefficients of endogenous inputs.

The summarization of consumptions coefficients creates balance sheet relationship matrix of enterprise, which is marked A as

$$A = \begin{bmatrix} a_{kj}^{p} \\ a_{kj}^{s} \end{bmatrix} = \begin{bmatrix} A^{p} \\ A^{s} \end{bmatrix}$$
(5)

To sum up of above relationships is possible to express the Input-Output Model at enterprise level in matrix-vector form as

where

E – Identity matrix.

By using of the Input-Output Model at enterprise level is possible to calculate the volume of marketed production y and volume of primary inputs s, which are depended on the total produced output x. The Input-Output Model at enterprise level is possible to modify and express as

where

 $(E - A^p)^{-1}$ - Matrix of consumptions coefficients of endogenous inputs produced unit of marketed production y,

 $A^{s} * (E - A^{p})^{-1}$ - Matrix of consumptions coefficients exogenous inputs produced unit of marketed production y.

In case of known quantity of marketed production y is easy to calculate the total production x and volume of necessary primary inputs s.

Above relations summarize the overall manufacturing complexity, while allowing optimal preparation and a breakdown of sales plan for each production department as soon as possible and whether the production plan is consistent with the production possibilities of the enterprise.

1.1 The Price Input-Output Model at the enterprise level

Every Input-Output model can be expressed in natural (Stahmer, 2000) or monetary units, what make a possibility to evaluate whole production of the enterprise. This expression of the Input-Output Model at the enterprise level is highly desirable, especially during planning

costs of business and optimization of production processes. The Price Input-Output Model at the enterprise level is expressed in monetary units, where prices of manufactured products are identified as p_i and prices of primary resources as p_k^t .

The Price Input-Output at the enterprise level has transposed form and this creates a matrix of planned costs in terms of technological dependence, where volumes of consumed inputs of exogenous and endogenous sources remain classified as α_{ij}^p and α_{kj}^s . These consumptions coefficients of exogenous and endogenous inputs are during transformation of model used for calculation of costs.

Understanding of the Price Input-Output Model at the enterprise level is necessary for explanation of the concept of shadow prices, by which are costs determined as equality of the input values to output values. After completion of this assumption leads to compliance with equilibrium conditions of the Input-Output Table (the sum of rows in the Input-Output Table is equal to the sum of columns in the Input-Output Table. This balance between inputs and outputs can be described by relation

$$\sum_{i=1}^{n} a_{ij}^{p} * p_{i} = \sum_{k=1}^{r} a_{kj}^{t} * p_{k}^{s}, \text{ for } j = 1, 2, ..., n, i = 1, 2, ..., n, k = 1, 2, ..., r$$
(8)

what is possible to express in a matrix relation as

$$A^{p^{T}} * p = A^{T} * p^{s}$$
⁽⁹⁾

where

A^p- Matrix with the dimension (n x m),

A^s- Matrix with the dimension (r x m),

 p^{s} - Matrix with the dimension (r x 1),

p - Matrix with the dimension (n x 1),

 $A^{p^{T}}$ - Transposed matrix of consumptions coefficients of endogenous sources,

A^{s^T}- Transposed matrix of consumptions coefficients of exogenous sources.

If the matrix A^p is regular and square matrix with the dimension (m x m), therefore n = m. We can create the Price Input-Output Model at the enterprise level for calculating of shadow prices and these prices are expressed as

$$p_{i} = \sum_{j=1}^{n} a_{ij}^{p*} * \sum_{k=1}^{r} a_{kj}^{s} * p_{k}^{s} \text{ pre } i = 1, 2, ..., n$$
(10)

where

 a_{ij}^{p*} - Amount of product j attributable to the production of one unit of product i, which is marketed y,

 $\sum_{k=1}^{r} a_{kj}^{s} * p_{k}^{s}$ – The total costs of exogenous sources for one product j. Shadow price p_{i} is equal to the sum of the planned costs for all primary inputs that are directly or indirectly involved in the production of one unit of product i which is marketed - y. Again, shadow price is possible to express in matrix formulation as

$$p = A^{p^{T^{-1}}} * A^{s^{T}} * p^{s}$$
(11)

The most important addition of the Price Input-Output model at the enterprise level is following of costs in the enterprise, whose are also expressed in monetary units. By this model is possible to analyze total costs of marketed production y as well as individual components of costs for different direct and indirect inputs into production. We can compare planned and real costs for marketed production y and follow impact of price changes in price levels of primary sources p on the total volume of produced output x.

1.2 Used database of the Price Input-Output Model at the enterprise level

For analysis was used Slovak engineering enterprise with 20 years old history (Techberg, s. r. o. 2016). After primary analysis of the enterprise was developed the Input-Output Model at the enterprise level. The enterprise produces more products (fasteners, brackets, steel sheets, steel strips, pads, various types of components and bearings).

Data were obtained from internal system of the enterprise and are in attachment of this paper. The database consists from annual values of technological processes and costs of production in year 2015 (raw materials, exogenous and endogenous sources, wages, profit, taxes, depreciation of fixed assets and others costs of enterprise). Beside of this were summarizing data about total quantity and price parameters.

The biggest obstacle in the summarization was the diversity of production, when the enterprise produces hundreds of various products with slightly different technological methods and prices. Finally, were products of the enterprise divided in 21 disparate groups and for example for closures, which are produced in 50 individual kinds. From this reason they were divided into the 5 representative groups with the same parameters. For other products was used a similar manner, so complete Input-Output Table is matrix with the dimension 21 x 21. In Annex 1 is described a breakdown of all products, where are shown also quantity of production in the year 2015 with the sale prices.

In the production process, the enterprise consumes exogenous materials (electricity, water, stones, oil, sawdust, rivets, steel sheets and steel strips), but during production are not consumed any blanks. The enterprise buys only raw materials and rivets, which are not produced in the enterprise, because of financial and time-efficiency. All raw materials with the unit price and consumption in the year 2015 are shown in Annex 2.

Furthermore, in Annex 3 and Annex 4 are reported data with wages and salaries of the enterprise and other items relevant for the third quadrant of the Input-Output Table (wages, depreciation, profit, taxes, social fund and other labor costs).

All of the previously mentioned input information's are summarized into the Input-Output Table at the enterprise level, which is featured in Annex 5.

2. Calculation of the Input-Output Model at the enterprise level

The aims of paper are calculation of the Input-Output Model at the enterprise level and calculation of the Price Input-Output Model at the enterprise level for particular company in 2015.

2.1 Calculation of consumptions coefficients of exogenous and endogenous sources

Consumptions coefficients of exogenous and endogenous sources were calculated and matrices of sheet relationships of the enterprise are marked as A^s and A^p . Completely calculated matrices of A^s and A^p are shown in Annex 6.

For a proper understanding of the significance of these matrices we explain the achievements for a first column of the matrices. For production of one fastener of first type (hereinafter referred as Fastener 1) are used $0,0009001 \in$ from value of using laser cutting, $0,0026056 \in$ of bending, $0,0015791 \in$ of pressing, $0,0003158 \in$ of spraying in the paintshop, $0,00221 \in$ of riveting, $0,0012633 \in$ of drilling, $0,007895 \in$ of threading, $0,0011843 \in$ of setting movement, $0,0010932 \in$ of management, $0,0021865 \in$ of administration and economic work, $0,0003644 \in$ of cleaning, $0,0010021 \in$ of logitics and transportation, $0,0036442 \in$ of value-added business owner., $0,0063287 \in$ of depreciation (20 years) , $0,0078522 \in$ of profit,

 $0,00149192 \in$ of taxes, $0,00018047 \in$ of Social Fundand $0,000723 \in$ of other costs. All values reflect the consumption of endogenous resources in \in . Besides the above mentioned technological procedures are used purchased raw materials – exogenous sources of the enterprise, where for production of one Fastener 1 are consumed $0,00071669 \in$ of electricity, $0,0058754 \in$ of steel strips, $0,0004807 \in$ of steel heets, $0,0004807 \in$ of water, $0,0000106 \in$ of stone aggregate and $0,0010128 \in$ of oil. Accepts above values we can consider, that technological process of rehash, sawdust and rivets are not used, their values are zero.

2.2 Calculation of the real Input-Output Model at the enterprise level

Based on previous defined formulas and relationships was calculated the Input-Output Model at the enterprise level for particular company from real data. Results of both Input-Output Models at the enterprise level are shown in below Table 1 and Table 2.

Table 1

Y/S	Description of the process	Values of process					
y1	Laser cutting	500500,00					
y2	Bending	195000,00					
y3	Pressing	1800550,00					
y4	Spraying in the paintshop	0,00					
y5	Riveting	65000,00					
y6	Rehash	400200,00					
y7	Drilling	142000,00					
y8	Threading	350750,00					
y9	Setting movement	250000,00					
y10	Management	3900,00					
y11	Administration and Economics work	3600,00					
y12	Cleaning	7200,00					
y13	Logistic and Transportation	1200,00					
y14	Value-added business owner	3300,00					
y15	Depreciation (20 years)	12000,00					
y16	Depreciation (12 years)	0,00					
y17	Depreciation (4 years)	0,00					
y18	Profit	0,00					
y19	Taxes	295506,00					
y20	Social Fund	73876,50					
y21	Other costs	0,00					
s1	Electricity	66775,70					
s2	Steel strips	547428,64					
s3	Steel sheets	44789,62					
s4	Water	401464,26					
s5	Stone aggregate	995,32					
s6	Oil	12000,00					
s7	Sawdust	0,00					
s8	Rivets	14400,00					

The Input-Output Model at the enterprise level expressed in matrix form $\frac{Y}{S}$

Notes: Values of processes are in €, 2015

Table 2

	X
The Input-Output Model at the enterprise level expressed in matrix form	_
	S

X/S	Description of the process	Values of process
x1	Laser cutting	507988,00
x2	Bending	202488,00
x3	Pressing	1862950,00
x4	Spraying in the paintshop	3494,40
x5	Riveting	77480,00
x6	Rehash	409560,00
x7	Drilling	148240,00
x8	Threading	356990,00
x9	Setting movement	261700,00
x10	Management	14700,00
x11	Administration and Economics work	25200,00
x12	Cleaning	10800,00
x13	Logistic and Transportation	11100,00
x14	Value-added business owner	39300,00
x15	Depreciation (20 years)	87000,00
x16	Depreciation (12 years)	58333,33
x17	Depreciation (4 years)	12857,14
x18	Profit	233745,01
x19	Taxes	339917,55
x20	Social Fund	76015,93
x21	Other costs	8571,43
s1	Electricity	66775,70
s2	Steel strips	547428,64
s3	Steel sheets	44789,62
s4	Water	401464,26
s5	Stone aggregate	995,32
s6	Oil	12000,00
s7	Sawdust	0,00
s8	Rivets	14400,00

Source: own processing, data extracted from particular enterprise Notes: Values of processes are in €, 2015

Interpretation for first column is necessary for right understanding of calculated models. In case of production of laser cutting in value 507 988 \in , enterprise sales to customer this service in value 500 500 \in . The difference between these two values describes the real consumption of finance sources in the enterprise during the production for all the enterprise's products. For laser cutting is the difference in value 7 488 \in , so it means, that laser cutting generates costs in the amount of 7 488 \in .

2.3 Calculation of the Price Input-Output Model at the enterprise level

After calculation of the real Input-Output Model at the enterprise level was calculated the Price Input-Output Model at the enterprise level for the same enterprise. Prices of primary exogenous sources are fixed by market (the enterprise does not influence market affects of market prices for raw materials, which are consumed in the enterprise). These market prices are fixed by market and fully respected by the enterprise. Prices of endogenous sources were calculated according to above methodology and results are reported in the Table 3.

Table 3

The Price Input-Output Model at the enterprise level

Р	Price
P1	24,18
P2	35,87
P3	20,77
P4	62,62
P5	42,55
P6	20,64
P7	94,34
P8	71,63
P9	57,73
P10	846,75
P11	507,34
P12	1418,71
P13	18158,2
P14	558,5
P15	22,04
P16	27,27
P17	775,57
P18	53,24
P19	36,92
P20	37,02
P21	22,01

Source: own processing, data extracted from particular enterprise Notes: Values of prices are in €, 2015

In theory are prices of endogenous sources also referred to the concept of shadow prices and they are marked as p_i . Prices are equal to the sum of the planned costs for all primary inputs involved to production of the unit of product, which is marketed outside of the enterprise. Value p_1 indicates, that the total planned costs for laser cutting is expressed by value 24,18 \in per piece of product i, which is marketed outside of the enterprise.

3. Conclusions and implications

By help of the Input-Output Model is possible to express relationships in macroeconomic and also in microeconomic level. Nowadays is necessary to follow relationships and flows and costs inside of company and so to know, how to manage company in the best way, where we can reach a maximal profit with the smallest costs, so to reach the biggest added value of inputs. Even in the fact, that Input-Output models are used mainly in macroeconomic level, we believe in deeper using at the enterprise level, what was the main target of the paper.

The Input-Output Model at the enterprise level used in the paper expressed marketed production, the total production and cost value of each product. The main contribution of paper is application of real data for calculation of the Input-Output Model at the enterprise level and the Price Input-Output Model at the enterprise level, because there is plenty of researches and authors, who would cover the application of Input-Output Model at the enterprise level. In Slovak republic is problem even bigger and analysis of companies give a great contribution for present and future situation. This is the great tool for comparison and expression of a added value for every company.

Our results can help to improve options of further development of the enterprise, what can reduce production costs.

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References

BOUŠKA, J. – SKOLKA, J. – TLUSTÝ, Z. (1965). *Medziodvětvová analýza*. Praha: Státni nakladatelství technické literatury.

Cenník pre malé podniky za elektrickú energiu. (2016). [online]. Available at the URL: <<u>http://www.zse.sk/documents/7350623/Cennik_male_podniky_EE_01012014.pdf</u>>. [accessed 21.01.2016].

Cena za vodné a stočné. (2016). [online]. Available at the URL: <https://www.zsvs.sk/ informacie/cena-za-vodne-a-stocne/>. [accessed 21.01.2016].

GOGA, M. (2009). Input-output analýza. Prvé vydanie. Bratislava: Iura Edition, 2009.

HUSÁR, J. – MOKRÁŠOVÁ, V. – GOGA, M. (2007). Input-output analýza a systém národných účtov. Bratislava: Vydavateľstvo EKONÓM, 2007.

STAHMER, C. – KUHN, M. – BRAUN, N. (1998). Physical Input-Output Tables for Germany, 1990. [Eurostat Working Paper 2/1998/B/1].

Techberg, spol. s r. o. (2016). *Data and information of enterprise*. [online]. Available at the URL: http://www.techberg.sk/. [accessed 16.01.2016].

ZBRANEK, J. – FISCHER, J. (2014). *Konstrukce a využití časových input-output tabulek pro hodnocení produktivity práce v podmínkách České Republiky*. Praha: Vysoká škola ekonomická v Praze. [online]. Available at the URL: https://www.vse.cz/polek/download.php%3Fjnl%3Dp olek%26pdf%3D981.pdf+&cd=1&hl=sk&ct=clnk&gl=sk>. [accessed 29.01.2016].

Annexes

Annex 1

D 1 (C	.1	
Products	ΟΓ	the	enterprise

Product	Quantity/unit	Price/unit	Sum of units	Sum of price	Quantity of kinds				
Fastener 1	235000	0,5		117500					
Fastener 2	200000	1,00		200000					
Fastener 3	10000	2,00	451450	20000	50 kinds (5 groups with 10 kinds of fasteners)				
Fastener 4	950	10,00		9500	10 kinds of fasteriers)				
Fastener 5	5500	20,00		110000					
Rail	100000	0,35	100000	35000					
Disc 1	1500000	0,30		450000					
Disc 2	1500000	0,50		750000					
Disc 3	500000	0,80	4050500	400000	100 kinds (10 groups with 10 kinds of discs)				
Disc 4	500000	1,00		500000	10 kinds of discs)				
Disc 5	50500	10,00		505000					
Washer 1	15000000	0,00		15000					
Washer 2	200000	1,00	15210500	200000	15 kinds (3 groups with 5 kinds of washers)				
Washer 3	10500	2,00		21000	Kinds of washers)				
Component 1	450000	0,01		4500					
Component 2	700500	0,02		14010					
Component 3	350000	1,00	1577000	350000	100 kinds (10 groups with				
Component 4	55000	5,00	1377000	275000	10 kinds of components)				
Component 5	20000	10,00		200000]				
Component 6	1500	30,00		45000					
Bearing	0	0,00	0	0	No production in 2015				

Source: own processing, data extracted from particular enterprise

Annex 2

Consumed exogenous sources in production process

Source	Quantity of consumption	Price/unit	Summarization
Electricity (kWh)	1200000,00	0,06	67089,36
Steel strips (t)	1000,00	550,00	550000,00
Steel sheets (t)	100,00	450,00	45000,00
Water (m3)	125000,00	3,23	403350,00
Stone aggregate (t)	0,10	10000,00	1000,00
Oil (L)	2000,00	6,00	12000,00
Sawdust (t)	0,20	0,00	0,00
Rivets (pieces)	1440000,00	0,01	14400,00

Annex	3	

Wages	of	emp	lovees
magos	01 0	unp.	10,9005

Technology	Time fund	Number of employees	Monthly wage	Sum of wages	Hour wage
Setting movement	3960,00	2,00	650,00	15600,00	3,94
Laser cutting	2500,00	1,50	520,00	9360,00	3,74
Bending	2500,00	1,50	520,00	9360,00	3,74
Pressing	19800,00	10,00	520,00	62400,00	3,15
Spraying	400,00	1,00	520,00	6240,00	15,60
Riveting	3900,00	2,00	520,00	12480,00	3,20
Rehash	3900,00	2,00	520,00	12480,00	3,20
Drilling	400,00	1,00	520,00	6240,00	15,60
Threading	400,00	1,00	520,00	6240,00	15,60
Managing	2000,00	1,00	1200,00	14400,00	7,20
Economics	11500,00	3,00	800,00	28800,00	2,50
Cleaning	1000,00	1,00	400,00	4800,00	4,80
Logistics	1500,00	2,00	550,00	13200,00	8,80
Owner	2200,00	1,00	4000,00	48000,00	21,82

Source: own processing, data extracted from particular enterprise

Annex 4

Other consumptions in production process

Items	Summarization
Depreciation (20 years)	87000,00
Depreciation (12 years)	58333,33
Depreciation (4 years)	12857,14
Profit	233745,01
Taxes	339917,55
Social Fund	76015,93
Other costs	8571,43

Annex 5

The Input-Output Table of the enterprise

Description of the process	Fastern 1	Fastern 2	Fastern 3	Fastern 4	Fastern 5	Rail	Disc 1	Disc 2	Disc 3	Disc 4	Disc 5	Washer 1	Washer 2	Washer 3	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6	Bearing	Y	X
Laser cutting	457,25	778,29	77,83	36,97	428,06	93,60	161,69	269,48	143,72	179,65	181,45	118,98	1586,44	166,58	14,22	44,28	1106,12	869,10	632,07	142,22	0,00	500500,00	507988,00
Bending	1323,61	2252,95	225,30	107,02	1239,12	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	11,85	36,90	921,77	724,25	526,72	118,51	0,00	195000,00	202488,00
Pressing	802,19	1365,43	136,54	64,86	750,98	1872,00	3233,78	5389,64	2874,47	3593,09	3629,02	991,53	13220,34	1388,14	116,93	364,05	9094,78	7145,90	5197,02	1169,33	0,00	1800550,00	1862950,00
Spraying in the paintshop	16,04	27,31	2,73	1,30	15,02	0,00	53,90	89,83	47,91	59,88	60,48	198,31	2644,07	277,63	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3494,40
Riveting	1123,06	1911,60	191,16	90,80	1051,38	2496,00	107,79	179,65	95,82	119,77	120,97	0,00	0,00	0,00	25,28	78,71	1966,44	1545,06	1123,68	252,83	0,00	65000,00	77480,00
Rehash	0,00	0,00	0,00	0,00	0,00	2496,00	323,38	538,96	287,45	359,31	362,90	0,00	0,00	0,00	25,28	78,71	1966,44	1545,06	1123,68	252,83	0,00	400200,00	409560,00
Drilling	641,75	1092,34	109,23	51,89	600,79	936,00	10,78	17,97	9,58	11,98	12,10	0,00	0,00	0,00	13,91	43,29	1081,54	849,78	618,02	139,06	0,00	142000,00	148240,00
Threading	401,09	682,71	68,27	32,43	375,49	1560,00	215,59	359,31	191,63	239,54	241,93	0,00	0,00	0,00	9,48	29,52	737,41	579,40	421,38	94,81	0,00	350750,00	356990,00
Setting movement	601,64	1024,07	102,41	48,64	563,24	2340,00	404,22	673,70	359,31	449,14	453,63	148,73	1983,05	208,22	11,85	36,90	921,77	724,25	526,72	118,51	0,00	250000,00	261700,00
Management	555,36	945,30	94,53	44,90	519,91	2160,00	373,13	621,88	331,67	414,59	418,73	137,29	1830,51	192,20	10,94	34,06	850,86	668,53	486,21	109,40	0,00	3900,00	14700,00
Econonomics	1110,72	1890,59	189,06	89,80	1039,82	4320,00	746,26	1243,76	663,34	829,17	837,47	274,58	3661,02	384,41	21,88	68,12	1701,73	1337,07	972,41	218,79	0,00	3600,00	25200,00
Cleaning	185,12	315,10	31,51	14,97	173,30	720,00	124,38	207,29	110,56	138,20	139,58	45,76	610,17	64,07	3,65	11,35	283,62	222,84	162,07	36,47	0,00	7200,00	10800,00
Logistic and Trasportation	509,08	866,52	86,65	41,16	476,59	1980,00	342,03	570,06	304,03	380,04	383,84	125,85	1677,97	176,19	10,03	31,22	779,96	612,82	445,69	100,28	0,00	1200,00	11100,00
Value-added business owner	1851,20	3150,98	315,10	149,67	1733,04	7200,00	1243,76	2072,94	1105,57	1381,96	1395,78	457,63	6101,69	640,68	36,47	113,53	2836,21	2228,45	1620,69	364,66	0,00	3300,00	39300,00
Depreciation (20 years)	3213,89	5470,46	547,05	259,85	3008,75	12500,00	2159,31	3598,85	1919,39	2399,23	2423,22	794,49	10593,22	1112,29	63,31	197,10	4923,97	3868,84	2813,70	633,08	12500,00	12000,00	87000,00
Depreciation (12 years)	2499,70	4254,80	425,48	202,10	2340,14	9722,22	1679,46	2799,10	1492,86	1866,07	1884,73	617,94	8239,17	865,11	49,24	153,30	3829,76	3009,10	2188,43	492,40	9722,22	0,00	58333,33
Depreciation (4 years)	550,95	937,79	93,78	44,55	515,79	2142,86	370,17	616,95	329,04	411,30	415,41	136,20	1815,98	190,68	10,85	33,79	844,11	663,23	482,35	108,53	2142,86	0,00	12857,14
Profit	3988,84	6789,52	678,95	322,50	3734,24	2216,29	22460,70	37434,50	19965,07	24956,34	25205,90	15,03	200,34	21,04	434,32	1352,19	33780,73	26542,00	19303,27	4343,24	0,00	0,00	233745,01
Taxes	757,88	1290,01	129,00	61,28	709,50	421,10	4267,53	7112,56	3793,36	4741,70	4789,12	2,85	38,07	4,00	82,52	256,92	6418,34	5042,98	3667,62	825,21	0,00	295506,00	339917,55
Social Fund	91,68	156,05	15,60	7,41	85,83	356,57	61,60	102,66	54,75	68,44	69,12	22,66	302,18	31,73	1,81	5,62	140,46	110,36	80,26	18,06	356,57	73876,50	76015,93
Other costs	367,30	625,20	62,52	29,70	343,86	1428,57	246,78	411,30	219,36	274,20	276,94	90,80	1210,65	127,12	7,24	22,53	562,74	442,15	321,57	72,35	1428,57	0,00	8571,43
Electrocity	364,07	619,69	61,97	29,44	340,83	0,00	2194,66	3657,77	1950,81	2438,51	2462,90	3032,33	40431,10	4245,27	25,05	77,99	1948, <mark>4</mark> 6	1530,93	1113,41	250,52	0,00	0,00	
Steel strips	2984,66	5080,27	508,03	241,31	2794,15	0,00	17991,88	29986,46	15992,78	19990,98	20190,89	24859,12	331454,99	34802,77	205,37	639,40	15973,51	12550,62	9127,72	2053,74	0,00	0,00	
Steel sheets	244,20	415,66	41,57	19,74	228,61	0,00	1472,06	2453,44	1308,50	1635,63	1651,98	2033,93	27119,04	2847,50	16,80	52,31	1306,92	1026,87	746,81	168,03	0,00	0,00	
Water	2188,84	3725,68	372,57	176,97	2049,13	0,00	13194,59	21990,98	11728,52	14660,65	14807,26	18230,78	243077,03	25523,09	150,61	468,91	11714,39	9204,17	6693,94	1506,14	0,00	0,00	
Stone aggregate	5,43	9,24	0,92	0,44	5,08	0,00	32,71	54,52	29,08	36,35	36,71	45,20	602,65	63,28	0,37	1,16	29,04	22,82	16,60	3,73	0,00	0,00	
01	514,22	875,27	87,53	41,58	481,40	2000,00	345,49	575,82	307,10	383,88	387,72	127,12	1694,92	177,97	10,13	31,54	787,84	619,01	450,19	101,29	2000,00	0,00	
Sawdust	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Rivets	0.00	0.00	0,00	0.00	0,00	2880.00	621.88	1036.47	552,78	690.98	697.89	45,76	610,17	64,07	36,47	113,53	2836.21	2228,45	1620.69	364.66	0.00	5000.00	

Source: own processing, data extracted from particular enterprise

Annex 6

Consumptions coefficients of endogenous and exogenous sources

Description of the process	Fastern 1	Fastern 2	Fastern 3	Fastern 4	Fastern 5	Rail	Disc 1	Disc 2	Disc 3	Disc 4	Disc 5	Washer 1	Washer 2	Washer 3	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6	Bearing
Laser cutting	0,0009	0,0038	0,0000	0,0106	0,0055	0,0002	0,0011	0,0008	0,0005	0,0122	0,0072	0,0110	0,1429	0,0042	0,0002	0,0008	0,0860	0,0037	0,0019	0,0019	0,0000
Bending	0,0026	0,0111	0,0001	0,0306	0,0160	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0001	0,0006	0,0717	0,0031	0,0015	0,0016	0,0000
Pressing	0,0016	0,0067	0,0001	0,0186	0,0097	0,0046	0,0218	0,0151	0,0110	0,2444	0,1440	0,0918	1,1910	0,0353	0,0013	0,0062	0,7074	0,0306	0,0153	0,0154	0,0000
Spraying in the paintshop	0,0000	0,0001	0,0000	0,0004	0,0002	0,0000	0,0004	0,0003	0,0002	0,0041	0,0024	0,0184	0,2382	0,0071	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
Riveting	0,0022	0,0094	0,0001	0,0260	0,0136	0,0061	0,0007	0,0005	0,0004	0,0081	0,0048	0,0000	0,0000	0,0000	0,0003	0,0013	0,1529	0,0066	0,0033	0,0033	0,0000
Rehash	0,0000	0,0000	0,0000	0,0000	0,0000	0,0061	0,0022	0,0015	0,0011	0,0244	0,0144	0,0000	0,0000	0,0000	0,0003	0,0013	0,1529	0,0066	0,0033	0,0033	0,0000
Drilling	0,0013	0,0054	0,0001	0,0148	0,0078	0,0023	0,0001	0,0001	0,0000	0,0008	0,0005	0,0000	0,0000	0,0000	0,0002	0,0007	0,0841	0,0036	0,0018	0,0018	0,0000
Threading	0,0008	0,0034	0,0000	0,0093	0,0048	0,0038	0,0015	0,0010	0,0007	0,0163	0,0096	0,0000	0,0000	0,0000	0,0001	0,0005	0,0574	0,0025	0,0012	0,0012	0,0000
Setting movement	0,0012	0,0051	0,0001	0,0139	0,0073	0,0057	0,0027	0,0019	0,0014	0,0306	0,0180	0,0138	0,1787	0,0053	0,0001	0,0006	0,0717	0,0031	0,0015	0,0016	0,0000
Management	0,0011	0,0047	0,0001	0,0128	0,0067	0,0053	0,0025	0,0017	0,0013	0,0282	0,0166	0,0127	0,1649	0,0049	0,0001	0,0006	0,0662	0,0029	0,0014	0,0014	0,0000
Econonomics	0,0022	0,0093	0,0001	0,0257	0,0134	0,0105	0,0050	0,0035	0,0025	0,0564	0,0332	0,0254	0,3298	0,0098	0,0003	0,0012	0,1324	0,0057	0,0029	0,0029	0,0000
Cleaning	0,0004	0,0016	0,0000	0,0043	0,0022	0,0018	0,0008	0,0006	0,0004	0,0094	0,0055	0,0042	0,0550	0,0016	0,0000	0,0002	0,0221	0,0010	0,0005	0,0005	0,0000
Logistic and Trasportation	0,0010	0,0043	0,0000	0,0118	0,0062	0,0048	0,0023	0,0016	0,0012	0,0259	0,0152	0,0117	0,1512	0,0045	0,0001	0,0005	0,0607	0,0026	0,0013	0,0013	0,0000
Value-added business owner	0,0036	0,0156	0,0002	0,0428	0,0224	0,0176	0,0084	0,0058	0,0042	0,0940	0,0554	0,0424	0,5497	0,0163	0,0004	0,0019	0,2206	0,0095	0,0048	0,0048	0,0000
Depreciation (20 years)	0,0063	0,0270	0,0003	0,0744	0,0388	0,0305	0,0146	0,0101	0,0073	0,1632	0,0962	0,0736	0,9543	0,0283	0,0007	0,0034	0,3830	0,0166	0,0083	0,0083	1,4583
Depreciation (12 years)	0,0049	0,0210	0,0002	0,0578	0,0302	0,0237	0,0113	0,0078	0,0057	0,1269	0,0748	0,0572	0,7423	0,0220	0,0006	0,0026	0,2979	0,0129	0,0064	0,0065	1,1343
Depreciation (4 years)	0,0011	0,0046	0,0001	0,0127	0,0067	0,0052	0,0025	0,0017	0,0013	0,0280	0,0165	0,0126	0,1636	0,0049	0,0001	0,0006	0,0657	0,0028	0,0014	0,0014	0,2500
Profit	0,0079	0,0335	0,0004	0,0923	0,0482	0,0054	0,1515	0,1049	0,0763	1,6977	1,0002	0,0014	0,0180	0,0005	0,0050	0,0232	2,6274	0,1136	0,0568	0,0571	0,0000
Taxes	0,0015	0,0064	0,0001	0,0175	0,0092	0,0010	0,0288	0,0199	0,0145	0,3226	0,1900	0,0003	0,0034	0,0001	0,0009	0,0044	0,4992	0,0216	0,0108	0,0109	0,0000
Social Fund	0,0002	0,0008	0,0000	0,0021	0,0011	0,0009	0,0004	0,0003	0,0002	0,0047	0,0027	0,0021	0,0272	0,0008	0,0000	0,0001	0,0109	0,0005	0,0002	0,0002	0,0416
Other costs	0,0007	0,0031	0,0000	0,0085	0,0044	0,0035	0,0017	0,0012	0,0008	0,0187	0,0110	0,0084	0,1091	0,0032	0,0001	0,0004	0,0438	0,0019	0,0009	0,0010	0,1667
Electrocity	0,0007	0,0031	0,0000	0,0084	0,0044	0,0000	0,0148	0,0102	0,0075	0,1659	0,0977	0,2808	3,6424	0,1080	0,0003	0,0013	0,1515	0,0065	0,0033	0,0033	0,0000
Steel strips	0,0059	0,0251	0,0003	0,0691	0,0361	0,0000	0,1214	0,0840	0,0611	1,3599	0,8012	2,3018	29,8608	0,8856	0,0024	0,0110	1,2424	0,0537	0,0269	0,0270	0,0000
Steel sheets	0,0005	0,0021	0,0000	0,0057	0,0030	0,0000	0,0099	0,0069	0,0050	0,1113	0,0656	0,1883	2,4432	0,0725	0,0002	0,0009	0,1016	0,0044	0,0022	0,0022	0,0000
Water	0,0043	0,0184	0,0002	0,0506	0,0264	0,0000	0,0890	0,0616	0,0448	0,9973	0,5876	1,6880	21,8988	0,6494	0,0017	0,0080	0,9111	0,0394	0,0197	0,0198	0,0000
Stone aggregate	0,0000	0,0000	0,0000	0,0001	0,0001	0,0000	0,0002	0,0002	0,0001	0,0025	0,0015	0,0042	0,0543	0,0016	0,0000	0,0000	0,0023	0,0001	0,0000	0,0000	0,0000
Oil	0,0010	0,0043	0,0000	0,0119	0,0062	0,0049	0,0023	0,0016	0,0012	0,0261	0,0154	0,0118	0,1527	0,0045	0,0001	0,0005	0,0613	0,0026	0,0013	0,0013	0,2333
Sawdust	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
Rivets	0,0000	0,0000	0,0000	0,0000	0,0000	0,0070	0,0042	0,0029	0,0021	0,0470	0,0277	0,0042	0,0550	0,0016	0,0004	0,0019	0,2206	0,0095	0,0048	0,0048	0,0000

Guidance for IT Outsourcing Decisions

Vladimír Mlynarovič

University of Economics in Bratislava Faculty of Business Management, Department of Information Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: vladimir.mlynarovic@euba.sk

Abstract

IT outsourcing is now permanent feature of business life. As companies search for cheaper and more effective ways of working, handing over non-core (IT) functions to lower-cost specialists can be an alluring prospect. The correct choice of IS/IT strategy and then effective system of the optimal IS/IT outsourcing provider selection with respect to the real objectives and business needs are tools enabling the management of the company to actively increase the efficiency and productivity of the organisation. This paper is designed to answer fundamental questions of outsourcing and providing guidance on how to get started.

Keywords: *IT outsourcing, offshoring, IT services JEL classification*: *L 21, L 24, M 15*

1. Introduction

Outsourcing has been a growing business trend since the 1990's. The outsourcing industry has helped the global economy by establishing professional services markets in far off locations (e.g., India, the Philippines, and China) and has opened doors in emerging markets (e.g., Latin America, Eastern Europe, and Africa).

The opportunities provided from outsourcing include lower costs, improved process efficiencies, and a greater focus on strategic activities. Until recently, these advantages have been primarily realized by large, global enterprises. For instance, most of the Fortune 500 companies use outsourcing as part of their business operating model. In a survey published by Duke University's Fuqua School of Business (Couto et al., 2008), 80 percent of large companies (defined as those with more than 20,000 employees) use some form of outsourcing.

According to the same study (Couto et al., 2008), small and mid-market businesses (SMB) plan on outsourcing; 58 percent of midsized companies (500-20,000 employees) and 43 percent of small companies (less than 500 employees) use outsourcing services.

This article is designed to answer fundamental questions of IT outsourcing and provide guidance on how to get started.

The three key questions discussed in this article, dedicated to first time outsourcers, are:

- ➤ Whether to outsource at all?
- Which form of outsourcing to choose?
 - From scope perspective (functions to be outsourced)
 - From delivery model perspective
- ➢ How to get started?

The further relevant key questions, important also for next generation of outsourcing projects, not discussed in this paper are:

- ▶ How to choose an optimal service provider partner
- How to evaluate the suitability of the partner

1.1 Defining outsourcing and IT outsourcing

Outsourcing - is the use of an external third party to provide services that were previously performed by internal staff. In general many back office functions that are considered "transactional" are provided by third party outsourcers. However, some niche services (e.g., legal and medical transcription, computer aided design and engineering, web and graphics design, even movie production special effects) are now being provided by outsourcers, as well. In some cases these outsourcing services are provided in domestic locations, also known as "onshoring", but more often they occur offshore, in locations ranging from Asia to Latin America.

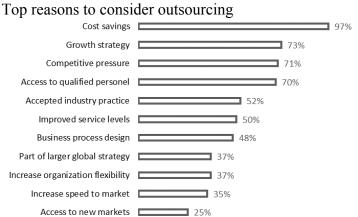
Outsourcing is most mature in the IT sector (Information Technology Outsourcing - ITO) although it is increasingly developing to include a wide range of business processes (Business Process Outsourcing - BPO) such as HR, Finance, Procurement, Customer Services, and the wider back office functions.

IT Outsourcing - From small beginnings in the 1980s IT Outsourcing has evolved into a sophisticated global market and most companies, no matter how traditional their business model, have outsourced one or more layers of their function. Outsourcing IT has always been a complex exercise, in part due to the requirement to bundle IT into 'service' combining hardware, software, people and processes. These services often contain data center, end-user support, service desk, application maintenance, and voice and data network management packages.

2. Question 1: Whether to outsource at all?

To answer this question, we must first ask: "Why anyone even considering IT outsourcing?" As noted, outsourcing is increasing in the SMB sector. According to the Duke University study (Hamilton, 2008), SMBs indicate they are considering outsourcing for costs savings, growth strategy, competitive pressure, and access to skilled personnel (Figure 1).

Figure 1



Source: graph based on data from Duke University study (Hamilton, 2008) and Gonzalez, R. – Gasco, J. – Llopis, J. (2005)

For example, if a company needs to reduce its costs, labor cost savings are available through offshoring and at some point; reducing staff becomes detrimental to business operations. Utilizing offshore resources is a way to reduce cost without increasing the burden on already overtaxed personnel and does not affect employee morale the same way layoffs do.

Or if a company is facing tighter margins and increased competitive pressure, outsourcing can be a quick way to reduce bottom line costs. And for those companies whose competitors are already utilizing offshore back office services, it can be difficult to keep up with the lower costs and competitive advantage that competitors are achieving.

In addition to the potential opportunities of outsourcing the Duke study (Hamilton, 2008) also asked respondents to indicate what benefits they had garnered from outsourcing. What it found was that though labor cost savings is the primary reason organizations consider outsourcing, the primary benefit is improved organizational flexibility. Other benefits include improvements in efficiency, access to skilled personnel, and the ability to improve overall business operations and performance through the reengineering of business technologies.

Though many firms cite labor savings as the reason to consider outsourcing, it's often more about performance than cost savings. Many organizations want to outsource some of their transactional activities because of the improvements they can gain from often inefficient operations—due to weak or non-existent automation, inefficient processes, or workforce quality.

So traditionally, the key driver to outsourcing activity has been cost reduction. Cost is still key factor, and we have yet to see anyone adopt outsourcing when it is more expensive than in-house delivery. Nevertheless, in case of IT outsourcing there are other drivers that are important (Delloite, 2013; Romanová, 2007):

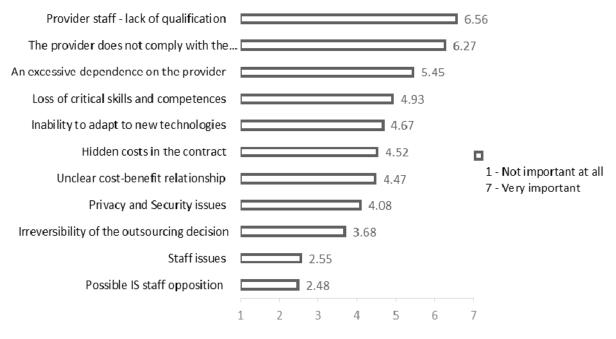
- Speed to market- following a start up or carve out, a new business entity can use outsourcing to put in place key functions much more quickly and cheaply than developing an in-house capability from scratch
- Flexibility and agility IT outsourcing can provide in required times the flexible capacity that a rapidly growing or declining, business may need to keep pace with changing demand
- Access to professional IT skills in areas such as IT, attracting, developing and retaining skilled staff can be a real challenge: outsourced providers can often offer access to these precious skills
- IT service reliability and delivery excellence to respond today's business objectives, IT must transform from a cost center to a value creator. It means service provider can ensure efficiently host workloads and services, provide hardened infrastructure, store and manage data. Customer wants integrated solutions across hardware, software, services, and applications (no longer selfassembled from disparate providers)
- Political maneuvering- internal offshoring or shared center strategy can be a sensitive topic, however outsourcing to a provider that can then draw on its own nearshore and offshore capability can be politically acceptable way of achieving the same end.

2.1 Risk of outsourcing

To avoid costly mistakes, it's important to consider the potential risks and deterrents of outsourcing—ranging from political to operational concerns—before making the decision to use outsourcing. The study (Gonzales, 2005) had as its main aim to propose a set of outsourcing risks, and to assess their importance and evolution over time. The results provides insight into the concerns expressed by customers of IT outsourcing (Figure 2). Interviewees suggested that they are mainly associated with providers, with great concern being expressed about the lack of qualification among their providers' staff, the potential lack of compliance with contracts, and the inability to adapt to the new technologies. It's not even listed concern that risks associated with offshoring/locations/cultures.

Figure 2

IT Outsourcing risks from customers perspective



Source: based on McKinsey Global Institute (2003)

Although providers talk a good game about their process reengineering abilities and their high-end service capabilities, survey data (Couto et al., 2008) indicates that they are far from the truth. That said, clients share the blame for deals dissolving, as they often fail to establish clear expectations and appropriate governance mechanisms. Chief among the reasons cited by service providers for deals falling apart are poor transitioning, lack of skills on the part of the client, poor change management, and no clear client outsourcing strategy (see Figure 3). Providers do concede, however, that their own "inability to deliver services" also plays a major role.

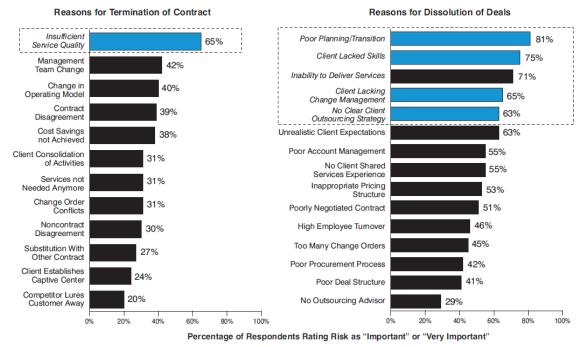


Figure 3

IT Outsourcing risks from provider's perspective and reasons for termination of contract

Source: based on Delloite (2013)

"Outsourcing Failure Stories" is its own Google keyword. The potential to achieve significant savings through outsourcing is well known. However, there are a number of examples where companies hit obstacles, get entangled in complexities and simply get it wrong. Without adequate advice, planning and management, outsourcing projects can and do fail. The consequences of a messy public divorce can be disastrous.

In our experience, organizations will almost certainly fail to realize the benefits of outsourcing unless they stick rigorously to the following steps:

- Adequately plan, manage and retain the right level of control/direction in the outsourcing relationship.
- > Establish and manage an effective governance process.
- > Effectively manage the commercial, legal and financial risks of outsourcing
- Effectively develop and manage any transition and transformation phases (these being the highest risk, and most failed upon phases along the IT outsourcing project lifecycle).

What this all means is that most of the risks associated with outsourcing can be mitigated through careful planning, partners selection, and oversight of the implementation on the organization's part.

2.1 Next steps

If the answer is "Yes" to the outsourcing question #1, we need to ask some additional questions to be prepared for the next section (Question 2: Which form of outsourcing to choose?). Following diagram (figure 4) should describe this decision process:

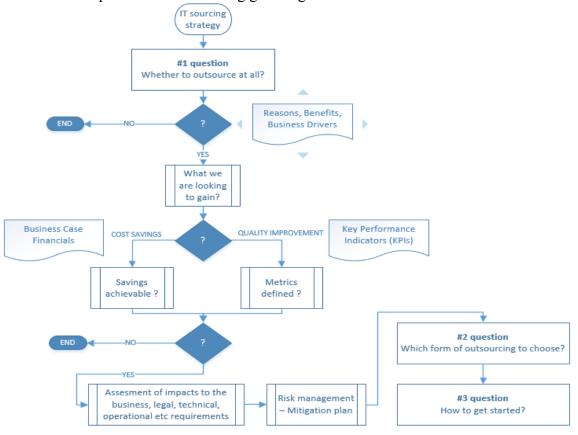
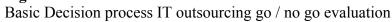


Figure 4



Source: own creation, based on authors own research.

3. Question 2: Which form of outsourcing to choose?

3.1 Functions to be outsourced and competency model

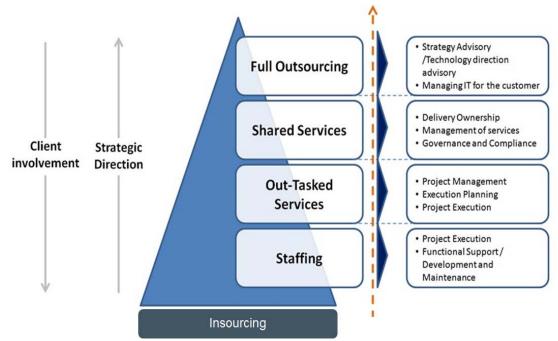
The McKinsey Global Institute study (McKinsey, 2003) on the state of outsourcing supports the idea that more transactional, less management intensive activities are typically outsourced. Because they should not require a lot of management involvement, transactional functions such as accounts payable or account reconciliations, are typically migrated offshore first. In regards to IT functions; internal help desk functions, workplace support, network and server/storage/backup management, are often considered most applicable to outsourcing.

Outsourcing these functions is considered less risky because they are not customer-facing, reduce operational costs, improve performance efficiencies, and allow management to focus on higher value activities.

This study (McKinsey, 2003) outlines the relationship between functional complexity and competencies in service delivery. Figure 5 provides a framework for assessing functions for potential competency model, based on the strategic direction and client involvement with delivering these services.

Figure 5

IT Outsourcing competency models



Source: based on Romanová (2007)

3.2 Delivery model

Once we have determined what to outsource, the next big question is, "Where?" The term "offshore" is commonly used to describe services provided in another country where labor costs are lower than in domestic state. As indicated by study in 2016 (Tholon, 2016) on the top 100 outsourcing countries, businesses have a wide range of options. Today's outsourcing services are provided in locations ranging mainly from Asia (e.g., India, Philippines, Malaysia China, and Vietnam), to Latin America (e.g., Brazil, Chile, and Argentina), but also in Central and Eastern Europe (positions for Poland: ranked as #9 (Krakow), #25 (Warsaw), #58 (Wroclaw); for Czech rep.: #14 (Prague), #31 (Brno), for Hungary: #24 (Budapest) and for Slovakia: #49 (Bratislava)). To distinguish between the various locations, it's important to assess the pros and cons of each region in regards to distance, cost, security and cultural fit.

We distinguish three delivery models of outsourcing in regards to the sites where the services are provided from:

- Onshoring outsourcing within one country, services are generally performed in the same country that the services are received.
- Nearshoring, Bestshoring outsourcing of the services to site which is generally in close proximity and has similar time zones to. Sometimes to sites related legislatively or culturally to the country of the contracting entity.
- Offshoring outsourcing of the services to sites in a big distance where there are significant difference in proximity and time zones (countries with the lower costs).

Time zones and proximity play a significant factor in managing an offshore service delivery model. They affect an organization's ability to bring offshore staff to the parent

organization for training or send staff to engage with offshore service providers; which can help facilitate the transition, to manage risk, improve communications, and resolve issues.

Asia has historically been considered the best option due to its low labor costs. However the gap between Asia and other countries like Bulgaria is shrinking. According to AT Kearny's study of offshoring opportunities, the Philippines is the lowest cost country of the major offshore service delivery locations, followed closely behind by India. Though Central & Eastern Europe countries are more expensive than India it still represents significant labor arbitrage compared to Western Europe or U.S. costs, ranging from 25-50 percent.

The location of the outsourced staff or support functions may have significant effect on the success of the client's outsource and this should be considered when evaluating the proposal responses. The analysis should consider the organization and cultural fit with the client, including factor such as language skills, workforce availability, cost, stability and accessibility.

A basic level of due diligence should be undertaken on the providers to gain confidence that the capabilities in their planned locations are sufficient to deliver the requirements. Typically, site visits and reference calls to review the provider's capabilities should be conducted including ensuring that:

- > The infrastructure and IT capabilities are sufficient to support the service effectively within service level objectives and agreements.
- The proposed service locations and facilities management (e.g. Datacenter) are suitable to deliver service requirements

Figure 6 provides a comparison of the comparative "key decision factors" within each outsourcing market—on a scale of most favorable = 1 to least favorable = 3.

Fig	ure	6
T7	1	•

Key decision factors in IT Outsourcing delivery models

Key Factors	Onshore	Nearshore	Offshore
Geographic Proximity	01	2	• 3
Time Zone Compatibility	01	D 2	• 3
Labor Cost	• 3	2	01
Available Labor Pool	1 2	• 3	01
Attrition Rates	01	2	• 3
English Language Skills	01	• 3	1 2
Spanish/German Language Skills	2	01	• 3
Cultural Compatibility	01	2	• 3
Geopolitical/Security concerns	01	2	• 3
Power and Telecom Infrastructure	01	2	• 3
Economic Stability	01	2	• 3
Regulatory Environment	01	2	• 3
Standard SLA	• 3	2	01
Laverage of Shared and Standard IT mgmt. tools	• 3	D 2	01
Standard automated IT mgmt. processes	• 3	2	01
Self services, automation	• 3	D 2	01
User profiles standardization	• 3	2	01
HW/SW standards	3	2	01
Inovations	2	01	• 3
Industry standard specific requiremets	1 2	01	• 3
Risk to Intellectual Property	01	2	• 3

Legend:	

01	most favorable
2	medium favorable
• 3	least favorable

Source: based on Auxis & APQC (2014) and authors own research

4. Question 3: How to get started?

Once we have made the decision that outsourcing is right for our business, it is important to have a realistic and practical approach.

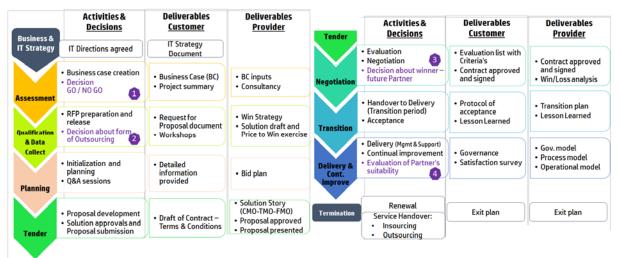
It is forgotten many times that the prerequisite for any further activities is the business strategy and liable IT strategy itself. The following assessment phase ensures that due consideration is given to all key aspects of the outsourcing lifecycle, particularly with regard to:

- > The overall objectives, which should be more than short term cost reduction
- > The financial benefits which can be delivered by an appropriate outsourcing
- > The costs which will need to be incurred in order to deliver required benefits
- > The risks which must be mitigated in order to ensure a successful outcome
- > The overall size and shape of the deal, ensuring it is aligned with requirements
- The degree of change required by both business and IT functions in order to ensure that the outsourcing is successful for the full lifetime of the contract.

There are some fundamental steps need to be taken to finalize the decision on what to outsource, where to and with whom. The following figure (Figure 7) defines the life cycle of the IT outsourcing opportunity together with four key decisions in its respective stages (see milestones 1, 2, 3, 4).

Figure 7

IT Outsourcing opportunity lifecycle



Source: own creation, based on authors own research.

3.2 Business Case

This is the first and arguably most important step in the outsourcing journey. The initial business case will define:

- > The scope and timescale of the outsourcing project
- > The shape and size of the deal
- > The pace of change necessary to deliver required benefits

Developing a realistic initial business case will require a thorough assessment of existing spent, which can be challenging if this is not currently under the control of a single department (i.e. for IT outsourcing deals it is often the case that business units retain responsibility for some IT provision alongside a central IT function).

Another critical dimension to the business case is the setting of challenging yet realistic value goals. Many first generation IT outsource deals were focused exclusively on cost reduction, with some considering only short term rather than full contract term reductions in IT cost (McKinsey, 2003). As more complex and sophisticated models have emerged it has become easier to focus on the addition of value, typically through improved levels of service or increased ability to deliver innovation whilst still ensuring that overall costs are reduced.

Any failure to set goals in line with the real business objective of the outsource runs the risk of setting the project off in the wrong direction, leading at best to a waste of elapsed time and cost and at worst to a deal which is designed to fail at meeting the real objectives.

5. Conclusions

A good outsourcing relationship is one that essentially becomes an extension of current environment; a true business partner rather than a provider or vendor.

The final decision on where to outsource should involve an assessment of many factors. If the primary driver is cost savings, Asia may present the strongest business case. For Western Europe companies willing to trade some cost savings for the proximity and time zone benefits then Eastern Europe may be the best option.

Once we have made the decision that outsourcing is right for the business, it is important to have a realistic and practical approach. We described fundamental steps we should take to finalize the decision on what to out-source, where to do it and with whom. As final guidance we recommend to follow these steps:

- 1. Evaluate and document the business case.
- 2. Define the contracting model.
- 3. Establish a "Win-Win" Relationship.
- 4. Document the "As Is" and "To Be" Models.
- 5. Manage concurrent activities (hiring of outsourcing personnel; facilities and infrastructure preparation; communication plans; risk management plans, etc.)
- 6. Development of standard operating procedures and training materials.
- 7. Full production and operation stabilization
- 8. Continues improvement (performance monitoring; efficiencies and cost savings; best practices)

If we are interested in outsourcing, it is incumbent upon us to evaluate the opportunities and the risks, and not get overwhelmed by the process. Realizing that outsourcing has become a part of today's business operating model, and that many businesses including our competitors are successfully using it to reduce their operating cost, and gain other key benefits, such as improved processing efficiencies, a greater focus on strategic activities, cost effective access to specialized skills, operational redundancy, and more, should give us some confidence.

Followers can take advantage of these same opportunities, and help their business to be more competitive and agile, if they "do outsourcing right." Guidance described in this paper can be helpful in deciding on IT investment and sourcing strategy to ensure IT resources effectively in the form of outsourcing.

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References

Auxis & APQC. (2014). *Outsourcing 101: A Game Plan for First Time Outsourcers*. 19 p. [online]. Available at the URL: https://www.apqc.org/knowledge-base/documents/outsourcing-101-game-plan-first-time-outsourcers. [accessed 25. 02.2016].

COUTO, V. – LEWIN, A. – MANI, M. – SEGHAL, V. (2008). booz&co. *Offshoring the Brains as Well As the Brawn. Companies Seek Intellectual Talent Beyond Their Borders.* [online]. Available at the URL: <<u>http://www.strategyand.pwc.com/media/uploads/</u>OffshoringtheBrainsasWellastheBrawn.pdf>. [accessed 7. 01.2016].

Delloite. (2013). *The Outsourcing Handbook*. v2. 62p [online]. Available at the URL: http://www.deloitte.co.uk/makeconnections/assets/pdf/the-outsourcing-handbook-a-guide-to-outsourcing.pdf>. [accessed 18. 01.2016].

Duke Executive Education. (2008) *Annual Survey Results. In Successful Outsourcing & Offshoring Strategies.* [online]. Available at the URL: https://www.iaop.org/Download/Download.aspx?ID=497&AID=&SSID=&TKN=f42fdacc03204caaa26f>. [accessed 20. 02.2016].

GONZALEZ, R. – GASCO, J. – LLOPIS, J. (2005). Information systems outsourcing risks: a study of large firms. Industrial Management and Data Systems. Vol. 105, n. 1, pp. 45-62. ISSN 0263-5577.

KEARNEY, A. T. (2011). *Offshoring Opportunities Amid Economic Turbulance*. 24 p. [online]. Available at the URL: https://www.atkearney.com/documents/10192/f062cfd8-ee98-4312-ae4f-0439afc10880>. [accessed 15. 01.2016].

McKinsey Global Institute. (2003). *Offshoring: Is It a Win-Win Game?* 20 p. [online]. Available at the URL: http://www.andrew.cmu.edu/course/67-325/Offshoring_MGI_Perspective.pdf>. [accessed 20. 02.2016].

ROMANOVÁ, A. (2007). *Manažment informačných systémov*. Bratislava: Vydavateľstvo EKONÓM, 2007. pp. 109-113. ISBN 978-80-225-2321-9.

Tholons. (2016). *Tholons 2016 Top 100 Outsourcing Destinations Rankings & Executive Summary*. 14 p. [online]. Available at the URL: http://www.tholons.com/ TholonsTop100/pdf/Tholons_Top_100_2016_Executive_Summary_and_Rankings.pdf>. [accessed 10. 02.2016].

The Future Salary of Alumni as a Factor of Youth Migration

Tetyana Nestorenko

University Berdyansk State Pedagogical University School Department of Entrepreneurship and Economic Theory Department Shmidta 4 Berdyansk, 71112 Ukraine E-mail: tetyana.nestorenko@gmail.com

Abstract

This paper reviews urbanisation as a necessary condition for economic growth, examining how the cost of higher education influences the decisions of young people about their future places of residence and work. For this purpose, this paper uses a model of intertemporal choice.

Keywords: urbanization, amenity, geographic mobility, youth migration, higher education. JEL Classification: I 22, *J* 31, *R* 23

Introduction

Migration is the event of relocation (beyond administrative boundaries). A migrant refers to a person who relocates. In migrant data, relocation is measured by comparing the according to the concept of the new economic geography, people migrate from areas with low wages to areas with high pay, seeking to secure maximum earnings, the terms of which are their level of education, skills and chances of getting a suitable job.

From this point of view, the migration from rural to urban areas is the most likely, taking into account the significant differences in the amount of pay, typical for rural and urban areas. This statement is the basis of most studies of in-migration in developing countries. However, in some cases, migration from rural to urban areas may not be the most characteristic form of in-migration in many countries. One of the areas of in-migration is the migration of the population from one city to another one.

The migration direction depends on the population category. Most of the young people migrate from small towns to big cities for education. At the time, as might be expected, some elderly move from large cities to small towns to benefit from the difference in the cost of housing in cities and towns, and also to have better access to urban ecosystem services.

Some areas of these problems are not fully covered by the existent publications. Therefore, this study is devoted to some factors of youth migration in the conditions of urbanization.

The paper is structured as follows. The next section discusses the urbanization as a necessary condition for economic growth. The paper then investigates the influence of higher education cost to the youth's choice of their future residence and work place in section 2. The last section contains our concluding remarks.

1. Urbanization as a necessary condition for economic growth

The world is fast becoming predominantly urban. At the beginning of the 19^{th} century, only 2% of the world's population was urban. The population living in urban areas reached 50% at the beginning of the 21^{st} century and is expected to reach 60% by 2030. At the same time the world's population has grown from 900 million to 7 billion. [14]

Annual growth rate of urban population is almost double the increase of the world population as a whole. In 2008, for the first time in history, the local population caught up with the rural population and reached 3.4 billion people. [23]

There are significant differences in the rate of urbanization in different countries and regions. The highest rates are in the most economically developed regions of the world. Thus, the level of urbanization has exceeded 80% in Australia, New Zealand and North America. Of the developed world, Europe is the least urbanized major region, with only 72% of the population lives in cities. In developing countries, the urban share is lower, but the rate of the urban population growth is higher. According to experts in the next decade, the urbanization rates will increase all over the world, with Africa and Asia experiencing a faster rate of growth than other regions. By 2030, three of four countries are expected to become predominantly urban (now – one of four). [17]

In Ukraine, the level of urbanization is growing, from 67.2% in 2000 [12] to 68.9% at the beginning of 2013. [23] Further, according to the experts of the World Bank it will continue to rise – to 70.2% in 2015. [12]

Historical economic studies have established that there is a positive correlation between planned urbanization and development. [7] It is also clear that the urban economy is more productive due to the proximity of the factors of production, increased specialization and market sizes. Because of this, proper urbanization should be used as a powerful tool for creating employment and livelihoods. [10]

Reasons for changing dwellings have not changed dramatically over the years, since the majority of moves relate to individual decisions about where to maximize utility by looking at economic, social and environmental aspects.

Against the backdrop of negative natural increase of the population in Ukraine the main factor in the growth of cities is in-migration. People migrate to the cities, because cities can provide them the best conditions for living and working. Benefits provided to individual living in a big city, some researchers call amenities. [2, 9] Sousa (2012) prefers to call them as urban externalities. [6] We think that urban externalities and amenities are interchangeably terms.

Sousa highlights several examples of urban externalities include inter alia varieties of entertainment (such as cinemas, theatres and restaurants, for example), pollution, congestion and violence.

As they occur where people reside, they might affect inhabitants' decision about where to live. However, they are a result of social interactions which enables them to present an additional feature: neighboring effects. For example, in a city surrounded by others with high levels of violence is affected by this neighboring effect. Therefore, neighboring effects of urban externalities might be interesting to address as they are not restricted to the region where they are located. Urban externalities may hence have an impact not only where they are located, but also in surroundings areas.

New economic geography suggests the existence of benefits associated with urbanization. These benefits accrue to both consumers and producers. There is the spatial concentration of population and labor force in a city, the number of markets for consumer goods and associated specialized industries increases. The diversification helps to meet the aspirations of consumers for diversity – the city offers a wide range of goods and productive resources. Therefore, the utility of consumers increases. Cities, according to Kolomak, should show higher productivity and increased consumer welfare in proportion with their size. [16]

Producers benefit through cost savings due to the proximity of counterparties, which provides localization and agglomeration effects of the city. The resources, suppliers and consumers accommodation close to each other leads to lower overall costs, promotes efficiency, helps to reduce the prices of goods. Ultimately, the localization of benefit not only for the manufacturer prepared firm but also consumers.

The main advantages (amenities) of large cities for consumers are:

- a greater opportunity in finding paid work, that related to the specialty and preferences of the employee
- the prospects for career growth and self-realization
- the access to quality education, as it is often in the big cities where the best schools exist
- the exemption from the scrutiny of relatives and neighbors rather than the "glory" of provincial towns and rural areas
- the variety of leisure (cinemas, theaters, clubs, museums, attractions, theme parks, etc.)
- better health care providers
- the greater variety and higher quality of public services (water supply, electric power, etc.)
- the diversity of goods and services, etc. [3]

It should be noted that the city (and especially – the large cities) are the place of concentration of higher education institutes. Therefore, the city is an attractive place of residence for young people getting higher education and building their career.

2. Higher education as a factor of Ukrainian youth in-migration and out-migration

Education is a major input to human capital accumulation. In Ukraine, young people make decisions about attaining higher education based on various reasons. One is the fact that higher education makes it possible to qualify for a higher salary. If the economic motive is regarded as the main reason of determining the feasibility of obtaining higher education, it is necessary to determine how to change the individual's salary after completing degrees and programs of higher education. This problem can be solved by using a model of intertemporal choice. [18]

Dividing the entire life cycle of the individual to T (T = k + p + 1) periods. Let one period will be equal to the duration of study (under the form we mean any education except the secondary one).

Consider when and under what conditions the rational individual beneficial to pursue higher education.

Rational consumer solves the problem of maximizing utility (U):

$$U = U(C_1, C_2, C_3) \to \max \tag{1}$$

under the budget constraint in the three-period model of the life cycle:

$$(1+r)^{2}C_{1} + (1+r)C_{2} + C_{3} = (1+r)^{2}Y_{1} + (1+r)Y_{2} + Y_{3} + (1+r)(d-r)L \quad (2),$$

where Y_i – individual's income in the period i; C_i – consumption expenditures in the period i; L – education costs in the first period, d – returns received by the individual in the second period on investment in education cost facilities (in the form of interest on the funds aimed at education).

Getting an education is beneficial to the individual, if the inequality holds:

$$\frac{1}{r}(1+r)^{p}((1+r)^{k}-1)Yh-(1+r)^{T}L > \frac{1}{r}(1+r)^{p}((1+r)^{k+1}-1)Yl$$
(3)

where Yl – average salary of individuals without high education; Yh – average salary of individuals with high education;

We get the next inequality from (3):

$$Yh > (Yl + rL)(1 + r) + \frac{r}{(1 + r)^{k} - 1}(Yl + (1 + r)L)$$
(4)

Than the duration of the period of getting high education by individual is smaller, then the increase of salary has to be less (for example, bachelor's degree in comparing to master's degree).

Consider the cases when a young girl from any Ukrainian town decides the place of getting of high education: Kiev, Bratislava, Warsaw or Moscow. Let's assess the change of her wages after completing her course of higher education with the qualification of Bachelor's and Master's degrees. All the calculations are given in Euros. The discount rate can be taken at the level of 8% per annum for Ukraine, 3.5% – for Russia, 3% – for Slovak Republic and Poland. The duration of time in completing her education is dependent on the country (Table 1). The costs of education were considered without the addition of administrative payments, which are very often set by Slovak and Polish universities.

Table 1

Data analyze of effectiveness of investment to getting higher education

Country	Poland	Russian	Slovak Republic	Ukraine
		Federation		
City	Warsaw	Moscow	Bratislava	Kyiv
University	University	Moscow State	School of	Kyiv National
	of Warsaw	University	Economics and	Economic
			Management in	University
			Public	
			Administration in	
			Bratislava	
Year of information	2012/2013	2012/2013	2013/2014	2013/2014
about cost of				
education				
Bachelor's degree,	9000 ¹	28720^{3}	4200^{-6}	5415 ⁹
cost of education, ε				
Duration education	3 years	4 years	3 years	4 years
Master's degree,	3000 1	14360 ³	1700^{-7}	1650 ⁹
cost of education, ε				
Duration of education	1 year	2 years	1 year	1 year
The average monthly	1242 ²	1240 ^{4,5} ,	1001 ⁸ ,	472 € ¹⁰ ,
salary in the capital, ε	(industry),	March 2013	Bratislava region,	March 2013
	March 2013		2011	

Source: compiled by the author based on [1, 4, 5, 8, 13, 15, 19, 20, 21, 22, 24]

The first assumption is that the higher education for Ukrainians at the universities of all the selected cities is paid for by the student. Second, the longest duration of individual's labor activity can be 47 years – until retirement age. The form study mode is full-time education. All cost indicators are given in the last year labor activity of the individual (using the discount rate). In constructing the model, the assumption is made that there is no inflation.

The results of substantiation cost-effective salary for graduates of the Bachelor and Master programs in the analyzed cities are presented in Table 2. Let's consider the case of a young woman returning to her native town after completing her education.

Table 2

Evaluation indicators of the effectiveness of investment in higher education

Indicator	Warsaw	Moscow	Bratislava	Kyiv
Salary of the specialist without degree, ε	-	-	-	110
Salary of the specialist with a bachelor's degree, ε	213	393	174	197
Salary of the specialist with a master's degree, ε	252	574	200	226

Table 3 shows the ratio of cost-effective wages of the individual under the condition of getting by her the different levels of education in the universities listed in Table 1.

For example, in order to invest in training to be economically reasonable, wage of bachelor educated in Warsaw and returned to Ukraine, should be above 1.94 times more then the salary of employee without high education (Table 3).

Table 3

The ratio of cost-effective wage of individuals with different levels of education

Indicator	Warsaw	Moscow	Bratislava	Kyiv
The ratio of wages of individuals with a	1,94	3,57	1,58	1,79
bachelor's degree and no higher education				
The ratio of wages of individuals with a	2,29	5,22	1,82	2,05
master's degree and no higher education				
The ratio of wages of individuals with a	1,18	1,46	1,15	1,15
master's degree and a bachelor's degree				

Thus, studying in the magistracy will be an economically reasonable step for this young girl if, after the completion of her degree, her salary increases as compared with the salary of a person with a bachelor degree in Kiev by more than 1.15 times. Trained with a Masters Degree in Bratislava, upon her return to Ukraine, she will qualify for a salary increase of 15%. In a similar situation, but receiving a Master's Degree in Warsaw, her wage growth should reach at least 18%. The high prices set by the Moscow State University for foreigners make it economically unprofitable for Ukrainians, who plan to come back to Ukraine, to receive their education there.

Thus, the desire to compensate expenses for education by obtaining a higher salary is one of the factors determining the direction of youth migration. A young girl who receives higher education in Moscow, most likely will not come back home: it is very difficult to find in Ukraine a job with an average salary of about 600 C. Therefore the young girl, who was educated at Moscow State University, most likely will stay in Moscow, and thus joins the ranks of immigrants.

Obtaining higher education in Slovakia and Poland is becoming more attractive for Ukrainians, because the difference in the cost of education in the universities of Ukraine, Slovakia and Poland is relatively low. On the other hand, the return of Ukrainians in Ukraine after studying abroad would be economically reasonable.

Conclusion

Urbanization is necessary for ensuring economic growth. Large cities attract different demographic groups, as they can provide the benefits and advantages to their inhabitants that are not available in small towns or rural areas.

The city's main amenities (or urban externalities) for youth are a opportunity to get high education; a greater opportunity to find paid work; the prospects for career growth and self-realization; the variety of leisure activities; the greater variety and higher quality of public services; the diversity of goods and services, etc.

Youth from developing countries (including Ukraine) have an opportunity to get a higher education in developed countries (for example EU countries). But with the higher cost of studying and the more years of schooling, it seems less desirable to come back to Ukraine, where wages are several times lower than in the EU countries.

Therefore, if the EU wants to limit the migrant flows from developing countries, priority should be given to short-term training program for students from developing countries in the framework of the European Neighborhood Policy. If the EU countries are interested in attracting highly educated workers, the students from developing countries should be given the opportunity to study long-term programs.

In any case, the desire of young people to get higher education leads to their migration to the big cities. Thus, the processes of urbanization will only be intensified under the influence of this factor.

One of the main factors of youth migration to cities is the wish of future graduates to get a higher education, then to build a career, and to get economically reasonable salary.

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References

[1] Average Monthly Wage. (2012). [online]. Available at the URL: http://portal.statistics.sk/show-doc.do?docid=6599>. [accessed 12.05.2015].

[2] BLOMQUIST, G. C. – HOEHN, J. P. et al. (1987). A hedonic model of interregional wages, rents, and amenity values. Journal of Regional Science, 27(4): pp. 605-620.

[3] NESTORENKO, T. (2013). Why people prefer to live in large cities. Collection of materials of 3rd Conference 'The finance and credit mechanism in country's socio-economic development', Makeevka; pp. 169-171.

[4] Pokyny na prijímacie konanie na I. stupeň štúdia pre akademický rok 2013/2014. (2013). Vysoká škola ekonómie a manažmentu verejnej správy v Bratislave. [online]. Available at the URL: http://www.vsemvs.sk/Prij%C3%ADmaciekonanie/Pokynynaprijkonanie-naIIstupe%C5%8820132014/tabid/560/language/en-US/Default.aspx>. [accessed 24.11.2015].

[5] Pokyny na prijímacie konanie na II. stupeň štúdia pre akademický rok 2013/2014. (2013). Vysoká škola ekonómie a manažmentu verejnej správy v Bratislave. [online]. Available at the URL: http://www.vsemvs.sk/Prij%C3%ADmaciekonanie/Pokynynaprijkonanie-naIIstupe%C5%8820132014/tabid/561/language/en-US/Default.aspx>. [accessed 12.01.2016].

[6] De SOUSA, F. L. (2012). Urban Externalities and Migration Flows. [online]. Available at the URL: http://www.gdnet.org/~research_papers/Urban%20externalities%20and%-20migration%20flows>. [accessed 30.01.2016].

[7] State of the World's Cities 2010/2011. (2011). [online]. Available at the URL: http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2917. [accessed 24.04.2015].

[8] Statystyka Warszawy. (2013). Urząd Statystyczny w Warszawie. Marzec, 2013 r. #3. [online]. Available at the URL: http://www.stat.gov.pl/cps/rde/xbcr/warsz/ASSETS_komuni-kat_03_waw_2013.pdf>. [accessed 19.07.2014].

[9] TABUCHI, T. – THISSE, J. (2002). Taste heterogeneity, labor mobility and economic geography. In *Journal of Development Economics*. Volume 69, Issue 1, October, pp. 155-177.

[10] Time to think. Urban UN-Habitat. Vision on Urbanization. (2013). United Nations Human Settlements Programme, April 2013.

[11] WALTERS, W. H. (2002). Journal of Planning Literature, Vol. 17, No. 1 (August 2002).

[12] World development report 2009: Reshaping Economic Geography. (2009). The World Bank. Washington, DC. 410 p.

[13] Wysokości opłat za studia ustalone dla cudzoziemców 1 podejmujących studia na zasadach odpłatności w Uniwersytecie Warszawskim w roku akademickim 2012/2013.
(2012). [online]. Available at the URL: http://www.bss.uw.edu.pl/aktualnosci/oplatydlacudzoziemcow.pdf>. [accessed 22.05.2015].

[14] Zarządzenie nr 20 rektora Uniwersytetu Warszawskiego z dnia 28 marca 2013 r. w sprawie wysokości opłat za usługi edukacyjne w roku akademickim 2013/2014. (2013). [online]. Available at the URL: http://www.uw.edu.pl/strony/student/oplaty/2013/zarz_28.03.13.pdf>. [accessed 24.02.2016].

[15] Vartist navchannia studentiv DVNZ «KNEU imeni Vadyma Hetmana», shcho budut navchatysia na kontraktnii osnovi u 2013/2014 n.r. (2013). [online]. Available at the URL: ">http://kneu.edu.ua/ua/plicants/missions/kontrakt

[16] KOLOMAK, E. A. (2011). Otsenka vliianiia urbanizatsii na ekonomicheskii rost Rossii // Region: ekonomika i sotsiologiia, 2011, Issue 4, pp. 51-69. ISSN 0868-5169.

[17] Monitoring mirovogo naseleniia s udeleniem osnovnogo vnimaniia raspredeleniiu naseleniia, urbanizatsii, vnutrennej migratsii i razvitiiu. (2008). Doklad Generalnogo sekretaria OON. [online]. Available at the URL: http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N08/205/16/PDF/N08205-16.pdf?OpenElement>. [accessed 03.10.2015].

[18] NESTORENKO, T. P. – NESTORENKO, O. V. (2009). Modeliuvannia vplyvu osvity na mihratsiini protsesy. Zb. prats "Sotsialno-ekonomichni problemy suchasnoho periodu Ukrainy. Mihratsiini protsesy v umovakh polietnichnoho seredovyshcha rehionu: [zb. nauk. pr.]. NAN Ukrainy, In-t rehionalnykh doslidzhen. Lviv. Vyp. 6 (80), pp. 226-234.

[19] Serednia zarobitna plata za rehionamy za misiats u 2013 rotsi. (2013). [online]. Available at the URL: http://www.ukrstat.gov.ua/operativ/operativ2013/gdn/reg_zp_m/reg_zpm13_u.htm>. [accessed 23.10.2015].

[20] Sredniaia zarabotnaia plata v 2013 godu v Rossii i mire. (2013). [online]. Available at the URL: http://bs-life.ru/rabota/zarplata/srednyaya-zarplata2013.html. [accessed 23.10.2015].

[21] Sredniaia zarabotnaia plata v Moskve v 2013 godu. (2013). [online]. Available at the URL: http://bs-life.ru/rabota/zarplata/moskwa2013.html. [accessed 23.10.2015].

[22] Ukraina 2020: demohrafichnyi ta mihratsiinyi vymiry bezpeky. (2012). Ukrainskyi instytut publichnoi polityky. [online]. Available at the URL:<http://uipp.org.ua/publication/

proektni-publikatsiyi/ukrayina-2020-demografichnita-migratsijni-vimiri-bezpeki.html>. [accessed 25.2.2016].

[23] Chyselnist naselennia na 1 bereznia 2013 roku ta serednia chyselnist za sichen-liutyi 2013 rik. (2013). [online]. Available at the URL: http://www.ukrstat.gov.ua/operativ/operativ2013/ds/kn/kn_u/kn0313_u.html. [accessed 23.10.2015].

[24] Ob ustanovlenii razmerov oplaty za okazanie obrazovatelnych uslug v 2012/2013 uchebnom godu. (2013). Prikaz №356 rektora MGU im. M.V.Lomonosova ot 15 maya 2012 g. [online]. Available at the URL: http://edu.msu.ru/order/pdf/20120515_356.pdf>. [accessed 12.2.2015].

The Forming Multipolar World

Juraj Ondriaš

University of Economics in Bratislava Faculty of International Relations, Department of International Political Relations Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: jurajondrias@gmail.com

Abstract

This paper deals with the transition of the current system of international relations after the Cold War from unipolarity at the beginning of the 1990s to multipolarity. The paper will start by defining the key theoretical concepts. First, it will define polarity, and its various types. Then, it will present several definitions of the term "superpower" according to various scholars of international relations. The next part of the paper will briefly describe the debate on the nature of the current international system, unipolarity and multipolarity. The last part will touch upon the Chinese potential for superpower status. Information was obtained mainly through the study of online scientific journals and university websites.

Keywords: polarity, superpower, China *JEL classification:* F50, F59

1. Introduction

The topic of this paper is the currently forming multipolar system of international relations (IR) and the ongoing transition from unipolarity in the era after the Cold War. The first section of the paper will define some theoretical concepts, namely polarity, the various types of polarity, or the balance of power. After that, the paper will focus on the concept of a pole and a superpower. Several definitions of the term "superpower" according to various scholars of IR will be presented. The second part of the paper will very briefly describe the debate on the nature of the current international system, unipolarity and multipolarity. After naming the potential candidates for future superpower status, the last part of this work will take a quick glance at the potential of China to become a superpower. It concludes with acknowledging China as the most probable candidate for superpower status in the new polarity. This paper is rooted in the discipline of IR and it will use the terminology of IR. More specifically, it is influenced by the realist paradigm of IR, e.g. in focusing on the state as the dominant actor of IR to the exclusion of non-state actors. Information was obtained mainly through the study of online scientific journals and university websites.

2. The theory behind polarity

The current global system of international relations is also called the Westphalian system, after the Peace of Westphalia, which concluded the Thirty Years War in 1648. The basis of this system is the internal and external sovereignty of the constituent states of the system. This conception of state sovereignty has become the cornerstone of IR, along with the concept of formal equality of states based on their equal rights of sovereignty. But formal equality doesn't mean de facto equality, or that the states are equal in power. Power is distributed unequally in the international system, and this distribution of power defines the structure of the global system of IR. The main feature of this structure is the question of polarity within

the system, i.e. how many independent centers of power, or poles, to which other states and actors gravitate, are present in the system. Based on that, we discern systems that are unipolar (having one sole hegemonic superpower, sometimes termed as a hyperpower), or systems that consist of more than one pole. In the second case, we discern whether these systems are bipolar with two superpowers or multipolar with three or more independent centers of power. Apart from these basic types of polarity some authors posit the existence of hybrid forms like unimultipolarity (suggested by Samuel Huntington, described below) or bimultipolarity (suggested by Richard Rosecrance), which are not always accepted as equally valid objective concepts by the scholarly community.

The concept of polarity in IR is connected to the concept of the ballance of power between states. The balance of power is one of the most permanent characteristics of the international system. The quality of this balance defines the stability and the staying and reproductive power of the system. It influences the creation of spheres of influence, which are a significant side product of the polatiry of a system. This is a controversial concept and discussion is ongoing on whether it is necessary or beneficial (especially from a moral standpoint) to let balance-of-power considerations influence diplomacy. But in spite of that, fears of disturbing the existing balance of power are influencing the current debate on the transformation of the contemporary international system from unipolarity to multipolarity, as well as the debate on which new poles are appearing in the system.

Equally tied to the concept of polarity is the nature of the great power or superpower at the head of each pole. A great power is defined as a state, which is able to ensure its survival on its own, without the help of other actors. This is in keeping with the "three S" of the realist school of IR, developed by Hans J. Morgenthau and Edward H. Carr. These "three S" namely statism (the state as the the dominant actor of IR), survival (emphasis on survival in the international system as the main goal of the state) and self-help (the ideal of ensuring its survival on its own). A great power thus does not have to rely on the help of other states to ensure its security, political survival or economic prosperity. On the contrary, it may be the guarantor of the security, survival and prosperity of other states within its sphere of influence, which brings us back to the definition of a pole in IR. The term "superpower", on the other hand, appeared after World War Two in the context of the bipolar division of the world, to designate both new poles in the international system, the USA and the USSR (and also the UK at first), to distinguish them from the traditional great powers. The term itself was popularized by the prominent geopolitical scholar Nicholas Spykman. One of the definitions of a superpor states that it is a great power which has global interests and the means to carry out these interests. Another definition was later added according to which a superpower is capable of withstanding a nuclear attack and able to respond with an equally destructive nuclear counterattack. This led to the conflation of superpower status with the status of a Nuclear Weapons State (NWS) and the doctrine of Mutually Assured Destruction (MAD).

It is necessary to be able to determine if and when the global system of IR became or will become multipolar. There is no clear and universally accepted definition of when does a superpower become a global pole or even what makes a superpower a superpower, or what makes a pole a pole. One popular set of criteria comes from the historian of IR Paul Kennedy, who stated that a superpower must excel in seven dimensions of state power: geography, population, economy, resources, military, diplomacy, and national or cultural identity. Miller (2005) from Stanford University simplifies this list by narrowing it down to four dimensions: political, economic, military and cultural. The cultural dimension is represented by "soft power" as defined by the creator of this term, Jospeh Nye. According to Kim Richard Nossal (1999) the attributes of a superpower are: relativey large size, a large population, a strong economy, plentiful natural resources, and a high degree of self-sufficiency, but most of all, the

capability to retaliate after a nuclear attack. As for another definition of a superpower, June Dreyer (2007) suggests the simple criterion of it being able to execise both hard and soft power anywhere across the globe.

3. From unipolarity to multipolarity?

After the breakup of the Soviet bloc in the late 1980s and early 1990s, some western politicians began to talk of a so-called "unipolar moment" for the USA in IR. This was meant to describe a situation when the USA became the sole remaining superpower (sometimes termed a hyperpower, which was fomerly meant as an ironic hyperbole), or even a hegemon in the international system. The author of the concept of the unipolar moment was the US political scientist and journalist Charles Krauthammer in his articles The Unipolar Moment from 1990 and The Unipolar Moment Revisited from 2002. According to him, this was supposed to be a temporary phenomenon, which would last three.four decades at most. Many IR theorists, but also some politicians, picked up on this idea. Among the most influential propagators of unipolarity and US hegemony was the US think-tank Project for a New American Century (PNAC), as can be seen from its name. PNAC, which existed between 1997 and 2006 was tied to the US Neoconservative movement. Its members greatly influenced US foreign policy under President George W. Bush, in whose goverment many prominent Neoconservatives served. Their influence was seen in the promotion of unilateralism, meaning that the USA as the hegemon responsible for the stability of the international system has the right to act alone against threats to the system. This is one of the most controversial tenets of the US interpretation of multipolarity.

Yet already at the beginning of the 1990s there were voices in the scholarly community claiming that what awaits us is not unipolarity, but a return to multipolarity similar to the system before the Cold War. The prominent US scholar of IR Samuel Huntington, in reaction to Francis Fukuyama (an early influential scholar for Neoconservative movement with his work *The End of History*), wrote his seminal work *The Clash of Civilizations* (first presented in 1992, published as a book in 1996) in which he suggested that the world would fracture into poles according to cultural lines. In a later article named *The Lonely Superpower* from 1999, he named the arrangement of the world as unimultipolarity (Huntington, 1999). In such a system, there is one superpower (in this case the USA) and many regional powers. The superpower cannot act alone to enforce its will as would be the case in a pure unipolar or hegemonic system, but it needs the cooperation of other powers, e.g. in implementing sanctions or interventions against "rogue states". According to Huntington, the unipolar moment of the USA only existed in the early 1990s, before it gave way to the current unimultipolar system, which will lead to a true or pure multipolarity in the 21st century.

Among the potential poles in the new international system, the main suggestions were Japan, the EU or a reunited Germany, Russia (after resolving the consequences of the breakup of the USSR) and the People's Republic of China. In East Asia, the biggest prospects of regional hegemony and potential superpower status were at first ascribed to Japan. The thensenator Paul Tsongas from the USA summed this belief up with the words "The Cold War is over; Japan won" (Huntington, 1999). But Japan only really fulfilled the econmic criteria for superpower status, to the detriment of the political, military and cultural ones. Because of that, when the Japanese economy got into trouble after the bursting of the economic buble at the start of the 1990s and again during the Asian financial crisis of 1997-98, forecasts of a "Japanese century" or Japanese hegemony have subsided. Since then, attention has shifted towards China. Observers were surprised at the speed with which China approached superpower status. In the twenty years since 1990, the Chinese economy grew on average by over 10 % annually. In 2007 China overtook Germany to become the world's third largest

economy. It became the second largest economy in 2010, when it overtook Japan. It is currently estimated that according to purchasing power parity (PPP) China overtook the economy of the USA to become the world's largest economy in late 2014, although it is expected that based on GDP China will not overtake the USA until the middle of the 2020s. In general, this threshold is being continually revised downward - in 2010, the Chinese economy was expected to overtake the US economy in 2027, while before the global financial crisis in 2008 the estimate was in 2041 (Flores-Macias – Kreps, 2013). Currently, there is talk of an economic slowdown in China, although growth in the next two years is projected at between 6 and 7 %, which is substantially higher than the growth in developed countries (World Bank-The Global Outlook in Summary, 2014). Concurrently with this slowdown there is talk of a surge in Chinese nationalism. A result of this is supposed to be greater asertivity of China in East, Southeast and Central Asia, which is often seen as evidence of Chinese superpower (or even hegemonic) ambitions (Niquet, 2012). These speculations have become stronger since the rise to power of the fifth generation of Chinese leadership under current President Xi Jinping between 2012 and 2013. Xi is seen as more of a hardliner than his predecessor Hu Jintao. As evidence of this, the current Minister of foreign affairs Wang Yi declared in 2014 that China will take on a more assertive role in IR, especially in regional affairs, support of developing countries and the protection of overseas Chinese and their legitimate interests (People's Daily Online, 2014).

4. Conclusion

This paper looked at the phenomenon of the forming multipolarity in the contemporary international system since the end of the Cold War. It began with the definition of key theoretical concepts, namely the concepts of polarity, pole, great power and superpower. Special attention was paid to the various criteria laid down by different scholars of IR that determine what makes a superpower a superpower and thus how many poles a given system of IR contains. Following that, the evolution of the views on the global system of IR after the Cold War were described, from the early predictions of American unipolarity and hegemony, to the potential appearance of new poles within the system. Finally, attention was briefly given to the potential of China to be the next country to be accorded superpower status. China fulfills most of the criteria that define a superpower according to the definitions mentioned in the text. It is, of course, the most populous country in the world, along with being the third largest, thus fulfilling the criteria of size and population. As stated above, it is also the second largest (or even the largest, depending on the methodology used) economy in the world. But while China is resource rich, it is dependent on imports of many commodities, lowering its self-suffiency. And although it is a nuclear power, it is also not yet militarily on par with the other great powers of the world, though it is working to make up its deficiency with a program of building up its military. But it is precisely this which lessens its cultural and diplomatic (or "soft") power. Surrounding countries are growing afraid of China's rising milirary might, which lowers China's possibilities for amicable influence in these regions. It remains to be seen how China will rise to this challenge.

References

DREYER, J. T. (2007). Chinese Foreign Policy. *The Newsletter of the Marvin Wachman Fund for International Education, Foreign Policy Research Institute*. [online]. February 2007, Volume 12, Issue 5. Available at the URL: http://www.fpri.org/docs/media/FN1205-Ch-dreyer.pdf>. [accessed 22.01.2016].

FLORES-MACÍAS, G. A. – KREPS, S. E. (2013). The Foreign Policy Consequences of Trade: China's Commercial Relations with Africa and Latin America, 1992–2006. In *Journal of Politics*. April, 2013, Volume 75, Issue, 2 pp. 357-371. [online]. ISSN 0022-3816. Available at the URL: http://han.savba.sk:81/han/EBSCO/web.ebscohost. com/ehost/pdfviewer/pdfviewer?sid=02a3860d-3ebb-4d89-8891-27c8069dec3f% 40sessionmgr111&vid=15&hid=127>. [accessed 14.09.2014].

HUNTINGTON, S. P. (1999). The Lonely Superpower. *Foreign Affairs*. [online]. March-April 1999. ISSN 0015-7120. Available at the URL: https://www.foreignaffairs.com/articles/united-states/1999-03-01/lonely-superpower. [accessed 22.01.2016].

KRAUTHAMMER, C. (2003). The Unipolar Moment Revisited. *National Interest*. [online]. 2002/2003, Volume 70, Issue 5-17. ISSN 0884-9382. Available at the URL: http://www.cf. org/content/publications/attachments/Krauthammer_347.pdf>. [accessed 22.01.2016].

MILLER, L. (2005). China an Emerging Superpower? In *Stanford Journal of International Relations*. [online]. 2005, Volume 6, Issue 1. [cited 22. 1. 2016]. Available at the URL: http://web.stanford.edu/group/sjir/6.1.03_miller.html>. [accessed 22.01.2016].

NIQUET, V. (2012). Mer de Chine: la guerre menace. In *Le Monde*. [online]. [Published 24.09.2012]. Available at the URL: http://www.lemonde.fr/idees/article/2012/09/24/mer-de-chine-la-guerre-menace_1764594_3232.html>. [accessed 29.05.2014].

NOSSAL, K. R. (1999). Lonely Superpower or Unapologetic Hyperpower? Analyzing American Power in the Post-Cold War Era. Biennial meeting, South African Political Studies Association, 29. 6. – 2. 7. 1999. [online]. Available at the URL: http://post.queensu.ca/~nossalk/papers/hyperpower.htm. [accessed 22.01.2016].

People's Daily Online. (2014). [online]. Available at the URL: http://english.peopledaily.com.cn/. [accessed 29.05.2014].

World Bank. (2014). The Global Outlook in Summary. [online]. Available at the URL: http://www.worldbank.org/en/publication/global-economic-prospects/summary-table. [accessed 22.01.2016].

Consultant's Role in ERP System Implementation: Case Study in the Indonesian Banking Sector

Triadana Perkasa, Hasnawati

Trisakti University, Economics and Business Faculty Jl. Kyai Tapa no.1 Jakarta Barat 11440 Indonesia E-mail: hessy.zainal@gmail.com

Abstract

The purpose of this research is to examine the influence of communication effectiveness, conflict resolution, and knowledge transfer to enterprise resource planning (ERP) system implementation effectiveness. Research objects are employees who work in five national and international banks in Jakarta. The data of this research is obtained by administering 125 questionnaires directly to the research object and returned as much as 125 questionnaires. The result of this research shows that communication effectiveness, conflict resolution, and knowledge transfer have positive correlation to the effectiveness of ERP implementation.

Keywords: Communication effectiveness, Conflict resolution, Knowledge transfer *JEL classification: O3*

1. Introduction

Nowadays there are many organizations looking for a way to get better performance and to get ahead of the competition through better resource management and deployment. Enterprise Resource Planning are being adopted widely across many organizations of any kind and size, in order to avoid technical obsolesce and to create sustainable competitive advantages (Al-Mashari*et al.*, 2003; Willis and Willis-Brown, 2002). ERP system implementation could enhance working quality and productivity, because the system offers standardization and simplification in operational procedures across the organization (Nah *et al.*, 2001). Essentially the ERP system works by integrating the whole business information, allowing organizations to manage effectively their resource of people, materials, and finance (Markus *et al.*, 2000)

The ERP has been seen by organization as a way to manage their resource and many advantage of it. Implementing ERP could greatly increase efficiency in doing business. All day-to-day management would be facilitated by the system. The system would provide rapid access to information for decision making and managerial control. Despite the advantages, the implementation of it is not always effective. Sometime the organization doesn't fully invest in the system, so the implementation is not as effective as the organization wants.

ERP systems are packaged business software systems, capable of sharing common data, and accessing information in a real time (Tsai *et al*, 2010). Through a strong data business framework, ERP is able to coordinate all offices and capacities over an organization into a solitary PC framework that can serve each one of those diverse divisions' specific needs like genuine enterprise resource planning programming. It implies that the organization that utilizing Enterprise Resource Planning (ERP) framework will have the capacity to coordinate separate framework or department like obtaining, request administration, Human Resources, and bookkeeping into a solitary framework. That is the reason why Enterprise Resource Planning uses could be related with major effectiveness.

In banking company, ERP is greatly needed. With thousand transactions happening at the same time, the company needs a system that could process all the incoming data into usable information. Most banking company would need to invest to a great ERP system, to be the backbone system of the company. But sometime the ERP systems could fail to meet company's goals soon after their implementation.

Enterprise Resource Planning (ERP) system could improve productivity and quality of work by offering integration, standardization and simplification for some banking transactions. This study aims to introduce a conceptual framework that examines the role of ERP consulting process such as communication effectiveness, conflict resolution, and knowledge transfer to the effectiveness of ERP implementation.

2. Literature Review

Enterprise resource planning (ERP) system is a business management system that comprises integrated sets of comprehensive software, which can be used, when successfully implemented, to manage and integrate all the business functions within an organization. These sets usually include a set of mature business applications and tools for financial and cost accounting, sales and distribution, materials management, human resource, production planning and computer integrated manufacturing, supply chain, and customer information (Boykin, 2001; Chen, 2001; Yen *et al.*, 2002 in Shehab*et al.*, 2004).

Another definition said that ERP system as a networked information system that collects, process, and provides information about an organization's entire enterprise, from identification of customer needs and receipt of orders to distribution of products and receipt of payments. ERP is the technological backbone of electronic business, an enterprise wide transaction framework with links into sales order processing, inventory management and control, production and distribution planning, and finance. (Richard L. Daft, 2003). As the business world moves ever closer to a completely collaborative model and competitors upgrade their capabilities, to remain competitive, organizations must improve their own business practices and procedures. To accomplish these objectives, companies are increasingly turning to enterprise resource planning (ERP) systems. (Elisabeth J. Umble*et al.* 2002)

2.1 Communication Effectiveness and Effectiveness of ERP implementation

The effectiveness the consulting process is depends with the constant communication with the client (Lee and Kim, 1999). With effective communication, information can be transferred and exchanged easier between both parties who realize, in that way, that sustaining this relationship is at their best interest (Maditinos*et al.*, 2011). It is a foundation that needs to be strongly built between external consultants and organizational members (Attewell, 1992 in Maditinos*et al.*, 2011). The consultant and users should understand each other to create an effective environment during consulting process.

The more consultants and users understand each other, the more effective the communication becomes during the consulting process. When there is lack of communication of users' needs, goals and aspirations to the consultants, it may undermine the implementation of the ERP system. (Fleck, 1993; Wang and Chen, 2006 in Maditinos*et al.*, 2011)

H1: A positive relationship exist between communication effectiveness and effectiveness of ERP implementation

2.2 Conflict Resolution and Effectiveness of ERP Implementation

Conflicts may occur during the implementation process between users and consultants; also the implementation of an ERP system is a time-consuming process (King, 2005 in Maditinos*et al.*, 2011). Such conflicts will possibly affect in an adverse way the output of the consultant and client relationship (McGivern, 1983). But the conflict should not be considered negatively impact the cooperation, but as a common incident during the implementation process (Green, 1998 in Maditinos*et al.*, 2011).

Conflict is a part of every social system; it is also an important interaction between individuals because the result of the conflict is the realization of outcomes. The outcomes could range from getting exactly what one wants to getting more than desired outcome, and finally, getting less than desired outcome (Meyer *et al.*, 2012)

Effective management of conflicts may lead in an enhanced level of information exchange and group work, thus, improving the implementation of the ERP system (Scott and Kaindl, 2000 in Maditinos*et al.*, 2011). Because some conflicts, eventually, can be resolved in a manner in which both parties gain – a typically desired integrative resolution (Carnevale, 2006 in Meyer *et al.*, 2012).

H2: A positive relationship exists between conflict resolution and Effectiveness of ERP implementation

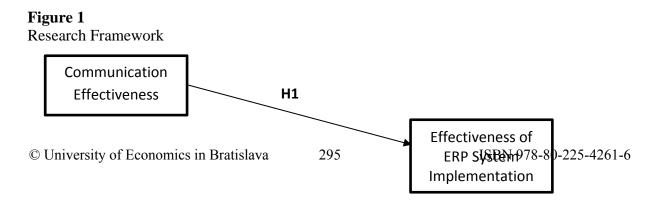
2.3 Knowledge Transfer and Effectiveness of ERP implementation

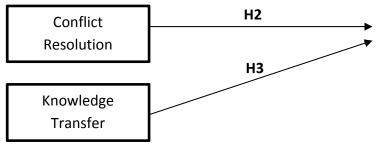
Knowledge transfer would be gradually transferred between external consultant and vendors to the internal environment during implementation process. The knowledge itself would enable company to use the new technology to its full potential and keep receiving the benefits of the technology. (Attewell, 1992)

Knowledge transfer is an event through which one entity learns from the experience of another, suggesting thereby that the effect of one unit on another is in terms of the learning that the second unit experiences (Kumar and Ganesh, 2009). Learning can happen in two ways, an entity can learn from its own experiences, or from the experiences of others (Gray and Meister, 2004 in Kumar and Ganesh, 2009). One entity could obtain knowledge by its direct experience with the work environment; another is able to apply the knowledge without having to go through the same experience. (Kumar and Ganesh, 2009)

Knowledge transfer within an organization enables employees to work together efficiently, and, thus, is essential to efficient management. Managers should always encourage their employees to transfer knowledge as a means to increase the effectiveness of ERP system implementation.

H3. A positive relationship exists between knowledge transfer and Effectiveness of ERP implementation





Source: Authors

3. Methodology

This research follows previous research conducted by Maditinos *et al.*(2011). The quantitative data was collected using questionnaire. The research was done in the natural environment where work could progress normally. Therefore the study setting of this research is non-contrived settings. Time horizon of this research is cross-sectional studies. This study is measuring three independent variables, which are communication effectiveness, conflict resolution, and knowledge transfer and one dependent variable which is effectiveness of ERP Implementation. Data were collected using questionnaire adapted from various previous researchers (Davison, 1997; Simonin, 1999; Sussman and Guinan, 1999; Wang *et al*, 2007; Shin and Lee, 1996). All questions were translated to Bahasa Indonesia, and five-point Likert scale was used for the measurement of all variables (1= "strongly disagree" to 5 = "strongly agree'). The Research model is below:

$$ERP = a + b1. CE + b2.CR + b3.KT + e$$

Which : ERP = Enterprise Resource Planning System Implementation

- CE = Communication Effectiveness
- CR = Conflict Resolution
- KT = Knowledge Transfer

e = error

Results

Here are profiles of respondents who became the research object. They have been working as employees in Standard Chartered, OCB, BNI, BRI and Mandiri banks in Jakarta – Indonesia.

4.1 Characteristic of Respondent

Table 1

Profile of respondents based on position

Position	Frequency	Valid Percent
Staff	80	64%
Supervisor	28	22.4%
Superintendent	15	12%
Director	2	1.6%
Total		100%

Source: Authors based on data extracted

From Table 1, we can see that majority of respondents work as a staff as much as 80 respondents, followed by supervisor (22.4%), superintendent (12%) and director (1.6%).

Table 2

Profile of respondents based on education

Education	Frequency	Valid Percent
S1 (bachelor)	87	69.6%
S2 (master)	36	28.8%
S3 (doctorate)	2	1.6%
Total	125	100%
	1	

Source: Authors based on data extracted

Table 2 shown that mostly (69.9%) of respondents education are bachelor degree, followed by master degree (28.8%) and doctorate degree (1.6%).

4.2 Validity and Reliability Test

All of construct in this research already passed of Validity and Reliability test. Validity test is required to know whether the instruments used are appropriate to measure the construct. Pearson correlation test was used to test all construct.

The result of validity test for communication effectiveness, conflict resolution, knowledge transfer, and ERP Implementation Effectiveness is valid for each item. Each item receive p-value lower than 0.005 that make every item tested is valid. Cronbach's alpha was used for reliability test. The entire amount of Cronbach's Alpha for each item is greater than 0.7 that means every construct that used meets reliability criteria. It also means that all answer from respondents were consistent and reliable.

4.3 Goodness of Fit

To examine whether the model is fit or not, researcher used coefficient determination. The value of coefficient of determination is shown in Table 3:

Table 3

Coefficient determination test result

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.681 ^a	.464	.450	.504712

a. Predictors: (Constant), Knowledge transfer, Communication effectiveness, Conflict resolution

Source: Authors based on data extracted

The value of adjusted R square (coefficient of determination) is 0.464 indicating the variation of the effectiveness of ERP system implementation variables could be explained by knowledge transfer, communication effectiveness, and conflict resolution variables as much as 0.464 or by 46.4% while the remaining 53.6 is explained by the other factors that aren't included in this study.

4.4 Testing the Overall Significance (F-Test)

Below is the result of overall significance test of the observed or estimated regression line using ANOVA:

Table 4

Results of overall significance test

		Sum of			_	
Model		Squares	df	Mean Square	F	Sig.
1	Regression	26.634	3	8.878	34.852	.000 ^a
	Residual	30.823	121	.255		
	Total	57.457	124			

ANOVAb

 Predictors: (Constant), Knowledge transfer, Communication effectiveness, Conflict resolution

b. Dependent Variable: ERP implementation effectiveness

Source: Authors based on data extracted

The result of the regression analysis above indicating that the test of ANOVA or F test obtained F count of 34.852 with a significant level of 0.000. This shows that the F count is greater than the F in the Table 4 and the probability is much smaller than 0.05, which means that all variables (knowledge transfer, communication effectiveness, and conflict resolution) together influence the effectiveness of ERP system implementation

4.5 Hypothesis Testing

Below is results of individual t-test

Table 5

t-test results

		Unstandardized Coefficients		Standardized Coefficients		
Model		В	Std. Error	Beta	t	Sig.
1	(Constant)	.617	.350		1.765	.080
	Communication effectiveness	.227	.091	.192	2.499	.014
	Conflict resolution	.437	.072	.473	6.111	.000
	Knowledge transfer	.171	.069	.182	2.496	.014

Coefficients

a. Dependent Variable: ERP implementation effectiveness

Source: Authors based on data extracted

For the first hypothesis, we are looking for influences between communication effectiveness and effectiveness of ERP system implementation. The result of the hypothesis testing showed that communication effectiveness has positive correlation with effectiveness of ERP system implementation, because t-sig = 0.014 (less than 0.05). That means when the company communicate with the provider or consultant effectively, the effectiveness of implementation will likely to be increased. This happened because all members of company

and consultant are understand each other about problem that faced and communicate its' clearly. Managers should keep an effective communication environment if they want to increase the effectiveness of ERP system implementation.

The result of this research is contrary with (Maditinos et al., 2011), in the previous research the communication effectiveness hasn't able to establish a significant relationship with effectiveness of ERP system implementation. However, the result of this research is consistent with (Attewell, 1992) that stated effective communication is a strong foundation of a trustworthy relationship between external consultants and organizational members. Because when there are more consultants and members of user understand each other that would create an effective communication environment during consulting process. Also with effective communication, information can be transferred and exchanged easier between both parties who realize, in that way, that sustaining this relationship is at their best interest (Maditinos*et al.*, 2011). And when there are insufficient amount of communication between users and their needs, goals and aspirations to the consultant may undermine the implementation of the ERP system (Fleck, 1993; Wang – Chen, 2006).

Hypothesis 2

For the second hypothesis, we are looking for influences between conflict resolution and effectiveness of ERP system implementation. The result of the test indicates that conflict resolution has a positive correlation to the effectiveness of ERP system implementation (t-sig = 0.000). That means if the user and consultants are able to resolve any conflict that happened during implementation process, this will likely increased the effectiveness of the implementation. Conflicts might always happen during implementation process, the ability to resolve the conflict is important for both users and consultants. So when any company wants to implement ERP system, the top manager should able to diminished any conflict that arise between users and consultants therefore increase the effectiveness of ERP system implementation.

The result of this research is contrary with (Maditinos et al, 2011), in the previous research the conflict resolution couldn't establish a significant relationship with the effectiveness of ERP system implementation. However, the result of this research is consistent with (Scott – Kaindl, 2000) that stated effective management of conflicts may lead in an enhanced level of information exchange and group work, thus, improving the implementation of the ERP system. The ability of top management to decrease the conflict is important if they want to effectively implement the ERP system. But conflicts should not be seen as a negative, as (green, 1998) stated that the emergence of disagreements during the implementation period should not be considered as a negative turn in the cooperation, but rather as a common incident during a long-lasting collaboration. Conflict will always be there when two company collaborating, but when the conflict is resolved there is a greater chance that the collaboration will be stronger and successful.

Hypothesis 3

For the third hypothesis, we are looking for influences between knowledge transfer and effectiveness of ERP system implementation. And the result of the test indicates that there is positive correlation with the effectiveness of ERP system implementation (t-sig = 0.014). Knowledge transfer would be happened when both users and consultant work together in the middle of implementing process. Consultant give the user guidance on how the system works that will gradually transfer the knowledge to the users itself. Then over time users would be self-knowledge with the system know-how. And thus increase the effectiveness of ERP system implementation. The result of this research is consistent with (Maditinos*et al.*, 2011) that stated increased level of knowledge concerning the ERP system will enable the company to exploit the new technology to its full potential and continue to achieve benefits from the use of the system in the future. When company has received enough knowledge about the system, the ERP system would effectively implement as the company has independently know how the system worked. Thus the benefit of the system will always be received by the company over time.

1. Managerial Implication

The result of this study could give some consideration points for the management of this study selected banks. Some of these consideration points are:

- 1. Communication around the organization is very important as it will make cooperating much fluid and when any conflict arise they could resolve it with ease, because there will be no wall between them as they have clear communication since beginning. As it would create an effective environment for the new system to be implemented.
- 2. The management should be able to diminish any conflict that arising by creating an effective communication with the people of the organization. Because when everything is clear and understandable, it would decrease any conflict. Even when conflict is happened, the resolution of it would be much easier and faster.
- 3. The consultant could give the user some training before using the system. So the user would be comfortable using the new system and know how to operate it too. And the consultant could be giving them some kind of guide book of the system, if the user has some trouble they could refer to the book first.

2. Research Limitations

- 1. The location for this research is in Jakarta with 5 banks involved in the survey taking. All banks have been using ERP system. The result of this research can't be generalized to all banking industry.
- 2. This research is using questionnaire as the sources of the data, misunderstanding can be happened when respondents answering the questionnaire.

References

Al-MASHARI, M. – Al-MUDIMIGH, A. – ZAIRI, M. (2003). Enterprise resource planning: a taxonomy of critical factors. In *European Journal of Operational Research*. Vol. 146, pp. 352-64.

AKKERMANS, H. – vanHELDEN, K. (2002). Vicious and virtuous cycles in ERP implementation: a case study of interrelations between critical success factors. In *European Journal of Information Systems*. Vol. 11, No. 1, pp. 35-46.

AMOAKO-GYAMPAH, K. (2007). Perceived usefulness, user involvement and behavioral intention: an empirical study of ERP implementation. In *Computers in Human Behavior*. Vol. 23, pp. 1232-48.

ATTEWELL, P. (1992). Technology diffusion and organizational learning: the case of business computing. In *Organization Science*. Vol. 3, No. 1, pp. 1-19.

BESSANT, J. – RUSH, H. (1995). Building bridges for innovation: the role of consultants in technology transfer. In *Research Policy*. Vol. 24, pp. 97-114.

BINGI, P. – SHARMA, M. K. – GODLA, J. K. (1999). Critical issues affecting an ERP implementation. In *Information Systems Management*. pp. 7-14.

BLOOMFIELD, B. P. – DANIELI, A. (1995). The role of management consultants in the development of information technology: the indissoluble nature of socio-political and technical skills. In *Journal of Management Studies*. Vol. 32, No. 1, pp. 23-46.

BOYNTON, A. C. – ZMUD, R. W. – JACOBS, G. C. (1994). The influence of IT management practice on IT use in large organizations. In *MIS Quarterly*. Vol. 18, No. 3, pp. 299-318.

BRADFORD, M. – FLORIN, J. (2003). Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems. In *International Journal of Accounting Information Systems*. Vol. 4, No. 3, pp. 205-25.

CHANG, S. I. (2004). ERP life cycle implementation, management and support: implications for practice and research. The Proceedings of the 37th Hawaii International Conference onSystem Sciences (HICSS-37), Hawaii, US, 05-08 January.

CRUZ, N. M. – PEREZ, V. M. – CANTERO, C. T. (2009). The influence of employee motivation on knowledge transfer. In *Journal of Knowledge Management*. Vol. 13, Iss.6, pp. 478-490.

DAVISON, R. (1997). An instrument for measuring meeting success. In *Journal of Information and Management*. Vol. 32, Issue 4, pp. 163-176.

DILLARD, J. – YUTHAS, K. (2006). Enterprise resource planning systems and communicative action. In *Critical Perspectives on Accounting*. Vol. 17, pp. 202-23.

FINNEY, S. – CORBETT, M. (2007). ERP implementation: a compilation and analysis of criticalsuccess factors. In *Business Process Management Journal*. Vol. 13, No. 3, pp. 329-347.

FREEMAN, K. D. – DART, J. (1993). Measuring the Perceived Quality of Professional Business Services. In *Journal of Professional Services Marketing*. Vol. 9, Issue 1, pp. 27-47.

GARGEYA, V. B. – BRADY, C. (2005). Success and failure factors of adopting SAP in ERP system implementation. In *Business Process Management Journal*. Vol. 11, No. 5, pp. 501-516.

HONG, K. – KIM, Y. (2002). The critical success factors for ERP implementation: an organizational fit perspective. In *Information and Management*. Vol. 40, pp. 25-40.

JIANG, J. J. – GARY, K. – MEANS, T. L. (2000). Project risk impact on software development team performance. In *Project Management Journal*. Vol. 31, No. 4, pp. 19-26.

KEMP, M. J. – LOW, G. C. (2008). ERP innovation implementation model incorporating change management. In *Business Process Management Journal*. Vol. 14, No. 2, pp. 228-242.

KING, W. (2005). Ensuring ERP implementation success. In *Information System Management*. Vol. 22. No. 3, pp. 83-84.

KUMAR, J. A. – GANESH, L. S. (2009). Research on knowledge transfer in organizations: a morphology. In *Journal of Knowledge Management*. Vol. 13, Issue 4, pp. 161-174.

LEE, J. N. – KIM, S. (1992). The relationship between procedural formalization in MIS development and MIS success. In *Information and Management*. Vol. 22, No. 2, pp. 89-111.

MADITINOS, D. – CHATZOUDES, D. – TSAIRIDIS, C. (2011). Factors affecting ERP system implementation effectiveness. In *Journal of Enterprise Information Management*. Vol. 25, Issue 1, pp. 60-78.

MAJED Al-MASHARI. (2002). Enterprise Resource Planning (ERP) systems: a research agenda. In *Industrial Management & Data Systems*. Vol. 102, Issue 3, pp. 165-170.

MARKUS, M. L. – TANIS, C. (2000). The enterprise system experience – from adoption to success. In ZMUD, R. W. (Eds.). *Framing the Domains of IT Management: Projecting theFuture through the Past, Pinnaflex Educational Resources*. Cincinnati (Ohio). pp. 173-208.

MARNEWICK, C. – LABUSCHAGNE, L. (2005). A conceptual model for enterprise resource planning (ERP). In *Information Management & Computer Security*. Vol. 13, No. 2, pp. 144-155.

McGIVERN, C. (1983). Some facets of the relationship between consultants and clients in organizations. In *Journal of Management Studies*. Vol. 20, No. 3, pp. 367-386.

McLACHLIN, R. D. (1999). Factors for consulting engagement success. In *Management Decision*. Vol. 37, No. 5, pp. 394-402.

MEYER, C. J. – McCORMICK, B. – CLEMENT, A. – WOODS, R. – FIFIELD, C. (2012). Scisors cut paper: purposive and contingent strategies in a conflict situation. In *International Journal of Conflict Management*. Vol. 23, Issue 4, pp. 344-361.

MOTWANI, J. – SUBRAMANIAN, R. – GOPALAKRISHNA, P. (2005). Critical factors for successful ERP implementation: exploratory findings from four case studies. In *Computers in Industry*. Vol. 56, pp. 529-544.

NAH, F. – LAU, J. – KUANG, J. (2001). Critical factors for successful implementation of enterprise systems. In *Business Process Management Journal*. Vol. 7, No. 3, pp. 285-296.

REIMERS, K. (2003). International examples of large-scale systems: theory and practice II: implementing ERP systems in China. In *Communications of AIS*. Vol. 11, pp. 11-33.

SHEHAB, E. M. – SHARP, M. W. – SUPRAMANIAM, L. – SPEDDING, T. A. (2004). Enterprise Resource Planning. In *Business Process Management Journal*. Vol. 10, Issue 4, pp. 359-386.

SHIN, H. – LEE, J. (1996). A process model of application software package acquisition and implementation. In *Journal of Systems and Software*. Vol. 32, Issue 1, pp. 57-64.

SIMONIN, B. L. (1999). Ambiguity and the process of knowledge transfer in strategic alliances. In *Strategic Management Journal*. Vol. 20, Issue 7, pp. 595-623.

SUSSMAN, S. W. – GUINAN, P. J. (1999). Antidotes for high complexity and ambiguity in software development. In *Information and Management*. Vol. 36, Issue 1, pp. 23-25.

THONG, J. Y. L. (2001). Resource constraints and information systems implementation in Singaporean small businesses. In *Omega*. Vol. 29, No. 2, pp. 143-156.

THONG, J. Y. L. – CHEE-SING, Y. – RAMAN, K. S. (1996). Top management support, external expertise and information systems implementation in small businesses. In *Information Systems Research*. Vol. 7, No. 2, pp. 248-267.

UMBLE, E. J. – HAFT, R. R. – UMBLE, M. M. (2003). Enterprise resource planning: implementation procedures and critical success factors. In *European Journal of Operational Research*. Vol. 146, No. 2, pp. 241-257.

WANG, E. – CHEN, J. (2006). Effects of internal support and consultant quality on the consulting process and ERP system quality. In *Decision Support Systems*. Vol. 42, pp. 1029-1041.

WANG, E. T. G. – LIN, C. C.-L. – JIANG, J. J. – KLEIN, G. (2007). Improving enterprise resource planning (ERP) fit to organizational process through knowledge transfer. In *International Journal of Information Management: The journal for Information Professionals*. Vol. 27, Issue 3, pp. 200-212.

WILLIS, T. – WILLIS-BROWN, A. (2002). Extending the value of ERP. In *Industrial Management & Data Systems*. Vol. 102, No. 1, pp. 35-38.

Appendix

Questionnaire's statements are as follows:

Independent Variables:

• Communication Effectiveness

Communication effectiveness was measured using four questions adopted from (Davison, 1997):

- a. The language of the meeting prevented you from participating
- b. You found it hard to understand other group members when they talked
- c. You experienced problems expressing yourself
- d. You felt reluctant to put forward your own ideas

• Conflict Resolution

- Conflict resolution was measured using three statements adopted from (Sussman and Guinan, 1999); the participants' gives degree to these statements:
- a. In general, we get along very well
- b. This team resolves conflicts that exist among team members in a timely manner
- c. This team finds ways to minimize tensions between members

• Knowledge Transfer

Knowledge transfer was measured by these statements below adopted from (Simonin, 1999; Wang *et al* 2007); the participants' gives degree to these statements:

- a. Your company has learned a great deal about the technology/process know-how held by your partner
- b. Your company has greatly reduced its initial technological reliance or dependence upon the partner since the beginning of the alliance
- c. The technology/process know-how held by your partner has been assimilated by your company and has contributed to other projects developed by your company

Dependent Variable:

The Dependent variable in this study is the effectiveness of ERP implementation. The effectiveness of ERP implementation was measured using four statements adopted from (Shin and Lee, 1996):

- a) Extend to which a software system can be maintained to operate without failure under abnormal conditions
- b) Extend to which a software system can provide reliable (precise, accurate, consistent) information
- c) Ease of learning how to use software systems, prepare input data, and interpret information processing results
- d) Extent to which one can understand the structure of the software system and what it does

Achieving Economic and Social Development on the Local Level through Optimal Fiscal and Budgetary Policy: Fiscal Decentralisation Survey

Yuliya Petrenko

Institute of the Economy of Industry of the National Academy of Sciences of Ukraine Department of Problems of Development Strategy and Financial and Economic Regulation of Industry Panas Myrny 26 Kyiv, 01011 Ukraine

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

Abstract

The article offers a brief review of theoretical and empirical background of fiscal decentralisation considering it as a worldwide trend of fiscal and budgetary policy on the local level for several recent decades. The aim of the article is to estimate the optimal level of fiscal decentralisation concerning its impact on economic and social development in terms of economic growth in the countries of the European Union (EU) and the Commonwealth of Independent States (CIS) according to the data available.

Keywords: fiscal decentralization, economic growth *JEL classification*: H 70, H 77, O40

1. Introduction

Like most institutional arrangements, intergovernmental fiscal frameworks affect social and economic development on both central and sub-central levels through differences in taxation and public service provision, which affects the long-term growth path of a country. The trend of recent years shows that fiscal decentralization appears to be the most implemented and optimal fiscal and budgetary policy at local level for many countries. The index of regional authority computed for 42 democracies and semi-democracies and published in 2010 reveals that 70 % of countries have decentralized since 1950 (Martinez-Vazquez et al. 2015, 1). According to the recent (Martinez-Vazquez et al. 2015; Gadenne and Singhal 2014) and previous (Oates 1993; Oates 2005) researches, fiscal decentralization is considered as a way of organizing public sector as to create opportunities for higher economical and social development in terms of higher growth and welfare. Socio-economic growth and development is one of the most important issues nowadays and the main question concerning fiscal and budgetary policy at local level is whether ongoing in the world trend of fiscal decentralization is useful for this goal.

The issues of fiscal decentralization and its impact on social and economic development in terms of economic growth are reflected in many scientific publications. Thus Oates (1993; 2005) created a theoretical background for investigation of fiscal decentralization *per se*, Blöchliger and Égert (2013) concentrated their attention on the influence of decentralization

on economic growth through its impact on economic activity, productivity and investment, Blöchliger, Rodríguez-Pose and Krøijer (2009) focused on fiscal decentralization and economic growth in Central and Eastern Europe, Szarowská (2014) worked on the issues of fiscal decentralization and economic development in selected unitary European countries, Gadenne and Singhal (2014) investigated decentralization in developing economies. As the above mentioned studies offered different views on fiscal decentralization and its role in countries' economic activity and development including its positive and negative influence along with no influence at all, the article seeks to estimate the optimal level of fiscal decentralization concerning its impact on economic and social development in terms of economic growth in the countries of European Union (EU) and Commonwealth of Independent States (CIS) according to the data available.

2. Theoretical and empirical background

According to the most comprehensive survey on the *theoretical background of fiscal decentralization* (Oates 2005), the early contributions to the first generation theory (characterized as normative) rely on the definition of the nature of public goods, conceptualization of the roles of public and private sectors and main functions of the government as income distribution, dealing with market failure, and macroeconomic stabilization, taking into account that local public goods would be better provided by local governments as they acknowledge of local preferences, but under the supervision of central government in case of negative spillovers. The first generation theory also considers the tax assignment problem in a multi-layered government with a conclusion that taxation executed by local governments should be focused on property taxes and users fees regarding the distortions issue. The second generation theory brings a "public choice" perspective and focuses not only on economic background, but also on imperfect information, moral hazard by assuming the presence of selfish public officials with their own agenda, and the problem of hard and soft budget constraints leading to the conclusion that decentralization based on the own resources of local governments is more efficient that one relied on transfers.

Concerning *marking out the fiscal decentralization* there are numerous approaches based on the division of decentralization processes. One of them supposes fiscal decentralization being a part of government decentralization along with other components which include six dimensions: vertical decentralization describes systems in which government or administration is divided among many tiers; decision-making decentralization focuses on how the authority of making political decisions is distributed among different tiers; appointment decentralization concerns the level at which officials at different tiers are selected and dismissed; electoral decentralization means the proportion of tiers at which direct elections are held to pick executives; personnel decentralization concerns the share of administrative personnel employed at lower tiers; and fiscal decentralization concerns the way tax revenues and public expenditures are distributed among the different tiers (Treisman 2002, 5-13). Another approach provides the division into three distinct elements of decentralization: fiscal decentralization including the transfer of financial resources in the form of grants and taxraising powers to sub-national government units; administrative one that provides the transfer of functions performed by central government to geographically distinct administrative units; and political decentralization with focus on devolving powers and responsibilities to elected local governments (Scott 2009, p. 4). Dividing decentralization in the above-mentioned manner is rather arguable as all the dimensions are interrelated and the degree of fiscal decentralization depends on all of its components, but in order to avoid ambiguity the measurement of fiscal decentralization without interference with other decentralization options in many cases is seemed as suitable.

There is no generally accepted single indicator for *measuring fiscal decentralization* and the methods vary according to the research purposes as dealing with intergovernmental fiscal frameworks requires a multi-dimensional approach. The most common measure of fiscal powers at local level is a share of resources assigned to sub-national governments in the form of spending, revenue and tax ratios¹, which although poorly measure the real fiscal discretion of local governments in practice. The reason of it is that central government may limit tax autonomy on the revenue side or influence local spending on expenditure side remaining essential regulatory power at the central level. In this case traditional measurement ratios are often inadequate for testing fiscal decentralization impact of economic growth, efficiency in provision of public services or citizens' satisfaction. Regardless the relevance and reliability of the various indicators there is evidence that revenue shares better reflect fiscal and regulatory power than spending ones as sub-central spending is often financed by large transfers with a lot of regulatory conditions. Institutional indicators, e.g. spending power indicator, are more picturesque in describing the policy framework than spending and revenue ratios, but those indicators are not that common yet and available for a few countries only (Blöchliger et al. 2013, 8).

Economic and social development in general meaning is a process of increasing the living standards of the population. According to recent publications, the influence of fiscal decentralization on economic and social development is mostly measured in terms of its impact on *economic growth*². Thus in production function output is determined by physical and human capital and by their productivity, which in turn is affected by institutional and policy settings including the extend of decentralization (OECD 2013, 61). The other option is to determine the influence of fiscal decentralization through its direct impact using regression analysis (Szarowská 2014, Rodríguez-Pose and Krøijer 2009).

Many selected empirical evidences show a positive relationship between decentralization and economic activity in terms of GDP growth. Thus a positive and statistically significant impact of expenditure decentralization on per capita GDP growth in a panel of 51 developed and developing countries covering 1997-2001 was reported (Iimi 2005). More recent acrosscountries findings (Blöchliger et. al 2013, 5) showed that sub-central fiscal power measured by revenue or spending shares is positively associated with economic activity and doubling sub-central tax or spending shares (e.g. increasing the ratio of sub-central to general government tax revenue from 6 to 12 %) is associated with a GDP per capita increase of around 3 % with the impulse stems from productivity and human capital improvements, and little economic effect from capital investment. Investment in physical and human capital as a share of general government spending is significantly higher in more decentralized countries. Although relationship between decentralization and GDP is weaker for more decentralized

¹ The most common of them are the ratios of sub-central to general government spending (spending decentralization), revenue (revenue decentralization), tax revenue (tax revenue decentralization), and tax revenue over which sub-national governments have some base or rate-setting autonomy (tax autonomy) (Blöchliger et al. 2013; OECD 2013). Another set of indicators consists of the ratio of sub-national governments' own-sourced revenue to sub-national governments' expenditure (fiscal autonomy of sub-national governments), the ratio of sub-national governments' expenditure to total public sector expenditures (fiscal importance of sub-national governments), and the geometric average of the measures of the two previous elements (fiscal decentralization index) (Vo 2005), but to calculate those indices more detailed statistical information is needed, which creates problems for cross-country analysis because of statistical data availability, especially for countries that are not the member states of EU and not OECD countries.

 $^{^2}$ Researchers highlight three main reasons for linking economic growth and fiscal decentralization: first reason consists in the fact that growth is seen as an objective of fiscal decentralization and efficiency in the allocation of resources in the public sector, second one is that it is an explicit intention of governments to adopt policies that lead to a sustained increase in per capita income, and third one is that per capita growth is easier to measure and to interpret than other economic performance indicators (Scott 2009, 10).

countries reflecting possible detrimental effect of wide sub-central fiscal powers and unsuitability of decentralization of certain policy areas, the estimated relationship never becomes negative. In the similar later study (Blöchliger and Égert 2013, 3) authors put their results in a bit different way showing that 10 % increase in the decentralization ratios in form of spending or tax revenue shares is associated with a 0,3 % higher GDP per capita on average, and that results vary little between federal and unitary countries in general, suggesting that differences between the two country groups are small.

As the empirical evidence is mixed, some researchers found negative impact of fiscal decentralization on GDP growth or showed no impact at all (Szarowská 2014). There are may be two main reasons to explain those results. Firstly, the researches with negative results were focused on developing or transition economies, and fiscal decentralization may be harmful in the stages of development, "... where the administrative capability of local governments is insufficient, local officials may not be responsive to preferences of local residents, and local governments in those countries may be constrained by central government" (Gemmell et. al 2013, 1918). Secondly, fiscal decentralization as such may effect economic growth less than functional composition of government spending or type of tax (Gemmell et. al 2013, 1918). Another reason may be that effects of decentralization on growth through such relevant economic and institutional variables as corruption or macro stability are not always accounted for in different studies.

Thus, there are contrary points of view and empirical evidences according fiscal decentralization influence on economic growth. In this case the decision concerning optimal fiscal and budgetary policy implementation does not seem to be easy. But in case that fiscal decentralization may influence economic growth in both positive and negative ways the optimal level of fiscal decentralization exists where the sign of its impact changes from positive to negative.

Methodology

To estimate the impact of fiscal decentralization on economic and social development the regression analysis based on panel data has been used. Economic and social development is expressed by economic growth, which in the model acts as the dependent variable and is expressed by GDP p.c. growth $(GDP)^3$. The main independent variables are calculated according to different approaches to fiscal decentralization. Two basic indicators are used⁴:

- fiscal decentralization (tax revenue approach) = (local government taxes + state government taxes)/general government taxes;
- fiscal decentralization (expenditure approach) = (local government expenditure + state government expenditure)/general government expenditure.

The impact of fiscal decentralization is expected to be not linear, but rather non-linear, which means that beyond a certain optimal level of fiscal decentralization (A) its positive

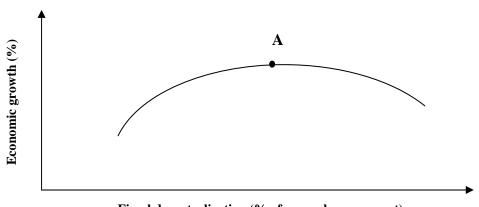
³ GDP per capita is assumed to be the headline indicator for economic and social development in the country (Eurostat Statistics Explained 2015).

⁴ The calculations have been made according to the data of International Monetary Fund's (IMF) Government Finance Statistics (GFS) applicable across countries with different legal and institutional structures, but not particularly focused on decentralization issues. The standardization of the fiscal variables inevitably leads to a loss of detail that must be kept in mind when using GFS data to assess decentralization. For example, expenditures that are mandated by the central government appear as sub-national expenditures, even though subnational governments may have no autonomy in these spending decisions. Shared taxes appear as sub-national revenue, although the sub-national government has no autonomy in determining the revenue base or rate, since the GFS reports revenues based on which level of government ultimately receives the revenues (GFSM 2014).

impact on economic growth turns and additional decentralization reduces economic growth. That fact may be subject to decreasing level of efficiency in the public sector with regard to smaller municipal units (undesirable tax competition between regions, emergence of rich and poor regions, increased costs of administration, public management and tax collection). Given situation may be illustrated graphically through inverted U - shaped curve (Figure 1).

Figure 1

Nonlinear impact of fiscal decentralization on economic growth



Fiscal decentralization (% of general government)

Source: own processing according to Gwartney et. al (1998)

On the vertical axis is the value of economic growth achieved under a certain level of fiscal decentralization, which is located on the horizontal axis. The positive relationship between the fiscal decentralization and the amount of economic growth can reach the point A, when economic growth is the highest. Then increasing decentralization would lead to a reduction in economic growth. This relationship can be expressed mathematically in written form as:

$$GDP_{i,t} = \beta_1 + \beta_2 fis_{dec_{i,t}} - \beta_3 fis_{dec_{i,t}}^2 + u_{i,t}$$

where $GDP_{i,t}$ reflects the value of economic growth for a certain country (i) in a given year (t). In accordance with this graphical expression the inverted U-shaped curve represents the movement of the curve to the point A, the given variable represents the fiscal decentralization and affects the amount of positive economic growth. Conversely, variable captures the negative effect of increasing the level of fiscal decentralization at the height of economic growth and is expressed graphically on the curve from the point A to the right.

The resulting econometric model to transform the basic shape of the quadratic equation is written below:

$$ax^2 + bx + c = 0 \tag{2}$$

The level of fiscal decentralization that maximizes economic growth is estimated using Viet formulas by formula:

$optimal\ fiscal\ decentralization = -\frac{b}{2a}$

A representative sample of countries made up of two international unions: the Commonwealth of Independent States and European Union representing European and post-

(1)

(3)

soviet fiscal traditions, the time period covers the years 2000-2014⁵. Due to the availability of data from the World Bank and IMF databases the panel is unbalanced.

Regression analysis based on longitudinal data is used to estimate the correlation between the fiscal decentralization and economic growth. Based on the assumptions fixed effects model has been chosen, which is used in case when the representative sample constitutes individual effects, which are unobservable, but correlated with the explanatory variables. All subsequent effects then includes in diameter through estimable conditional relationship:

$\alpha_i = \alpha_1 z_{i1} + \alpha_2 z_{i2} + \dots + \alpha_q z_{iq}$

(4)

(5)

(6)

The resulting fixed effects model can be written in the form:

$y_{it} = \alpha_i + \beta_1 x_{it1} + \beta_2 x_{it2} + \dots + \beta_k x_{itk} + u_{it}$

where α_i is referred to as fixed effects, which is different for each cross-sectional unit (country).

To confirm the appropriateness of the type of the model (fixed effect model) several tests have been used for determining the best model describing the tendency in the dataset. The first is essentially based on dispersion levels pointing to an associated significance of different mean values in groups. If the p-value is less than the value of 0,05 the null hypothesis saying that fixed effects are the same for each cross-sectional unit is rejected (pooled regression model is preferable) and the alternative hypothesis is accepted, which claims that the regression model with fixed effect is more suitable for the purposes of the research.

The second test called Breusch-Pagan test compares the better alternative between the pooled regression model and regression models with random effects based on the fundamental equation regression model with random effects:

$y_{it} = X_{it}\beta + v_i + s_{it}$

The null hypothesis provides for the dispersion is equal to 0 and thus it is preferable to use the pooled regression model. If the null hypothesis is rejected the alternative hypothesis is accepted, which argues in favour of using random effects model.

The last of those tests is Hausman test, which compares the effectiveness of using a regression model with random effects versus fixed effects model. The null hypothesis assumes that there is consistency within estimates of parameters of generalized list squares method (regression model with random effects) and regression method with fixed effects. Due to this fact the usage of regression model with fixed effects would not be effective. An alternative method on the other hand says that coefficient β_1 is consistent and β_2 is not consistent, and thus fixed effect model appears to be a suitable option.

Before calculating the coefficient it is necessary to determine whether there are autocorrelation and heteroskedasticity in the model. Their presence is contrary to the assumptions of ordinary least squares and has to be removed. To remove autocorrelation two methods are used based on variance - covariance matrix, which are consistent also in the case of autocorrelation and heteroskedasticity existence to estimate the standard error of regression coefficient. These methods are applicable for estimation through the pooled regression model, fixed effect model and random fixed effects model. For the purposes of the research the

⁵ The period from 2000 has been chosen because shortcomings have been identified in the data for the years prior to 2000 that have been reclassified according to the Government Finance Statistic Manual (GFSM) 2001 framework (GFSM 2014).

method based on a characteristic has been chosen, though autocorrelation is not a serious problem (Beck and Katz, 1995). When there is a parallel between correlation and heteroskedasticity concerning cross-sectional units it is preferable to use the estimator referred to as "Panel_Corrected Standard Errors" according to Beck and Katz (1995).⁶

Results

All results of regression analysis are presented in the tables below. Autocorrelation and heteroscedasticity have been removed with the usage of Panel Corrected Standard Errors. Results from the tests focused on the choice of model for the purposes of the study (F-test, Breusch-Pagan and Hausman test) have shown the most appropriate model for the each case (in the brackets).

Table 1

Estimation of fiscal decentralization influence on economic growth

Unions of countries	Fiscal decentralization (tax revenue approach)	Fiscal decentralization (tax revenue approach) ²	Fiscal decentralization (expenditure approach)	Fiscal decentralization (expenditure approach) ²
EU	0,139	-0,984***	0,161***	-0,291***
	(Fixed effects)	(Fixed effects)	(Pool OLS)	(Pool OLS)
CIS	0,350*	-0,298	0,130	-0,205
	(Fixed effects)	(Fixed effects)	(Pool OLS)	(Pool OLS)

Source: own calculation based on data provided by World Bank and IMF Notes: *significant at 10% level; **significant at 5% level; ***significant at 1% level

As it is shown in the table, the presence of inverted U-shape of the curve can be confirmed as well as the existence of a nonlinear relationship between fiscal decentralization and economic growth. Optimal level of fiscal decentralization is given in the table below as well as the average level of fiscal decentralization (Table 2).

Table 2

Optimal level of fiscal decentralization

Unions of countries	Optimal level of fiscal decentralization (tax revenue approach)	Optimal level of fiscal decentralization (expenditure approach)	
EU 53,30%		27,66%	
CIS	58,73%	31,70%	
Unions of countries	Average level of fiscal decentralization (tax revenue approach)	Average level of fiscal decentralization (expenditure approach)	
EU 16,21%		26,41%	
CIS	24,44%	30,98%	

Source: own calculation based on data provided by World Bank and IMF

Considering *EU member states* the main findings are as follows. The optimal level of fiscal decentralization (tax revenue approach) is equal to 53,30 %. Regarding the fact that the average level of tax decentralization in the countries of EU in given time period has been calculated as 16,21 %, there is a space for increasing its amount. The expenditure decentralization at optimal level of 27,66 % gives some space for increasing decentralization from the average level of 26,41 %.

⁶All calculations have been made in econometric statistical software Gretl.

For the *CIS member states* the optimal level of fiscal decentralization according to the tax revenue approach is equal to 58,73 %. Regarding the fact that the average level of fiscal decentralization in the countries of CIS in the same time period is 24,44 %, this creates a big space for additional decentralization ensuring increasing economic growth. The calculated optimal level of fiscal decentralization (expenditure approach) is 31,70 %. The calculated average level of expenditures decentralization is equal to 30,98 %. It shows the existence of the space for increasing expenditure decentralization that may be recommended in CIS countries.

4. Conclusions and policy implications

The study of the influence of fiscal decentralization on the economy and society has become increasingly important in resent decades. In theory fiscal decentralization leads to higher economic and social development at local level starting with Oates decentralization theorem, tax assignment problem, and proceeding with new political economy consideration. Fiscal decentralization may be marked out of the other decentralization dimensions for the purpose of the research as to avoid the ambiguity in its measurement, but in more recent empirical studies other institutional dimensions, as political or administrative, are often taken into consideration when the influence of fiscal decentralization is analyzed. The common measures of fiscal powers at local level are the shares of resources assigned to sub-national governments in the form of spending, revenue and tax ratios. According to the study of empirical evidence, fiscal decentralization impact on economic and social development is commonly investigated in terms of economic growth. Both positive and negative evidences are presented in the researches.

In order to estimate the optimal level of fiscal decentralization on economic growth two unions of countries, EU and CIS, have been investigated representing European and postsoviet fiscal traditions. Regression analysis based on longitudinal data has been used to estimate the correlation between the fiscal decentralization (measured through tax revenue and expenditure approaches) and economic growth. Considering the impact of fiscal decentralization to be non-linear the optimal levels of fiscal decentralization have been calculated. The main findings are that there is a space for both tax revenue and expenditure fiscal decentralizations in both unions. The difference between optimal and average levels is bigger for tax revenue decentralization showing more opportunities for increasing its level in the framework of positive influence on economic growth. In order to proceed with the research in this direction next study is to be concentrated on using other measurements of fiscal decentralization and economic growth as well as on dividing the countries according to their level of development according to the data available.

References

BERK, N. – KATZ, J. N. (1995). What to do (and not to do) with Time-Series Cross-Section Data. The American Political Science Review, Vol. 89, Issue 3, pp. 634-647. [online]. Available at the URL: https://www.rochester.edu/college/psc/clarke/405/BeckKatz95.pdf>. [accessed 08.01.2016].

BLÖCHLIGER, H. – ÉGERT, B. (2013). Decentralisation and Economic Growth - Part 2: The Impact on Economic Activity, Productivity and Investment. *OECD Working Papers on Fiscal Federalism*, No. 15, OECD Publishing. [online]. Available at the URL: http://dx.doi.org/10.1787/5k4559gp7pzw-en. [accessed 08.01.2016].

BLÖCHLIGER, H. – ÉGERT, B. – FREDRIKSEN, K. (2013). Fiscal Federalism and its Impact on Economic Activity, Public Investment and the Performance of Educational

Systems. *OECD Economics Department Working Papers 1051*. OECD Publishing. [online]. Available at the URL: http://dx.doi.org/10.1787/5k4695840w7b-en. [accessed 16.01.2016].

Eurostat Statistics Explained. (2015). *Sustainable development - socioeconomic development*. [online]. Available at the URL: http://ec.europa.eu/eurostat/statistics-explained/index.php/sustainable_development_-socioeconomic_development>. [accessed 03.02.2016].

GADENNE, L. – SINGHAL, M. (2014). Decentralization in Developing Economies. *NBER Working Paper No. 19402.* [online]. Available at the URL: http://www.ksg.harvard.edu/fs/msingha/DecentralizationDevelopingEconomies_gadenne_singhal.pdf>. [accessed14.01.2016].

GEMMELL, N. – KNELLER, R. – SANZ, A. (2013). Fiscal decentralization and economic growth: spending versus revenue decentralization. *Economic Inquiry*. Vol. 51, Issue 4, pp. 1915-1931. [online]. Available at the URL: http://www.socsci.uci.edu/~jkbrueck/course% 20readings/Econ%20272B%20readings/gemmell-kneller-sanz.pdf>. [accessed 18.12.2015].

Government finance statistics manual. (2014). Washington, D. C.: International Monetary Fund, 2014. [online]. Available at the URL: https://www.imf.org/external/Pubs/FT/GFS/Manual/2014/gfsfinal.pdf>. [accessed 15.01.2016].

GWARTNEY, J. – LAWSON, R. – HOLCOMBE, R. (1998). The size and functions of government and economic growth. *Joint Economic Committee*. [online]. Available at the URL: http://www.jec.senate.gov/public/index.cfm/republicans/1998/4/the-size-and-functions-of-government-and-economic-growth>. [accessed 18.01.2016].

IIMI, A. (2005). Decentralization and Economic Growth Revisited: An Empirical Note. In *Journal of Urban Economics*. Vol. 57, pp. 449-461.

MARTINEZ-VAZQUEZ, J. – LAGO-PEÑAS, S. – SACCHI, A. (2015). The Impact of Fiscal Decentralization: A Survey. *International Center for Public Policy Working Paper 15-02*. [online]. Available at the URL: http://dx.doi.org/10.2139/ssrn.2633869>. [accessed 08.02. 2016].

OATES, W. E. (2005). Toward a second-generation theory of fiscal federalism. *International Tax and Public Finance*. Vol. 12, No. 4, pp. 349-373. ISSN 0927-5940.

OATES, W. E. (1993). Fiscal decentralization and economic development. *National Tax Journal*. Vol. 46, No. 2, pp. 237-243.

OECD. (2013). Fiscal Federalism 2014: Making Decentralisation Work. *OECD Publishing*, 136 p. ISBN 9789264204560. [online]. Available at the URL: http://www.oecd-ilibrary.org/governance/fiscal-federalism-2014_9789264204577-en. [accessed 25.12.2015].

SACCHI, A. – SALOTTI, S. (2014). A comprehensive analysis of expenditure decentralization and of the composition of local public spending. *Regional Studies*. DOI: 10.1080/00343404.2014.893387. [accessed 18.01.2016].

SCOTT, Z. (2009). Decentralisation, Local Development and Social Cohesion: An Analytical Review. *GSDRC Research Paper*. Governance and Social Development Resource Centre, University of Birmingham, UK. [online]. Available at the URL: http://www.gsdrc.org/docs/open/po60.pdf>. [accessed 12.01.2016].

SZAROWSKÁ, I. (2014). Fiscal Decentralisation and Economic Development in Selected Unitary European Countries. *European Financial and Accounting Journal*, vol. 9, no. 1, pp. 22-40. [online]. Available at the URL: https://ideas.repec.org/a/prg/jnlefa/v2014y2014i1id113. html>. [accesses 02.02.2016].

TREISMAN, D. (2002). Defining and Measuring Decentralization: A Global Perspective. [online]. Available at the URL: http://www.sscnet.ucla.edu/polisci/faculty/treisman/Papers/defin.pdf>. [accessed 17.01.2016].

RODRÍGUEZ-POSE, A. – KRØIJER, A. (2009). Fiscal decentralisation and economic growth in Central and Eastern Europe. *LSE 'Europe in Question' discussion paper series, 12/2009.* The London School of Economics and Political Science, London. [online]. Available at the URL: http://www.lse.ac.uk/europeanInstitute/LEQS%20Discussion%20Paper%20Series/LEQSPaper12.pdf>. [accessed 02.02.2016].

VO, D. H. (2005). Fiscal Decentralisation in Vietnam: a Preliminary Investigation. *Economics Discussion / Working Papers 05-16*, The University of Western Australia, Department of Economics. [online]. Available at the URL: http://msc.uwa.edu.au/?f=148844>. [accessed 19. 01.2016].

New Development Directions of Logistics in an Industrial Company

Patrik Richnák

University of Economics in Bratislava Faculty of Business Management, Department of Production Management and Logistics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: patrik.richnak@gmail.com

Abstract

For present business fundamental and dynamic changes are typical that must be accepted by each industrial company, and it needs to respond to them effectively. These are the increasing customer demands, globalisation of markets, financial, economic, political changes and rapid changes in production and information technology. These changes contribute to the fact that industrial companies are aware of the importance of logistics in the company. This helps to make the delivery time shorter and to increase the flexibility of production activities, etc. New direction of logistics brings its modern form, which is characterised by greater flexibility, innovation, accuracy, reliability, customer orientation and the use of global logistics in an industrial company, of which we are focusing on the Warehouse management system, e-Logistics and Industry 4.0.

Keywords: Warehouse management system, e-Logistics, Industry 4.0 *JEL classification*: F 60, L 90, M 11

1. Introduction

Significant changes in global markets influence the behaviour of industrial companies and the actual status of logistics. As the logistics is a part of the business process, it is important to follow its directions and development. Because only through logistics as an equal partner, a company will not succumb to "pitfalls" of dynamic changes in the business environment. Modern management in the company, the use of new information technologies and systems, tightening legislative requirements, shortening of product life cycle shift logistics in an industrial company forward, carrying out its modernization. It largely reflects automation, robotics, development of artificial intelligence and digitization. The rapid development of technologies and systems contributes to the fact that the future form of logistics with the help of advances in technology will eliminate jobs in the company logistics and make human resources waive the "second track".

Bearing in mind that the direction and development of logistics is extensive, we decided to describe new developments of logistics which importance and use in industrial companies will increase with the beginning of the fourth industrial revolution.

2. New direction of logistics

The current period is marked by significant technological progress, which is also reflected in the logistics. In the context of the new economy there is a great deal of knowledge, which due to information and communication technologies is more preferred and utilized. That is why we more often speak about the phenomena such as innovation, modern logistics, supply chain management, environmental protection, flexible manufacturing technology and modern information technology. These have become a major source of innovation since the mind – 70s. In recent years, the digitization of information technology that penetrates into each branch has contributed to a new direction in the development. The future form of logistics will not be different. According to the monthly Logistics (2012) and an article "The distant future intralogistics" we can expect that the logistics will be strongly influenced by information and communication technologies over the next 40 years. We can also predict following directions of development:

- Full use of all the information and technical capabilities with the help of intelligent search engines machines, logistics is planning to use social networking sites.
- Self-governing autonomous systems which substitute human labour in processing, because it is limited and does not reflect modern trends.
- The pursuit of highly flexible and decentralized distribution network with optimized transport which would also save energy.
- Use the concept of CargoCap that represents an automated transport of pallets with goods between distribution stations network of underground tunnels with a diameter of about two meters with the help of electric forklift computer controlled from a central control room.
- Consolidation of goods flow in decentralized distribution centers, on the basis of demographic change.
- Everyday consumption goods will be ordered daily using the Internet, which causes the fusion of retail and online market.
- In regional and trans-regional logistics hubs there will be inexpensive robots from Africa to hold manual work of human.
- Warehouses will move closer to cities to shorten the way and at the same time will be decentralized.
- Distribution of goods is concentrated in large virtual networks.
- It will connect internet data with the physical environment e. g. by iPhone will enable us to connect simple sensors to the network.
- The use of intelligent swarms, with the help of which more energy efficient supply chain with a flexible response to the events will generate. The aim should be to apply artificial intelligence to logistics, thus functioning of autonomous trucks without drivers.

A fundamental change in the logistics of an industrial company in the 21st century can be seen as a change from the period of the industrial era to the era of informatics. In this situation, each industrial company has to prove its efficiency and adapt to the new environment full of dynamic changes. More detailed change can be seen in Table 1.

Table 1

Company Logistics					
In the era of industry	In the era of informatics				
Logistics as an implementer of material	Logistics as part of the strategy: time				
and associated information flow: the right	conditioned distribution of resources as goods,				
product in the right amount of the right	people, capacity and information, operates				
quality at the right time, the right place,	within the meaning of substitution of material				
with minimal cost	processes for information processes				
The level of logistics services is	Logistics services are one of the key tools to				
determined beforehand and it is obtained	achieve greater corporate competitiveness				
at the lowest cost					
Logistics is seen as closer integration of	Logistics is based on:				

Change in the 21st Century Logistics

material handling, packaging, storage and	- Forecasting, strategic management, project			
transport with information	management, process management, information			
	technology			
	- Customer service, distribution, creation of			
	reserves, inventories of stocks, purchasing and			
	procurement, export and import			
	- Planning and operational management of			
	production, including the determination of the			
	product range			
	- Management of material management,			
	packaging, transport, storage, handling and			
	recycling			
	- quality			
Logistics specialists are recruited mainly	Logistics specialists are trained completely:			
from workers of the aforementioned areas	- In the area of professional know-how: logistics			
	strategy, customer service, logistics systems			
	including transport systems			
	- In the methodological know-how: logistics			
	systems design, selection and award of			
	forecasting models, logistic systems			
Source: STEHLÍK A – KAPOLIN I (2008) Logistika pro manažány Praha : Ekopress 2008 p. 39				

Source: STEHLÍK, A. – KAPOUN, J. (2008). Logistika pro manažéry. Praha : Ekopress, 2008. p. 39.

These changes shift the logistics forward, thus we more often discuss concepts such as e-Logistics, electric mobility, robotics, Industry etc. In this article, we therefore focused on clarification of new, selected directions of logistics development in industrial companies in the 21st century. From our perspective, it is important to explain the e-Logistics, Warehouse management system and Industry 4.0. These new logistics developments are important because they are not only used by many industries such as Warehouse management system, but also in the coming period they will be used to a greater extent. For example Industry 4.0, because the key to success is now the ability to innovate, constantly improve and do business flexibly.

2.1 Warehouse management system (WMS)

Each industrial company must continuously manage individual processes in order to secure profitability and competitive advantage in the market. The decisive factor in a successful company is an effective inventory management, because Warehouse management must respond more flexibly to market changes, accelerate processes, quality and availability of stock. The beginnings of the stock records using the computer go back to the 80s, when the amount of the deposited material was recorded, but current Warehouse management system offers many ways to manage, control, optimize warehousing and distribution operations.

Dudek (2009) defines Warehouse management system as a group of programs that help company management to control the activities of daily warehouse management. Each Warehouse management system offers slightly different options - but there are some standard functions: e. g. inventory management, management of goods at the entry and exit, management activities related with the collection and packaging and warehouse documentation, measurement of productivity in the warehouse, automatic data collection, reporting.

According to the monthly Logistics (2007) Warehouse management system is a software system designed specifically for motion control and storage of materials in the distribution

and wholesale stores (from receipt of goods through its storage to designated storage location, through to dispatch). These systems are mostly linked to ERP systems.

The essence of the system lies in a store map containing detailed parameters of storage space on the shelves and on the free surface, working according to the same principles and criteria like the use of place and others. Warehouse management system also includes information about the storage of goods in its size, turnaround, packaging and dispatching. Each logistical operation is recorded and it is clear where the logistic unit is, what parameters it has and what its expiry' date is. We must not lose sight of the difference between the Warehouse management system and warehouse management. Warehouse management system management system management system management system management system management.

Warehouse management is implemented through a set of algorithms that work with input data and specified rules with a system based on delivery notes and orders received. These dates determine where the received item is stored or where it will be dispatched. It is also committed to the principle of FIFO, LIFO, FEFO. Warehouse management system generates the issue slips, manages the optimal move of warehouse operators to stores, eliminating inefficient movement of pickers to stores. It also manages the work of warehouse and compares their performance with time data optimized for the operation. Warehouse management system includes mobile terminals that communicate with the system online through a wireless network. The terminals represent a control tool, because using the bar code logistics operations are controlled eliminating errors in all operations. Barcode plays an important role. With the goods lacking the barcode, it is necessary to find its origin and order, which causes delays. Warehouse management system works with stock positions, single and multi-level packaging, which allows you to track individual stock movements.

Through a barcode, Warehouse management system checks, the address of storage deployment from the product packaging or pallet labels. The data is compared with the data from the ERP system. When in stock product Warehouse management system accepts any limitations and optimum use of space in the warehouse with respect to turnaround. On the dispatch of the goods we shall operate on the basis of (Logistika, 2001):

- Zone processing when the warehouse is divided into several zones with certain number of warehouse staff and the order is divided into particular zones there.
- Batch (wave) processing when the storekeeper's orders are grouped into batches (waves) according to certain criteria. A dose, is made of a amount of similar (identical) orders.

Warehouse management system allows continuous inventory, which means that we can set an inventory interval for each item in the warehouse. When there is an inventory interval, Warehouse management system initiates the conversion of the product and also calculates the amount of products in the warehouse, which amount is close to zero. When using Warehouse management system you can combine other technologies that help to reset the error and save time. These include, for example, RFID, Pick by Voice, Pick by Light, conveyors and more. The future trend will be the integration of the entire supply chain and the connectivity of information through portal solutions.

Warehouse management system brings advantages but also disadvantages. We have clearly summarized them all in Table 2. In our opinion, the advantages outweigh in the use of this system in companies.

Advantages and Disadvantages of	W WIS		
Advantages	Disadvantages		
acceleration of stock movements	initial investments in the system		
increase efficiency of processes	return on investment up to two years		
elimination of errors that arose at	the need to promote technologies		
paper documents	providing online information		
reduction in the number of	reluctance to approach changes		
complaints			
customer service improvement			

Table 2

Advantages and Disadvantages of WMS

Source: own processing

2.2 E-Logistics

The phenomenon of internet in industrial companies started the potential to communicate with customers in a flexible way. Company logistics is not an exception. There is an effort to improve services and adapt to market demands using information and communication technologies and implementing the demands of e-commerce. That creates a new concept of e-Logistics.

Ceniga - Majerčák (2007) understand e-Logistics as logistics which is adapted to electronic commerce (e-commerce), includes strategic planning and development of logistics systems and processes necessary for e-commerce and administrative and operational of the creation.

Stehlík - Kapoun (2009) consider e-Logistics the support system management of the physical logistics along the entire chain, from suppliers to end customers. Through computer and Internet (extranet, intranet) technologies the physical logistics is managed and implemented.

Pernica (2005) understands e-Logistics the strategic planning and development of all logistics systems and processes that are necessary for e-commerce and also their administrative and operational formation for their physical progress.

The main idea of e-Logistics is to help ease the burden, speed up and rationalize the management functions of forecasting, planning, decision-making and control of the physical logistics. E-Logistics is a modern extension of classic logistics and can be divided into the following subsystems of electronic procurement (e-procurement), digitized manufacturing (e-manufacturing) and electronic distribution (e-distribuction).

Talking about e-Logistics, we meet the terms such as semi-automatic and fully automated processes, which are used in the warehouse management system, transport systems without a driver in automatic shelf stackers and order pickers, where electronics have an important role. However, these semi-automatic and fully automated processes are not related to e-Logistics, since it only includes technology, people and structures that are used for the collection, processing, storage and transmission of data for analysis, planning, organization, decision preparation, management and tracking of other information or physical processes that are directly related to the whole company logistics.

In addition to the classic characters that e-Logistics has there are challenges and facts, which companies must respond to optimally. The most important facts, which logistics management must reckon strategically and operationally, organizationally, technically and personally, are (Viestová, 2007):

- Paradigm change the customer has more power, Internet users are demanding and uncompromising on quality and response speed of Internet business and the timeliness of delivery of the order, and also the relevance and quality of information provided. Therefore, logistics must work safely, quickly, efficiently and meet the high expectations of the customer.
- Acceleration of logistics related to the new technologies used, enabling them to increase the speed of production and logistics processes. The new form of logistics under the influence of digitization increases the speed of procurement, processing, storage and transmission of data and feedback.
- Atomization of logistics customers order a variety of goods in individual pieces in small quantities. This concept is related to the concept of fulfilment. It is operational process steps and operation of businesses that are required to meet customer orders successfully from receipt through its management, manufacturing and distribution, to the arrival of the payment. The amount of parcels increases, which makes express and courier services overloaded. However, allowance should be made with retroactive distribution.
- Development of new logistical technology to better manage the demands placed on e-Logistics is developing a new flexible, precise logistics technology, which speeds up the process and it is also cheaper than existing methods used by companies.
- Growing share of manual work different orders from customers resulted in greater use of manual handling in the warehouse, for example, when taking over the piece in picking expeditionary units.
- Individualisation of logistics customer demands require distribution to be not only accurate, but also specific and economical. It is necessary to join long distance shipments and then sort them again before delivery.
- Cooperation with logistics companies the contacts and logistics routes to end customers by mail, courier, express and parcel companies are used.
- New infrastructure of selling and transferring of goods working with new technology that meets the e-Logistics, such as boxes which keep products cooled or fresh and so on.

Technology of Internet, using information and communication technologies, focusing on an overall solution, the integration of all logistics chain creates the concept of modern logistics, which must accept two types of integration (BUKOVÁ, 2008):

- horizontal integration which links companies with suppliers, business partners and distribution to end customers, including feedback related to complaints and recycling or disposal;
- vertical integration linking logistics of manufacturing, marketing and innovation. The information logistics and trading process via the Internet is becoming the main part of logistics chain as well as business partners. It also gives customers the option of direct communication to the transfer of crucial information.

On the basis of all these knowledge and information about e-Logistics, its advantages and disadvantages are clearly summarized in Table 3.

	ravanages and Disadvanages of e Eogistics					
Advantages		Disadvantages				
	increased automation	increased use of manual work				
	acceleration of logistics	increased demands of customer				
	efficiency in orders' processes	need to use new rapid logistics				
		equipment				
	logistics individualization	need to use new forms of goods				
		distribution				
	cycle time orders shortening					

Table 3

Advantages and Disadvantages of e-Logistics

Source: own processing

2.3 Industry 4.0

This term was first encountered in 2011 and is one of the main projects of informatization of traditional industries of the German Government. Industry 4.0 describes the fourth industrial revolution, which follows the digital revolution and is based on the perfect computer disposal of the undertaking, which in turn is essential for their sustained business success.

Concept for Industry 4.0 stands above all representatives of information technology, telecommunication companies, new media, engineering, and manufacturing industry electrotechnics and electronics. All these promote the concept of intelligent factories, which are characterized by flexibility, efficient use of resources and raw materials, ergonomics and customer involvement in the production and value creation. Around the year 2030 we expect that the Industry 4.0 will be in German companies a common phenomenon. Consequently, the manufacturing processes should be of a greater individuality, flexibility, and speed. Companies will have to respond better to the economic and social challenges such as engaging increasingly in manufacturing processes or the reconciliation of work and private life (ROGALSKA, 2013).

Gregor (2015) Industry 4.0 is the name of the great innovative movement, which was launched in the industry of Europe's most powerful economy, Germany it is the reaction of the German scientists and the industry in EU research programs, directed to companies of the future.

The idea is to link computerized production machines, manufactured products, information systems and other components of a production plant. Thanks to complete digitization of production elements, processes and management systems it allows to create a "virtual factory" identical to the real one. It also enables further improvement of the structure of production, the use of smart data, communication and cooperation of intelligent features, and the ability of learning and self-organization.

There are different possibilities of applying the concept of Industry 4.0. We rank among them for example intelligent maintenance management, customer involvement in the production process, sustainability, thanks to maximal recycling and use of secondary raw materials and "smart factory architecture". Vision Industry 4.0 says that companies will not have to sell their products as a whole, but they retain the right to reuse the raw materials that are on the surface of the extensive data on production, assembly and recycling. It is worth particularly in case of expensive raw materials such as precious metals and rare elements.

The basic principles of Industry 4.0 include (HERČKO – ŠTEFÁNIK, 2015): interoperability - connection of CPS (cyber-physical system) and people over the internet of

things and services, the use of co-operation of these elements is the key to the success of this concept; virtualization - the possibility of monitoring the physical processes through CPS, sensor data obtained are linked with a virtual business model and simulation models in a virtual environment can simulate various processes; decentralization - with growing market demand for products increases the complexity of central control, embedded computers allow the unit to decide independently, thus management systems are greatly decentralized; capacity in real time - the management of the organization is necessary to collect and analyze data in real time, on the basis of the information gathered we get a real-time response to the failure of the device; orientation services - company services, CPS and people are available via the Internet of Service and therefore can be offered to other parties, they may be internal or even external. Creating space for the group factories, which are located in several locations; modularity and reconfigurability - modular systems are able to flexibly adapt to changing demands to expand or change modules, modular systems are therefore easily editable for seasonal fluctuations or changes in the product characteristics.

The successful implementation of the concept of Industry 4.0 depends on several variables, namely to ensure sufficient quality human resources, raising substantial funds for the introduction of this concept into the company to ensure decentralized mindset of employees, ensure cooperation not only between institutions but also between people separated.

Concept of Industry 4.0 as a huge technological advance brings benefits for companies. We summarized these benefits in Table 4, and we compared them with the disadvantages.

Table 4

Auvantages and Disauvantages of I	industry 4.0		
Advantages	Disadvantages		
manufacturing processes are	declining of labor force in		
more flexible and faster thanks to	manufacturing		
the internet of things			
high utilization of automation,	lack of financial resources for the		
robotics and ergonomics	application of the concept		
efficient use of raw materials and	lengthy introduction which takes a		
resources	few years		
involvement of customers and	requires new algorithmization of		
suppliers in the production	processes and creation of new		
process	management systems		
higher environmental friendliness			

Advantages and Disadvantages of Industry 4.0

Source: own processing

3 Conclusions

The turbulent pressure of the international business environment is forcing all companies to increase the efficiency of operations, minimize costs, increase profits and meet ever more demanding customers, have a quality product and immediate service. The fulfilment of these requirements is currently challenging, but one of the ways to provide that is a modern logistics, which creates in any industrial company a significant source of competitive advantage.

The incoming fourth industrial revolution is changing the direction of industrial companies. The area of logistics is not an exception, and plays an important role there. In an upgraded environment it will be subject to changes brought about by the phenomenon of digitization. In this article, we therefore approached the main directions of development of

logistics and we focused on some of them, which include Warehouse management system, e-Logistics and Industry 4.0. At present, Warehouse management system and e-Logistics are implemented and used in industrial companies because thanks to a sharp rise in IT technology requirements of logistics are changing.

In the near future we will face substantial, deep and revolutionary changes in the industry and also logistics, will have to accept artificial intelligence, robotics, sensor systems, nanotechnology and other technologies that brings the concept of Industry 4.0, which is the culmination of the fourth industrial revolution. If industries underestimate these new developments in logistics, they will not survive long in the market.

References

BUKOVÁ, B. (2008). *Zasielateľstvo a logistické činnosti*. Bratislava: Iura Edition, 2008. 294 p. ISBN 978-80-8078-232-0.

CENIGA, P. – MAJERČÁK, P. (2007). Základy logistiky I. Žilina: EDIS, 2007. 140 p. ISBN 978-80-8070-749-1.

PERNICA, P. (2005). Logistika pro 21. století : supply chain management. 3. díl. Praha: RADIX, 2005. 1096-1698 pp. ISBN 80-86031-59-4.

STEHLÍK, A. – KAPOUN, J. (2008). *Logistika pro manažery*. Praha: Ekopress, 2008. 266 p. ISBN 978-80-86929-37-8.

VIESTOVÁ, K. et al. (2007). *Lexikón logistiky*. 2. vyd. Bratislava: Iura Edition, 2007. 204 p. ISBN 978-80-8078-160-6.

BREZOVSKÝ, J. (2014). WMS: Nástroj na zlepšenie procesov. In *Systémy logistiky*. Praha: ATOZ Marketing Services, november-december 2014, Vol. 9, Issue 51, pp. 16-17.

DUDEK, S. (2009). Efektívny systém riadenia skladu v období krízy. *In Doprava a logistika : odborný mesačník vydavateľstva Ecopress*. Bratislava: ECOPRESS, 2009. Vol. 4, Issue 5 (May), p. 22. ISSN 1337-0138.

GREGOR, M. (2015). Industrie 4.0 in Produktion, Automatisierung und Logistik. (2015). In *ProIN: productivity and innovation*. Žilina: CEIT, 2015. Vol. 16, Issue 3, p. 54. ISSN 1339-2271.

HERČKO, J. – ŠTEFÁNIK, A. (2015). Komponenty a princípy konceptu Industry 4.0. (2015). In *ProIN: productivity and innovation*. Žilina: CEIT, 2015. Vol. 16, Issue 2, pp. 47-49. ISSN 1339-2271.

ORAVEC, J. (2013). Nielen evidovať, ale najmä riadiť. In *Systémy logistiky*. Praha : ATOZ Marketing Services, november-december 2013, Vol. 8, Issue 45, pp. 26-27.

ROGALSKA, K. (2013). Priemysel generácie 4.0. (2013). In *Revue priemyslu: ľudia, manažment a hospodárstvo*. Bratislava: Vydavateľstvo Revue priemyslu, 2013. Vol. 7, Issue 6, p. 36. ISSN 1336-9857.

Slovníček logistiky. (2007). In *Logistika: měsíčník vydavatelství Economia*. Praha: Economia, 2007. Vol. 13, Issue 3 (March), p. 60. ISSN 1211-0957.

Vzdálená budoucnost intralogistiky. (2012). In *Logistika: měsíčník vydavatelství Economia*. Praha: Economia, 2012. Vol. 18, Issue 4 (April). pp. 56-57. ISSN 1211-0957.

Warehouse management system. (2001). In *Logistika: měsíčník pro dopravu, skladování, distribuci a balení*. Praha : Economia, 2001. Vol. 7, Issue 4 (April), pp. 19, 21-22. ISSN 1211-0957.

Integrated Environmental-safety-health Assessment Programme of Remediation of Environmental Burdens in Slovakia

Gabriela Sančiová

University of Economics in Bratislava Faculty of Business Economics with seat in Košice, Department of Management Tajovského 13 Košice, 041 30 Slovak Republic E-mail: gabriela.sanciova@gmail.com

Abstract

Strategic development documents aimed at satisfaction of socio-economic needs in the society must be in relation to sustainable development assessed in terms of their impact on the environment and human health. In this paper we designed a specific model for integrated environmental-safety-health assessment. The model is based on the implementation of the management of health risks in a standardised process SEA - Strategic Environmental Assessment.

Keywords: strategic development document, environmental impact assessment, risk assessment *JEL clasification:* Q51, Q58

1. Introduction

Quality of life is generally determined by the health of the population resulting from a healthy environment. It is therefore self-evident that today must consider preventive development strategies, in a sustainable, ie balanced socio-economic and environmental development. The process of assessing impacts on the environment and human health SEA, EIA, HIA) have undergone lengthy development and today are globally coordinated, standardized and legislatively established. The problem, however, is a separate and time-shifted impact assessment on the environment (before implementation of activities) and public health (in the monitoring of operational activities). It is evident that changes in health status are also due to changes in air quality, water, soil etc. In the present paper it is designed more exact process-integrated environmental health impact assessment of strategic development documents. The model is verified on a specific remediation program.

1.1 Methodology

Integrated assessment of strategic documents - model

Socio-economic development activities aimed at improving the quality of life favoring socio-economic dimension at the expense of environmental-safety are unsustainable in the future. Balance of development of individual regions must ensure at the stage of preparing a development strategy. Safety and health risks that occur in meeting social and economic objectives as a result of reduced quality components of the environment must be managed so in preparation as after approved strategic documents, the derivation of specific activities, plans and projects. These risks need to be managed during the first stage of preparation of

future activities, i.e. in the strategic development documents and assess them from the first step of assessing impacts on the environment and human health in the face of economic and social objectives. In the present paper it is designed for a specific strategic document "State program of remediation of environmental burdens in Slovakia" proven model for integrated environmental-safety-health impact assessment of development strategies.

If a standardized risk management becomes part of the impact assessment process of strategic documents, the SEA process goes beyond the environmental assessment, impact assessment on environmental issues, as well as health assessment, which means assessment of health risks arising from strategic documents focused primarily on the socio-economic improvement, so, environmental-safety-health impact assessment of strategic development documents.

Model of integrated environmental-safety-health assessment of strategic development document is designed to Figure 1.

2. Characteristics of the strategic document "State program of remediation of environmental burdens for the years 2010-2014"

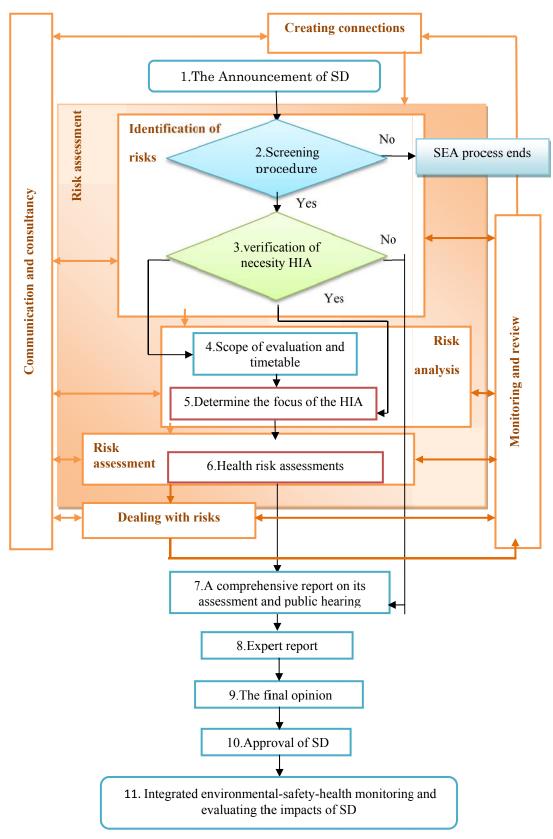
The program presents a medium-term strategic planning document for the systematic removal of old environmental burdens in Slovakia, prepared for the period 2010 - 2014. Updating of the document was to take place after the completion of projects carried out under the Operational Programme Environment (2007-2013) and then be carried out every five years. The strategy for dealing with environmental burden is defined through the priorities, objectives and measures designed to reduce the adverse environmental impacts on human health, environment and safety. The document is divided into three time horizons - short-term (2010 - 2011), medium term (2012 -2014) and long term (2015 and above), and for each time horizon determines the progress of work in dealing with environmental problems, including an estimate of their financial performance and identification of financial sources to cover financial expenses useful to address the environmental burden (Report on the Evaluation of the strategic document, 2009).

Priorities SPR EB:

- 1. Ensure a complex and systematic solution of issues of remediation of environmental burdens,
- 2. ensure the protection of human health and the environment in the areas concerned and burdened,
- ensure the fulfillment of measures stemming from European Union directives (Water Framework Directive - 2000/60 / EC, Directive 2006/118 / EC on the protection of groundwater against pollution and deterioration, Directive 2006/21 / ESo management of waste from extractive industries)
- 4. ensure the gradual elimination of environmental burdens and reducing the risks arising from them (The report on the Strategic Document.

Figure 1

Model of integrated environmental-safety-health assessment of strategic development document



Source: own processing

EDAMBA 2016

The aim SPR EB is improve management of environmental burdens through:

- Identify, research and systematization of probable environmental burdens,
- detailed survey of identified environmental burdens,
- Progressive methods of remediation of environmental burdens,
- Tracking and monitoring of the environmental burden (Report on the Evaluation of the strategic document, 2009).

From the assessment of environmental impact (environmental assessment - SEA) is the initial assessment report SD SPR EB in accordance with applicable legislation, and it contains all the requirements (formal, vocational). Deficiencies can be kept in a safety-health assessment. To be a complex assessment of the quality, more exactly and comply with the requirements the latest legislation and methodologies should be expanded and strengthened the process of assessing the SD SPR EB evaluation of safety-health risks. Potential safety-health risks can be anticipated based on the negative impacts of the SD SPR EB specified in the assessment report.

2.1 Identification of the negative impacts of the strategic document SPR EB

Assess risk from the strategic document are based on the determination of its negative effects. Basic data on the expected impacts of the SD SPR EB, including health, are presented in the 4th chapter of the Assessment report SD SPR EB and they are mainly as follows:

- negative impacts on environmental issues can manifest themselves in the event of noncompliance with the conditions set out from approved projects, research, remediation or monitoring,
- primary negative effects: the emergence of hazardous waste emergencies arising in the case of poorly chosen methods of investigation or remediation of environmental burden, temporary increase in contamination of groundwater (due to the introduction of harmful substances into groundwater removal contamination of the rock environment and groundwater to the extent necessary and for a limited time), increasing the risk of environmental load, in case of interruption respectively. non-completion of remediation (intermediate decomposition of contaminants are often more toxic than the original contaminant),
- secondary negative effects: entry to foreign property during the execution of geological works, temporary construction and land improvements (eg. construction of a temporary access road to the contaminated sites remediation building equipment, etc.), removal of vegetation.

3. Risk assessment of the strategic document

3.1 Risk assessment negative impact "generation of hazardous wastes" of the strategic document SPR EB

1. Identification of the risks:

Generation of hazardous waste

When exposed to the effects of hazardous waste there is a direct impact on human health and on environmental issues. In documenting the harmful effects of hazardous waste is required long-term exposure. Reduce the generation of hazardous waste can be achieved by reducing industrial activities arising from the SD in the country, by implementation of cleaner technologies in production processes, changes in consumer habits. The introduction of environmentally good sound management of hazardous wastes can reduce both environmental-safety and health risks.

Hazardous wastes are those wastes that have one or more hazardous characteristics listed in the Act. 79/2015 Coll. Waste effective from 1.1.2016 (explosiveness, oxidability, high flammability, combustibility, irritability, harmfulness, toxicity, Carcinogenic`, corrosivity, infectivity, developmental toxicity, mutagenicity, substances and preparations which, in contact with water, air or an acid releases toxic or very toxic gases, substances and preparations capable by any means, after disposal of yielding another substance, eg. leachate, which has or may have any of the above characteristics and ecotoxicity). The law in this context refers to transposing Directive EP and ER 2010/75 /EU of the European Parliament and of the Council Integrated Pollution Prevention and Control IPPC handling of hazardous substances requires special attention.

Principles for handling hazardous waste (HW):

- handling HW but only with the consent of the state administration body,
- keeping their records and reporting on their creation and method of handling.
- separated collection and to avoid mixing
- labeling as intended,
- transportation only with the consent of state administration bodies,
- disposal only in devices for this purpose.
- 2. Probability of risk:

Although in Slovakia gradually reduce the production of hazardous waste (also through legislative measures and stricter control of waste HW), the probability of hazardous waste still exists in connection with the implementation of other new activities.

The risk of hazardous waste is a function of the severity of the risks caused by the generation of hazardous wastes and likelihood of risk. Suppose there is a hazardous waste (in

case of non-compliance with approved projects), what causing contamination of the 10 m^2 area. The likelihood that the hazardous waste arises whatever the 1: 10 every year.

R = P x D

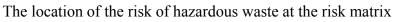
$R = (1:10) \times 10 = 1 m^2$ contaminated area for one year

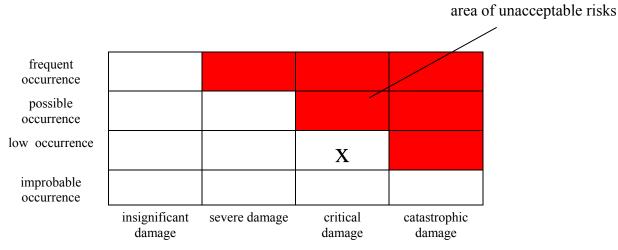
Where:

- R degree of risk
- P probability of risk
- D result of monitoring events
 - 3. Risk assessment:

It can be assumed the risk of hazardous waste, the result of this risk is contaminated area of between 1 m^2 per year which will be added in the range of implementation of the strategic document SPR EB. The risk of hazardous waste is placed in the risk matrix in Table 1.

Table 1





Source: own processing

Presumably low rate of risk of hazardous waste with a critical damage, which does not fit in unacceptable risks and it is important to emphasize that the chance of critical damage risk exists.

For each negative impact on safety, the environment and human health can be evaluated the risk of his estimate. Thus integrated environmental-safety-health assessed risk, which is part of the standard process of impact assessment (SEA, EIA) identifies assessment process and contributes to more exactly assessing the risks arising from strategic documents.

Assessment report SD SPR EB Chapter 5 outlines the measures proposed to prevent, eliminate, minimize and compensate for impacts on the environment and health, they are legislative, financial, technical, awareness and education and organizational measures.

3.2 The health risks of negative impacts "temporary increase groundwater contamination" of the strategic document SPR EB

It can be assumed arsenic contamination of groundwater. Sequence, measured and resulting values stated Ursínyová, M., 2010 opinion on 'Risk Assessment intake of arsenic from food and water in the Slovak Republic. "

1. Identification of danger - Arsenic (As)

FEATURES:

Metal gray color with metallic luster. It occurs in the oxidation states 0, III and V. Arsenic is known in various modifications. Generally it is a common modification metal, so gray arsenic. As metalloid arsenic and sulphides as is practically toxic. However, sulfides are often contaminated with arsenic trioxide, which has strong toxicity. Toxic compounds are also inorganic As.

S atom forms a highly poisonous colorless gaseous substances. The oxygen forms oxides in the oxidation state III. and V. In terms of the effects on health are distinguished two forms of As - toxic forms of inorganic and organic non-toxic form. Organic forms are present in some foods (eg. Seafood) in the air occur mainly inorganic toxic form.

DAMAGE human organism:

Arsenic is classified as a carcinogen. Arsenic in long-term intake can greatly harm the human body. The drinking water is bound in the inorganic form that is much more toxic than the organic food. Large doses of arsenic in drinking water has been associated with the incidence of skin cancer and other cancers of internal organs.

According to statistics from the World Health Organization (WHO), the unit risk for skin cancer is 6 cases per 10 000 in lifelong intake of water with elevated arsenic. For its carcinogenic effects on humans WHO has tightened its border tolerant amounts in drinking water. Tightening of the limit value is therefore justified from a health perspective.

2. Evaluation of the relation dose - respons

Acute intoxication after oral ingestion are now rare, they affect within minutes after consuming 70-180 mg As2O3 (arsenic trioxide) (vomiting, diarrhea, muscle cramps, cardiovascular risk, cyanosis) (Galková, 2009).

Characteristic of arsenic poisoning is a big difference in the size of the individual dose and the length of latency. The effects of long-term action of arsenic on the human body depends on the mode of contact with the toxicant by the body. These are:

By inhalation leads to damage to the mucous membranes and lung cancer, the dermal route leads to eczema, pigmentation spots, skin cancer, the most likely contact with a toxic substance in an organism is receiving contaminated water and food. Health reflected by changes in the optic and auditory nerve, damage of bone marrow and the spleen, liver cancer, kidney cancer, etc. (Ursínyová, M., 2010).

3. Exposure assessment

By monitoring groundwater contamination we can be evaluated As exposure from drinking water. For the calculation of income used the average content of As in drinking water from public water supplies in various locations in Slovakia in 2000 - 2010. It takes into account the average weight of 70 kg and human water consumption of 21/ day.

As the total average income of drinking water was calculated using the following formula:

As income = (As content in water water consumption x) / average weight of a person

$(\mu g / kg per day) = (\mu g / l x l / day) / kg$

Although the resulting average income of drinking water is 0.085 μg / kg body weight per day.

4. Risk characterization

On the basis of the quantification of risk As intake (as non-carcinogenic substance) of drinking water for the average capita it was found that the average income As does not present a potential risk of adverse manifestation of toxicity (dose ratio and the effect is less than 1), t. j. It does not foresee the existence of any significant risk.

Health risk assessment is necessary to calculate the uncertainty and excessive, special attention should be paid to areas with high levels of As in drinking water sources.

4. Conclusion

Above methodology integrated management of health risks within the SEA process can be used as a preventive tool, not only in assessing the environmental burden, but in general. Outputs from the assessment (evaluated risks, health risks strategic document) here should be part of the stage - "Report on the evaluation of SD." Given that the assessment report must be in accordance with legislation in paper form, the risk assessment can be more specifically mentioned only the results of risk assessments or conclusions from the evaluation. It would also include links to existing reports giving information and results of the evaluation of risk factors is also necessary to work closely with experts and professionals in the areas concerned.

Such a assessment report SD SPR EB is from a professional point of view more complex, more thorough, more accurate, it will help the process of commenting, make significant demands and uncertainty arising also from the positions of participants in the assessment process and during the public hearing and will improve not only the assessment of the strategic document by competent persons but also the actual decision trial.

References

GALKOVÁ, M. (2009). Environmentálne záťaže – stav riešenia v Európe a na Slovensku. In *Enviromagazín*. Vol. 14 (2009), MČ 2/2009, pp. 4-7. [príloha, pp. 1-5]. ISSN 1335-1877. [online]. Available at the URL: http://www.enviromagazin.sk/enviro2009/enviromc2/komplet.pdf>. [accessed 25. 02. 2016].

MAJERNÍK, M. et al. (2015). *Environmental and Health Impact Assessment of Development Strategies*. Albersdruck GmbH&Co.KG, Düsseldorf, GERMANY 2015. 148 p., ISBN 978-3-00-050052-7.

MAJERNÍK, M. – DANESHJO, N. – ŠTOFKOVA, Z. (2016). Integrované posudzovanie vplyvov rozvojových zámerov a stratégií. TipoPress. 2016. 214 p. ISBN 978-80-8129-048-0.

MAJERNÍK, M. – SANČIOVÁ, G. (2015). *The Development of environmental-safety technology for remediation of tailings ponds of power plant*. In *International Journal of Interdisciplinarity in Theory and Practice*. Nr. 8, 2015. [online]. ISSN 2344-2409. Available at the URL: http://www.itpb.eu/index.php/ct-menu-item-3/22-environmental/255-8-cislo-61-clanok>. [accessed 25. 02. 2016].

Štátny program sanácie environmentálnych záťaží (2010-2015). (2016). Štátny program sanácie environmentálnych záťaží. Ministerstvo životného prostredia SR. 2/2010. [online]. Available at the URL: http://www.enviro.gov.sk/info/metodicke-prirucky>. [accessed 25. 02. 2016].

SANČIOVÁ, G. (2015). Comparison of economic and environmental aspects of tailing ponds of slag and ash mixture. *EDAMBA 2015 : conference proceedings : international scientific conference for doctoral students and post-doctoral scholars : the era of science diplomacy: implications for economics, business, management and related disciplines : University of Economics in Bratislava, Slovak Republic, 21 - 23 october 2015.* 2015. P. 748-754. ISBN 978-80-225-4200-5.

URSÍNYOVÁ, M. (2010). *Hodnotenie rizika príjmu arzénu z potravín a vody v SR*. Slovenská zdravotnícka univerzita v Bratislave. 2010.

Headhunters: Brokers between Candidates and Companies

Tom Sander

University of Ludwigshafen Ernst – Boehe – Str. 6 Ludwigshafen am Rhein, 67059 Germany E-mail: tomsanders@hotmail.de

Biruta Sloka

University of Latvia Raina bulvaris 19 Riga, 1586 Latvia E-mail: biruta.sloka@lu.lv

Marion Mansberger

University of Applied Sciences Wiener Neustadt Business Consultancy and Business Leadership Johannes Gutenberg Str. 3 Wiener Neustadt, 2700 Austria E-mail: marion.mansberger@fhwn.ac.at

Abstract

The paper investigates the role of a third party for the employment seeking process. Human resources management (HRM) needs new channels to identify potential candidates. Information about the use of headhunters and exploring the reason of potential candidates to use headhunters is beneficial information for recruiting agencies and headhunters alike. Communication tools to transfer the information to potential candidates are investigated. That gives HRM the opportunity to improve the recruiting process. The information of the paper can be applied in the recruiting process or may justify the reason to use headhunters during the employment seeking process. Social capital theory serves as the theoretical background to explain the use of the headhunter's network and to use the relationship to a headhunter as an explanation for potential candidates to gain competitive advantage.

Keywords: social networks, human resources management, social capital *JEL classification*: *M12*; *J24*

1. Introduction

The labour market is continuously changing. Organizations need headhunters to identify employees with special skills or they employ sourcing specialists to identify suitable candidates which are difficulty to locate otherwise. Organizations make use of headhunters to increase their pool of potential employees because they face challenges to single out candidates with the needed skills, knowledge or experience. Headhunters are specialists who research the labour market, social networks or other platforms to locate high potentials for companies. They have insight in their respective markets and have experience in identifying and motivating individuals to apply for open positions of their clients (Han & Han, 2009). Employees create the competitive advantage for companies and support companies to be successful (Lado & Wilson, 2015). Knowledge about the best suitable channel to identify and contact candidates can therefore be an important step to anticipate for Human Resource Management (HRM). The new dynamics of today's labour market and all technological changes provide new channels to identify potential employees. Demographic changes, new environments and economical changes all influence the labour market. The number of suitable available candidates appears to be decreasing, yet their identification is important for organizations to remain successful. The chosen information channels might be important to reach employable individuals and to influence the potential candidates. These different channels can be used with different effectiveness and efficiency (Sander, Teh, Majlath, & Sloka, 2015). Hence, knowledge about the most suitable channel is needed to gain access to the most suitable candidate.

The decision about the chosen channel and the different kinds of contacts possible between the headhunter and the potential candidate are investigated in the paper. These different channels show different levels of influence and convenience for the potential candidates. Candidates generally do not like to be disturbed with employment information at any place. Therefore, HRM needs information about the process to get in touch with potential candidates. Since HRM is an important department for the competitive advantage of organizations (Becker & Gerhart, 2015), the decision to invest in the best channel to identify potential employees is important to be successful and to reduce costs and time in the recruiting process. However, not only is the channel important to attract individuals to apply or to inspire the desire of potential candidates to apply, the signal through which potential candidates are alerted is important in successful communication (Spence, 1973)(Kim, 2007) and an exchange of information without misunderstandings. The signal defines a responsible factor which prompts individuals to apply. The HRM department is responsible for continuously filling the candidate pipeline with suitable applicants. This access to candidates is important for the future of companies.

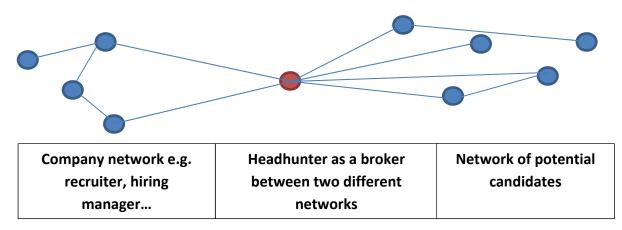
Transfer of any information is important for all belongings in any economy. One way to illustrate the exchange processes between individuals can be by applying the social capital theory. People need access to each other to exchange information and resources. The exchange becomes only possible through some type of tie. In a recruiting process, if a tie does not exist, a broker is needed to fill the structural hole between two parties involved. For example, this might be achieved with a headhunter who has access to the network of potential candidates and the company. The advantage of infiltrating different separated networks is the access to new or additional information and resources (Burt, 2001). That means the individual has an advantage because the access to another individual provides in turn potential access to employment opportunities. The investment of the broker between the two networks is to maintain the friendship and to share information and resources with the network. The sharing of resources and information and the access to resources and information are all advantages for individuals and the reason to use social networks and relationships (Vock, Dolen, Ruyter, van Dolen, & de Ruyter, 2013).

Today, the labour market has many involved individuals including candidates, headhunters, employees, recruiters, recruiting agencies, governmental employee agencies. All these labour market members are connected through direct or indirect ties to exchange information on employment opportunities, candidates and companies. Direct contact between organisation and potential candidates can be one possibility to find employment. However, the use of a broker e.g. headhunter is another possibility to identify employees or employment opportunities. The picture below describes the possible structure of two networks which are

connected via a headhunter (Sander, 2013). The headhunter fills the structural hole between the two networks and takes on the role of the broker in the diagram seen below

Figure 1

The role of the broker for the employment seeking process



Source: Authors

The headhunter transfers and translates the information between the two social networks. Since each social network uses similar norms and cultural approaches, the exchange of information becomes faster and easier. Transaction costs can be reduced. However, individuals from other social networks can often not decipher the language of unknown networks and have difficulties to understand members of other social networks due to their different symbols or culture. Therefore, the communication between the networks calls for a broker, for instance a headhunter in order to achieve a desired result and to take advantage of the possibility to communicate with each other. The headhunter enables the candidate and company to engage in easier knowledge exchange.

The theoretical background of argumentation is based on the social capital theory which explains the advantages with social networks and the advantages to get access to resources and information. Memberships in social networks pose the advantage that groups have power in sharing knowledge or experience to reach a collective goal. This constitutes the competitive advantage for individuals and is social capital otherwise not accessed. Investment in social capital is illustrated by the relationships of individuals and their human capital to share experience, knowledge or skills for example.

The employment seeking and recruiting process have already been deeply investigated with the social capital theory by different researcher (Granovetter, 1995) (Obukhova & Lan, 2012). The social capital theory also explains the mechanisms before mentioned within networks and the benefits of brokers who fill the structural hole. Headhunters hold an important position with power about the access to different networks with their resources and information (Brass, 2009). Yet, social capital can be an advantage and a disadvantage alike. If social capital proofs to be an advantage or disadvantage depends on the situation, individual needs and the environment. For instance, the broker can misuse the position for cronyism or selfish interest which can be a disadvantage for the organizations or other individuals. Individuals use the social network of another individual to gain a benefit. This illustrates social capital and the advantage which results from using another individual's network.

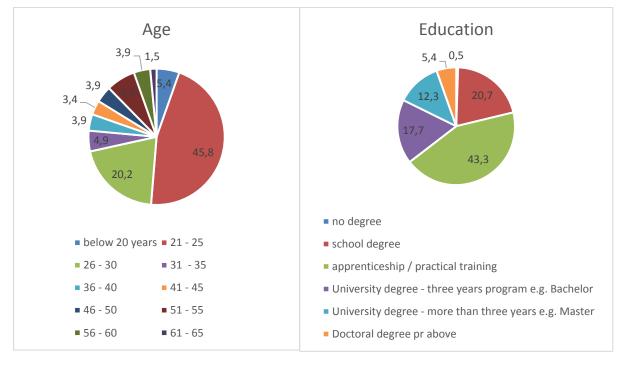
1.1 Methodology and description of the sample

The empirical research is based on a survey conducted with the help of a questionnaire with 234 respondents which has been distributed in October of 2015. A survey questionnaire was prepared to evaluate the use of social network sites (SNS). For evaluation, an evaluation scale of 1 - 6 was applied, and obtained data was analysed by descriptive statistics (arithmetic mean, mode and median and indicator of variability – standard deviation) and correlation analysis. The questionnaire used was part of a research project completed at the University of Ludwigshafen. The questions which were taken under consideration for the paper were part of a questionnaire about recruiting and employment seeking issues. The participants spoke German and 202 participants provided an answer regarding their gender. 40.6% were men, 59.4% women.

More than 45.8% of the individuals were between 21 and 25 years of age, more than 70% between the ages of 21 and 40. We note mainly young participants. Individuals of this age group live in a situation and environment to identify employment. They are mostly experienced with the employment seeking process and have had their first actual experience with labour markets and employment search. The participants were well educated. Only 0.5% did not have a degree, a school degree was noted by 20.7% and over 78.8% had some type of degree to start a career in a company. German companies generally expect that applicants have a university degree or have completed an apprenticeship or practical training successfully.

Figure 2

Age and education distribution



Source: Authors calculations based on data conducted by Tom Sanders, 2015; n = 203.

Participants were at an educational level to search for employment and were prepared to start a career. That means this group was somehow active in the labour market and of interest for companies who were looking for new employees. The obtained sample data of the respondents was processed by descriptive statistics indicators: arithmetic mean, median, mode, standard deviation, and for analysis of the data frequencies and correlation analysis were used.

2. Use of head-hunters for the employment seeking process

Companies have different channels to get in touch with potential candidates. Important for HRM is to use an effective channel to be successful. The different channels did not display a major difference. All channels have the median three and mode two.

Table 1.

Main statistic indicators of evaluations for the question "Please evaluate the effectiveness of the medium..."

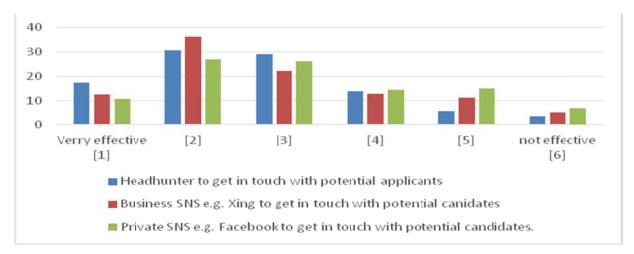
	Head-hunter to get in	Private SNS e.g.	Business SNS e.g. LinkedIn
	touch with potential	Facebook to get in touch	to get in touch with
	applicants	with potential candidates.	potential candidates
n	234	234	234
Mean	2,69	3,17	2,89
Median	3	3	3
Mode	2	2	2
Standard	1,26	1,427	1,375
Deviation	1,20	1,427	1,373

Source: Authors calculations based on data conducted by Tom Sander, 2015. Evaluation scale 1-6, where 1-very effective; 6-do not effective, n=234

The frequency of the evaluation supports the statistical results. There is a clear tendency to "very effective". The "head-hunter" was rated 77.4% on the first three steps (cumulative) of the scale and shows the highest frequency with 17.5% on scale one. On second place follows business SNSs with 70.9%. The smallest effectiveness is reported for private SNSs with 63.7% on the first three stages. The results provide the information that headhunters are the most effective method to get access to potential candidates.

Figure 3

Results of contact frequency for the question "Please evaluate the effectiveness of the medium..."



Source: Authors calculations based on data conducted by Tom Sander, 2015; n = 234.

The next results present the appreciated channel to get in touch with headhunters. HRM gains advantage having knowledge on convenient channels to get in touch with potential candidates. Any first moment when getting in touch is an important situation for companies to create an attractive image and to get feedback from potential candidates. The research results provide the statistical evidence that private SNSs are not suitable to contact potential

candidates. The mode is six and median is five. The best result to contact employees with employment relevant information appears to be by mail and e-mail. Both alternatives have the median two and mode one, which translate to a very effective way as perceived by the participants. The contacts by phone at home or at work have the mode six, which means that this option is not preferred by respondents. The median is three for contacting candidates by phone at home and four is the median initiating contact by phone at work. That means that the first contact by phone is not the best option. A fairly newly emerged new channel to contact individuals is via business SNSs. The median is three (half of respondents gave evaluations less than 3 and half of respondents gave evaluations more than 3) and the mode is two, the most often chosen evaluation by respondents. This way of contact proves to be the second best option after mail and e-mail.

Table 2.

Main statistic indicators of evaluations for the question "a headhunter identified your profile and likes to get in touch with you. What kind of channel would you prefer?"

	Contacting by E-Mail	Contacting by phone at home	Contacting by phone at work	Contacting by business SNS e.g. <i>LinkedIn</i>	Contacting by private SNS e.g. <i>Facebook</i>	Contacting by Mail
Ν	227	224	226	227	228	228
Mean	1,96	3,42	4,07	3	4,67	2,51
Median	2	3	4	3	5	2
Mode	1	6	6	2	6	1
Std. Dev.	1,301	1,78	1,789	1,692	1,499	1,627

Source: Authors calculations based on data conducted by Tom Sander, 2015.

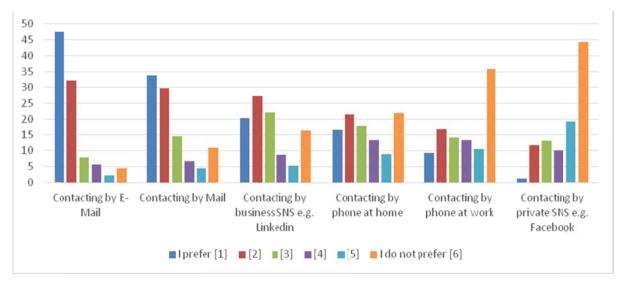
Evaluation Scale1-6, where 1-most preferred, 6-least preferred.

The tendency of preference is clearly visible in the figure below for contacting via e-mail and mail. The frequency for e-mail displays in Figure 4 on the first stage 47.6% and the first three stages make up for 87.7%. For both channels, most of the respondents indicated their preference with 1 (mode), half of respondents gave evaluations less than 2, and half of respondents gave evaluations more than 2 (median). The most preferable chosen emerged as being contacted by e-mail where the arithmetic mean of evaluations was 1.96 and the evaluations had the smallest variability, the standard deviation was the smallest. The mail option has 33.8% on stage one and 78.1% accumulated on stage one to three. A tendency to "I prefer" is evaluated with "Contacting by business SNS e.g. *LinkedIn*" with 69.6% on the first three scales (cumulative) and "contacting by phone at home" is 55.8% on the first three scales (cumulative). Another tendency shows the "contacting by phone at work" with 59.7% on the last three stages and "contacting by private SNS e.g. *Facebook*" has 73.3% on the last three scales (cumulative). This results supports the statistical results in the table above.

The results provide clear tendencies regarding the most desirable channels. E-Mail, mail and business SNSs remain the main suitable channels to get in touch with potential candidates. Clearly, under special observation remains all distribution which provide a clear tendency to "I prefer" or "I do not prefer". These details provide opportunity for recommendation for organizations and headhunters on most suitable channels to get in contact with intersting candidates.

Figure 4.

Distribution of evaluations on responses for the question "A head-hunter identified your profile and likes to get in touch with you. What kind of channel would you prefer?"



Source: Authors calculated based on data conducted by Tom Sander, 2015; n = 234

The next section analyses reasons to use headhunters, to evaluate the percieved advantages of a headhunter for potential candidates. The median and mean throughout all questions in this section lie between one and three. Participants view the best possible opportunity to get access to an unofficial position is via the use of a headhunter. The median is two and mode is one. The investment of time to identify positions is seen as the second largest advantage and that the potential candidate can use the network of the headhunter has the median and mode of two. The less positive evaluated opportunities are that the headhunter consults applicants and that the headhunter provides more information about employers, both are shown with a median three and a mode of two.

Table 3.

Main statistic indicators of evaluations for the question "Evaluate the advantages of a headhunter for the employment seeking process"

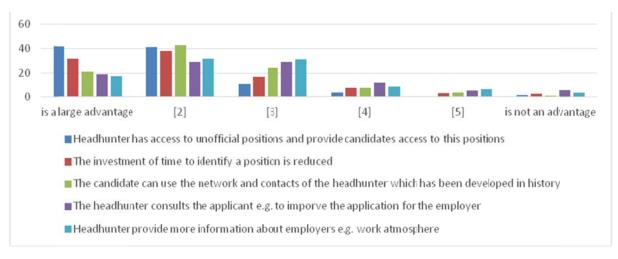
	Head- hunter provide more information about employers e.g. work atmosphere	The investment of time to identify a position is reduced	The head- hunter consults the applicant e.g. to improve the application for the employer	The candidate can use the network and contacts of the head-hunter which has been developed in history	Head-hunter has access to unofficial positions and provide candidates access to this positions
n	216	214	216	215	215
Mean	2,67	2,19	2,72	2,33	1,84
Median	3	2	3	2	2
Mode	2	2	2 and 3	2	1
Std.Dev.	1,272	1,184	1,343	1,053	0,96

Source: Authors calculations based on data conducted by Tom Sander, 2015 Evaluation scale 1-6, where 1-many advantages, 6-no clear advantages.

The tendency of the results is clearly displayed. All advantages display on the first three scales more than 77.4%. That means that all mentioned advantages are anticipated as valuable and desirable for candidates. The results are left skewed.

Figure 5.

Distribution of evaluations for the question "Evaluate the advantages of a headhunter for the employment seeking process"



Source: Authors calculations based on data conducted by Tom Sander, 2015; n = 234

From the collected data, only some significant correlations between the statements and the use of SNSs and demographic data could be detected. The correlation coefficients are weak and all of them lie below 0,292 and above -0,276. These results do not give a statistical relevant information to predict or explain the mechanism in SNSs.

3. Conclusions and recommendations

The paper concludes that headhunters are anticipated by individuals as the best option to identify employment opportunities. The business social network sites are accepted for the employment seeking process, yet private social network sites reach the lowest consent from the participants. That shows that companies should use headhunters or business social network sites to contact potential candidates in an effective and efficient manner.

All companies have different opportunities to get in contact with potential employees. The analysis revealed that candidates have preferences for different channels through which to be contacted. This information as well can be used by HRM to operate more efficient and effective. Participants mainly accepted the approach to get in touch by e-mail or mail. This appears very discrete and the recipient can decide about time and place to read the message from the contacting company. That explains the reason for businesses` SNSs to be accepted at third place. Contacting by phone appears to be less accepted; especially being contacted at work is not desired by candidates. The contact by phone might depend on a specific time and could be inconvenient and detrimental for candidates during work. Candidates do not feel comfortable if private SNSs e.g. *Facebook* is used to transfer information. Private social network sites were not appreciated and have displayed the lowest acceptance rate by participants. Privacy and data protection remain an important issue for individuals at private SNSs which explain the exclusion of private SNSs for the employment seeking process.

The reasons to use the network of headhunters for the employment seeking process might be differing from one to the next. However, the use of other individuals 'social capital for advantage is one of the typical mechanisms of social networks. Headhunters fill the structural hole between two networks, transfer the information between two networks and fill the gap between the individual and potential employee. Individuals use social networks which they trust to transfer and share information in to gain an advantage. The opportunity to get access to unofficial positions and to have a unique access to open positions is seen as an advantage. Competition is reduced and the chance to get employment increases. The historical developed and maintained relationship of the headhunter with the company and decision maker is used by the applicant to tap into a pool of knowledge. Here, the transfer of prestige from the headhunter to the applicant is a positive effect for the applicant. The headhunter maintains and invests in relationships and uses this investment to present it as a competitive advantage to job seeking candidates. They use social capital for their advantage and the advantage of their clients, and have access to decision makers. Time is another critical variable in the recruiting process. The fastest suitable candidates have the best chance to get an employment offer.

The identification of an open position needs a lot of effort and many resources. In the minds of the participants, a headhunter can reduce the time to identify a position and reduce this effort to secure a position. Overall, headhunters are anticipated positively in the employment seeking process. The use of social networks for advantage and to get access to a broker for additional desired and needed resources or competitive advantage was confirmed.

Further research is needed to evaluate other variables of social capital in social networks for instance trust or reciprocity to identify further indicators to explain the interlinked relationships and social network mechanisms. The research was conducted to explain the use of social networks for the employment seeking process and to provide recommendations to headhunters on how to best get in touch with candidates. Reasons why to use headhunters were explored. This information is important so that headhunters can potentially improve their work and that companies can apply convenient contact channels during the search process. The transfer of these results onto other scientific fields, situations or environments can be under consideration for future research. Further research including other fields may lead to superior insight of social capital and the mechanisms of social networks.

Acknowledgement

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References

BECKER, B., – GERHART, B. (2015). The impact of human resource management on organizationl performance: Progress and prospects. *Academy of Management Journal*, *39*(4), pp. 779–801.

BRASS, D. (2009). Connecting to brokers: strategies for acquiring social capital. In O. B. Vivia & J. H. Davies (Eds.), *Social capital: Reaching out, reaching in.* pp. 260 274. Cheltenham: Edward Elgar.

BURT, R. S. (2001). Structural Holes versus Network Closure as Social Capital. In N. Lin, K. Cook, & R. S. Burt (Eds.), *Social Capital, Theory and Research*. pp. 31 – 57. London: Aldine Transaction.

GRANOVETTER, M. S. (1995). *Getting a job*. (Gran, Ed.). (2nd ed.). Chicago: The University of Chicago press.

HAN, J., - HAN, J. (2009). Network-based recruiting and applicant attraction in China:

insights from both organizational and individual perspectives. *The International Journal of Human Resource Management*, 20(11), pp. 2228–2249.

KIM, J. (2007). Multidimensional signaling in the labor market. *The Manchester School*, (1972), pp. 64–88.

LADO, A. A. – WILSON, M. C. (2015). Human resrouches systems and sustained competitive advantage: A competency based perspective *Academy of Management Review*, 19(4), pp. 699–727.

OBUKHOVA, E. – Lan, G. (2012). Do Job-Seekers Benefit from Contacts? A Within-Individual Test with Contemporaneous Searches. *Management Science*, 59(10), pp. 2204 – 2216.

SANDER, T. (2013). New Circumstances for the Labor Market under the Consideration of Social Media. In *Communications of Global Information Technology*, *5*, pp.41 – 52.

SANDER, T. – TEH, P. L. – MAJLATH, M. – SLOKA, B. (2015). Use Preference and Channels Use in the Employment Seeking Process. In P. Michelberger (Ed.), *Management, Enterprise and Benchmarking in the 21st Century II.* pp. 240 – 249. Budapest: Obuda University.

SPENCE, M. (1973). Job market signaling. In *The Quarterly Journal of Economics*, pp. 355 – 374.

VOCK, M. – DOLEN, W. Van – RUYTER, K. De., van DOLEN, W. – de RUYTER, K. (2013). Understanding Willingness to Pay for Social Network Sites. In *Journal of Service Research*, *16*(January), pp. 1–15.

Transition from Neoclassical Theory of the Firm to Alternative Theories of the Firm

Ivana Setnická

University of Economics in Bratislava Faculty of National Economy, Department of Social Development and Labour Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: ivana.setnicka@gmail.com

Abstract

The neoclassicists tried to describe as precisely as possible happening in the firm. Front and center of the neoclassical theory has been profit maximisation. The impact of a changing society over time brings varied structure, size, objectives and behaviour of the firm, what makes neoclassical theory unrealistic and unusable. Just in this period, as a critique of neoclassical theory of the firm incurred alternative theories of the firm, which through two basic directions (management and behavioural) tried to reflect actual operation of firm.

Keywords: neoclassical theory of the firm, alternative theories of the firm, managerial and behavioral theories of the firm. *JEL classification*: D20, D21

1. Introduction

With increasing society and the inventions of the new period, particular the mission and objectives of the firm significantly changed. Many economists consider maximizing profit as a basic objective of the firm (neoclassicists). Companies at this time ignored the well-being of society and various unwanted effects that caused their striving for profit. Later economists realized the threat that might arise if all companies followed only their own purpose and their objective will be only to maximize profit. In the middle of 20th century economists realize that is necessary to add into original theory expect the economic aspects, also sociological and socio-psychological factors that have become necessary against the number, size and nature of companies, which were established due to the increasing demands of the population. In this period as a critique of some of the main assumptions of neoclassical theory incurred alternative theories of the firm, which began to develop in two directions: managerial and behavioral theories of the firm. Each of these directions is unique and offers a different perspective on the behavior of the firm.

1.1 Theory of the firm and its development

August A. Cournot (1801-1877) is one of the predecessors of neoclassical economics, especially the neoclassical theory of the firm. It was him who laid the foundations of the firm theory and was one of those who pay attention in explaining the firm's behavior by maximizing profits. A comprehensive view of the firm began to develop with the advent of neoclassical economics. (Holková, Veselková, 2008)

1.2. Neoclassical theory of the firm

Neoclassical theory of the firm is based on the assumption that in the firm is not separated ownership from management i.e. owner of the firm, also manages this firm. The firm is internally homogeneous, which can be understood as the absence of any interests groups that would have different objectives as owner of the firm, who is also her manager. His objective is to make a profit, and he will use that kind of strategy, which brings him the most money. Whereas in the firm does not exist any other subjects, who would change this objective, owner of the firm will do everything to achieve his goal of profit maximization. Neoclassicists in formulating conclusions are based mainly on the assumption of perfect competition, which influenced the behavior and layout of the firm. [http://www.valencik.cz/marathon/05/mar050502.htm, 22.01.2016]

Neoclassical theory of the firm was in the 40s of the 20th century criticized. This was the reason why arise new models and concepts that have turned away from the fundamental principle of marginal analysis.

New models and concepts known as alternative theories of the firm criticized in particular:

• <u>profit maximization</u>, which was considered as a main objective of the firm- firms have in the real world different objectives, which depend on situation in which they find themselves. (reaching a certain share of the firm, long-term survival of the firm among other companies, growth and expansion of the firm, achieving a satisfactory level of profit).

• owner is also the one who decide

• <u>assuming perfect competition¹</u>- perfect competition is unrealistic model, in real world does not exist.

• <u>assuming perfect information</u>- in the real world, the firm has many times imperfect information, what often becomes the cause of adoption wrong decision.

• <u>static concept time-</u> short period make long term period. Assumption is that if we can achieve the maximum benefit in the short term, it will happen also in long term period. In reality, however, this condition does not apply.

• <u>marginal principle MR=MC</u>, use of marginal variable- representatives of neoclassical theory of the firm has one objective – profit maximization. For them were very important relation MR = MC, i.e. the firm maximizes profit when the marginal costs are equal to marginal revenue. The problem with this definition arises from the lack of information from the firm about the variable, which is the reason why we cannot exactly find out when will be MC = MR. This is the reason why firms are not able to follow the objective of profit maximization. [lwella.sweb.cz/mikro6.doc, 07.02.2016].

1.3 Alternative theories of the firm

In the first half of the 20th century were created large companies with complicated ownership structure, the complicated links between owners of the firm and the firm management, conflicts between interest groups in the firm and so on. To these problems was unable to respond neoclassical theory of the firm. This was the reason why arise a new theories known by the term "alternative theories of the firm." These new theories have developed direction for the practical management of large corporations that were created at that time, select their strategies, but also the objectives that firm were trying to achieve.

Alternative theories pay attention not only on economic aspects (as in the neoclassical theory of the firm), but also on different socio-psychological and sociological factors. The birth of

¹ Non-existent barriers to entry and exit on the market, a large number of companies, the perfect information in the market, individual firms are price-takers, homogeneous products, product demand is perfectly elastic.

alternative theories rests largely in their ability to react on complicated structure of ownership and interest structure in the firm and the related problems. A typical characteristic for these theories is that the firm may have other objectives than profit maximization.

New theories of the firm developed in two directions: (Holková, Veselková, 2008)

• managerial – consists of pure economic theory, which replace the classical objective of marginal theory of the firm.

• behavioral – pays attention to processes inside of firm, social functions and corporate structure. It includes socio-economic theory of the firm.

Given the scope of work we will focus only on certain managerial and behavioral theories of the firm.

1.3.1 Managerial theories of the firm

Managerial theories of the firm are largely different from the neoclassical theory of the firm, which is considered the main objective of maximizing profits. Managerial theories of the firm are based on the idea that the ownership of the firm and its management should be separate, i.e. we talk about two or more different people. Firm owners should be therefore shareholders and paying managers should perform management functions. Each group should watch their own interests, which may under certain situations come into conflict. [edu.uhk.cz/~jindrvo1/files/miek2/texty/12_ alternativni_cile_firmy.pdf, 28.01.2016].

Simple managerial model

Many times we can see that exist one large firm owned by more shareholders, who in the case of the alternative theories of the firm, only own the firm. These shareholders, respectively, owners will choose general manager / managers who will lead the firm and carry out direct functions in the firm.

Some representatives of managerial theories assume that the behavior of managers is similar to the behavior of consumers, whose objective is to maximize utility. In the case that the firm is run by managers its main objective is to maximize manager's utility.

Manager utility is the function of firm's profit and additional benefit and manager's income, which can be written as follows:

$\mathbf{U} = \mathbf{f} (\boldsymbol{\pi}, \mathbf{M})$

Utility for managers is on the one side given by additional benefit and manager's income and on the other side by their position in the firm. If the firm has greater profit, manager profile and his position within the expertise of the other managers raise too.

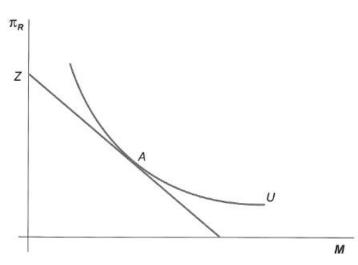
Among the additional benefits of managers we could include, for example: a car for private purposes, notebook, mobile phone, business flat for free, severance pay and others.

It is important to remember the fact that these additional benefits and managers income represent for the firm cost i.e. increase total costs, and thus also reduce firm's profit.

The situation could be explained by the Picture 1.

Picture 1

Simple managerial model



Sources: <ttp://edu.uhk.cz/~jindrvo1/files/miek2/texty/12_alternativni_cile_firmy.pdf>. [accessed 28.01.2016].

The axis "x", in simple managerial model, shows the additional benefit and manager's income and the vertical axis "y" shows the attained profit of the firm. The line "Z" represents profit line, which shows different combination of firm's profit and additional benefit and managers income for given level of profit. If the manager additional benefit and manager's income are zero, firm maximize profit (point Z). This situation would be ideal for the owners, i.e. the shareholders of the firm. This situation is unreal for managers, because they would have in this case zero benefits. It is therefore necessary for the manager find combination of a profit and manager benefits that would bring him maximum utility. Indifference curve i.e. curve "U" is a combination of two parts of profit, which gives the same utility. The highest utility that a manager can achieve is point Abalance point, which is the intersection of the indifference curve "U" and the line of profit "Z". (Edu.uhk.cz/~jindrvo1/files/miek2/texty/12_alternativni_cile_firmy.pdf, 28.01.2016).

1.3.2 Behavioral theories of the firm

In the twenties and thirties of the 20th century, after overcoming the Great Depression, when the economies of many countries started evolve again, developed other of the alternative theories of the firm – behavioral.

Behavioral theories of the firm do not incur as a negation of managerial theories. They are characterized by some of the common features (i.e. the owners and managers of the firm are different person).

According to Kudera (2000, s.17-18) behavioral theory of the firm "modified managerial theory of the firm, without fundamentally changing its core. We can say that with them increased. In particular, it deduces way of action firms in changing conditions. It is often stated, that it is the way of behavior of firms in condition of competing groups (inside of the firm and competitive relationships in an oligopoly market structure) and the search for reciprocally acceptable objective of this behavior is the core of behavioral theory of the firm."

Creation more and larger companies is the emergence of various interest groups in the firm, whose objectives may be different from each other. For basic groups in the firm can be considered: the owners of the firm, its management, but also the ordinary employees. The complicated structure of the firm does not allow tracking just one goal. It is important to fulfill a

certain level of each objective of interest group, so that all groups will be satisfied (satisfaction theory).

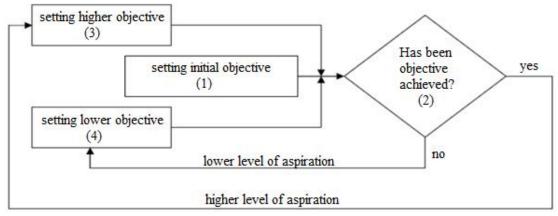
Simon's model

Simon's model (1959) is one of the basic model of behavioral theories of the firm. Its_author is Herbert Simon Alexander, who won Nobel Prize. General objective in this model is to survival on the market. In practice, is this objective elaborated and the main objective of the firm in Simon's models is to find a solution that fits all active stakeholders in the firm. If in firm operates more interest groups, it is understood that each of these groups will try to promote and fulfill own objective. The role of management is to find a satisfactory level of objectives. Important is that objectives of all stakeholders in the firm must be at least partially filled.

This alternative model pays attention rather on a process under which the firm takes its decisions, as a result of these decisions. The relationship between the objectives and firm performance illustrates following picture (Soukup, 2003):

Picture 2

Simon's model



Sources: Soukup, J. (2003). Mikroekonomická analýza. p. 108.

Management in the firm determine starting objective from which will depend the following decision (point 1). Later this objective will be evaluated (point 2) and determined if the initial objective is fulfilled or not. In the case that objective is fulfilled, will be determined higher goal (point 3). After a certain time, will be again evaluated if the objective is achieved or not. If the objective is not fulfilled, it will determine a lower objective (point 4). In case that the objective is fulfilled, will set the objective even higher than that for starting.

Simon's model for a better understanding can be explained by specific examples. Suppose a firm has initial objective to achieve 10% market share (point 1). After a certain time, assume 1 year, evaluates whether the firm really has fulfilled this objective (point 2). In the case that firm's market share increased by the required 10%, the firm will determine in the following year higher market share by another 10% (point 3). Even if firm achieves this objective during the following year, firm will set another higher objective. However, it may happen, that firm for its initial objective determines a higher share of the market by 10% (point 1). If the firm does not achieve this objective after one year (point 2), firm must set lower objective in following year, for example drop in market share on 5% (point 4). However, if the firm does not fulfill this objective during the following year, it will set even lower objective, for example 3% drop in market share next year.

Lower and more easily achievable objective can become the key to achieving ever higher

missions. To fulfill the higher objectives of the firm (which is essentially the same as maximizing goals) could help constantly increasing intensity goals. (Soukup, 2003)

Doyle's model

Doyle's model is one of the newest models, which belong to the behavioral theories of the firm. This model is known since 1994 and its author is Peter Doyle. Doyle's model is based on the assumption that in the firm exist different interest groups that seek to achieve 8 different objectives at the same time:

- market value of the firm,
- production quality
- risk minimization
- firm's share of the market,
- employee motivation,
- good supplier customer relations,
- firm growth
- income from shares.

Each interest group has set different objective that try to achieve as much as possible. Doyle's model is based on the assumption that it is not effective for the firm to focus only on one objective (high alternative cost). The firm should focus on many objectives at the same time. How to achieve that all objectives were at least partially filled?

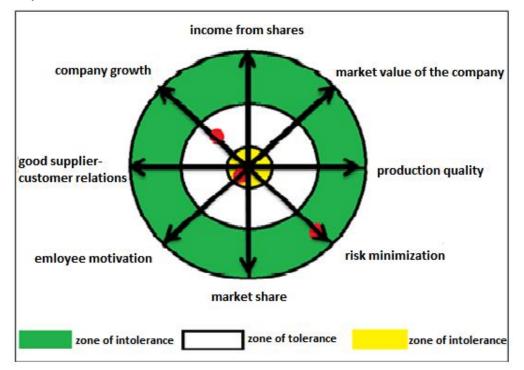
The following picture divide circle into 3 smaller zones: 1. The green zone is called the

outside zone

- 2. The white zone is called the zone of tolerance zone of intolerance
- 3. The yellow zone is called an internal zone.

Picture 3

Doyle's model



Source: own processing according to Soukup, J. (2003). Mikroekonomická analýza. p. 109.

The lines in this model illustrate achieving certain objective. For example, if we follow employees motivation, as the objective that we set, we monitor how far we are (in our case, we used to illustrate this situation with the red dot) from the center in fulfilling this objective. The red dot is in the yellow zone i.e. zone of intolerance, what means that achieving this objective is only on minimum. If we follow the growth of the firm as the chosen objective, again it should be noticed how far is red dots from the center which indicates the fulfilling of the objective. In this case it lies in the zone of tolerance, which means that the objective is achieving but firm still has plenty of space for growing. In last situation we are also looking for location of red dot in risk minimization. In this case, the red dot is in the outside zone, which is located furthest from the center, which means that the firm minimizes the risk as much as possible.

Conclusion is: the further red dot (or achieving objective) from the center is, the more we succeed in achieving this goal. In the real world it is not possible that all eight goals are achieved to the greatest extent, i.e. they are in the green zone. Some objectives can be contradictory. Nor it is not good if the objectives are at the yellow circles, i.e. in the zone of intolerance, because at this level the objectives are fulfilled only at very low levels. The ideal is if all objectives are located in white zone i.e. in the zone of tolerance. Objectives in this zone are not filled to 100%, but also they are not fulfilled at the lowest level. In this zone are all interest groups, attempting to achieve 8 different objectives, most satisfied.

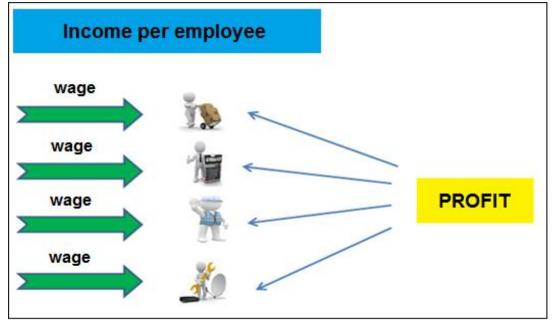
The role of managers is therefore to extend the zone of tolerance to the greatest possible extent. It can be possible through communication between stakeholders and trying to find common interests of groups inside of the firm, strengthening unformal relation through meetings and interviews, as well. (Soukup, 2003)

Employee model of the firm

This model belongs to the behavioral theory of the firm. Important in this model is that employee taking over business activity of the firm. In this case, we will discuss about another of the alternative objectives of the firm, which is to maximize income per employee. This objective is achieved if every employee receives the highest possible income. Employee model of the firm can be explained in the following picture:

Picture 4

Employee model of the firm



Source: own processing according to Cyert, R. - March, J. Behavioral Theory of the firm. 1963.

Suppose the firm employs four workers. Income of each employee consists of two parts:

1. The first part is the wage of a worker, which is showed as a green arrow.

2. The second part of the income is the share of profit, which represents for each worker ¹/₄ of profit. In this case, important role has the size of the profit that the firm obtained and the number of employees working for the firm (this number also affects the size of production, which the firm produces).

The main idea of the Employee model of the firm is to maximize income per employee. Income of each employee consists of two parts: the employee's wage and the share of each employee on the profit (in our case ¹/₄ of the profits for each). (Cyert, March, 1963).

2. Conclusions

View of the firm has historically changed as has also changed "theories of the firm" and the opinions of economists on its functioning, objectives, structure and size as well. Assumptions of neoclassical theory of the firm in the form of profit maximization we could consider as a significant milestone in the understanding firm. In the first half of the 20th century, when large companies were created, it changed the ownership structure and objective of companies. Neoclassical theory of the firm was not able to react on these problems, and thus formed alternative theories of the firm.

A common feature of these theories is that the objective of the firm may not be profit maximization (as neo-classical), but on the contrary, the firm may also have other objectives (growth and expansion of the firm, long-term survival of the firm, etc.). Two main lines of the alternative theories of the firm can be regarded as managerial and behavioral. Managerial based on the separation ownership and management of the firm and behavioral theories of the firm focus more on processes inside firm and social functions of corporations. They also include a socio-economic theory of the firm.

References

CYERT, R. – MARCH, J. (1963). *Behavioral Theory of the firm*. Oxford: Blackwell, 1963. 268 p. ISBN 978-0-631-17451-6.

HOLKOVÁ, V. – VESELKOVÁ, A. (2008). *Mikroekonómia*. Bratislava: Sprint dva, 2008. 316 p. ISBN 978-80-969927-9-9.

Web. (2006). *Alternativní teorie firmy*. [online]. Available at the URL: http://lwella.sweb.cz/mikro6.doc. [accessed 07.02.2016].

JINDRA, V. (2014). *Alternativni teorie firmy*. [online]. Available at the URL: http://edu.uhk.cz/ ~jindrvo1/files/miek2/texty/12_alternativni_cile_firmy.pdf>. [accessed 28.01.2016].

KUDERA, J. (2000). *Moderní teorie firmy*. Praha: Grada Publishing, spol. s r.o., 2000. pp. 17-18. ISBN 80-7169-954-3.

POŠTA, V. (2005). *Firma v ekonomické teorii*. [online]. Available at the URL: http://www.valencik.cz/marathon/05/mar050502.htm>. [accessed 22.01.2016].

SOUKUP, J. (2003). *Mikroekonomická analýza*. 3rd ed. Melandrium Slaný, 2003. 256 p. ISBN 80-86175-30-8.

Securitisation

Mikhail Shatagin

University of Economics in Bratislava Faculty of National Economy Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: mshatagin@bloomberg.net

Abstract

The issue of securitisation in the recent years is focused on in financial theory and practice. Securitisation includes tools, their combination, schemes and virtual transaction, which may introduce difficult system, which involves risks. Many theorists concede that securitisation may be one of many reasons which led to the crisis. Trading with these products was confined. After some time, some techniques of securitisation appear again and it is possible, that there will be some new form. The aim of this paper is to explain securitisation and its form from history to the present day. This paper deals with securitisation, its history, types and future. Securitisation is the process of taking an illiquid asset, or group of assets, and through financial engineering, transforming them into a security. At the beginning of the paper we define securitisation. In the second part we summarise history of securitisation and define its typology. At the end of paper is a short summary of securitisation in future.

Keywords: Securitization, History, Types, Fannie Mae, Ginnie Mae, Trus, Key players, Future of securitization *JEL Clasification:* G 21, G 28

Introduction

According to Allen (2009) securitization is the process of packaging financial promises and transforming them into a form whereby they can be freely transfered among multitude of investors. It is the financial practice which include various type of financial contracts, such as commercial mortgages, residental mortgages, auto loans, credit cards or promises to pay. This promise can take the form of verbal agreement or written contract. The value of promise will depend on the ability and willingness of the person or company to make good on the promise. Some of these contracts involves only the original two parties for the entire life of the transaction, others will be packaged with similar promises and may ultimately be bought and sold by hundreds or thousands of investors.

The contracts or financial promises may not always suit the investor's wants and needs and may contain a risk and investors may fear that they lack understanding of crucial aspects of the transaction. For these reason, financial promises are transformed through the securitization process. This transformation of the raw assets into form that best meets for investors is called structuring.

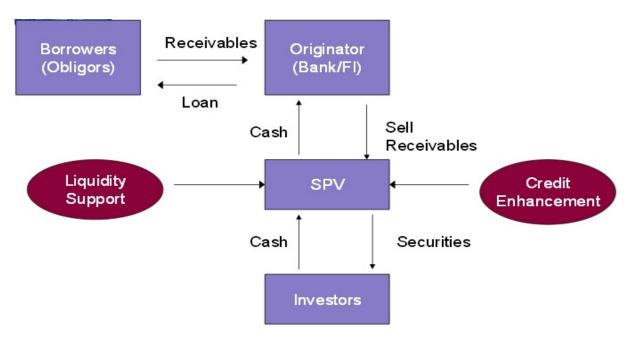
There are this types of structured finance in securitization:

- Residental mortgage backed securities (MBS)
- Commercial mortgage backed securities (CMBS)
- Collateralized mortgage obligations
- Asset backed securities (ABS)

- Collateralized debt obligations (CDO)
- Collaterizated loan obligations
- Collaterizated fund obligation
- Credit derivates
- Future flow securitization
- Partial guaranteed structures
- Loan sell offs
- Revolving credit financing (clasociety.org)

Securitization Picture 1

Basic model of securitization



Source: clasociety.org

History

The first efforts towards securitizing financial assets were made in the U.S., originating in the mortgage financing markets of the country. The instrument was developed with a need to create a secondary market in mortgage financing. In the process the catalysts were government agencies formed for buying and selling federally insured mortgages. The history of U.S. government efforts to introduce a secondary market in mortgages begins in 1930s. originally mortgages in the U.S. were originated by savings and loans associations that financed their operations through retail deposits. During the depression, deposit market collapsed. It caused creating a secondary market in mortgages. In 1938, the Federal National Mortgage Association was created to buy and sell federally insured mortgages. It was these agencies FNMA (Fannie Mae) and GNMA (Ginnie Mae) which were responsible for development of securitization markets (Kothari, 2006).

Fannie Mae

• Fannie Mae was established in the 1930's to provide a governmentowned secondary market for FHA loans. Essentially, Fannie Mae has operated for much of its life as a national savings and loan in the sense that gatheres funds by issuing its own debt and buying mortgages that were held in portfolio.

• In 1968, Fannie Mae was moved off the government's budget and was recreated as a shareholder-owned, government sponsored agency. The original FNMA was split into a new FNMA (Fannie Mae) and GNMA (Ginnie Mae), with Fannie Mae privately owned and shares quoted on the New York Stock Exchange.

• In the 1970's, it switched its focus toward conventional mortgages rather than government-insured mortgages.

• The first Fannie Mae mortgage-backed security was issued in 1981. The agency played a crucial role in promoting securitization of adjustable-rate mortgages and variable rate mortgages (Acharya, Richardson, Nieuwerburgh, White, 2011).

Ginnie Mae

• In 1970, Ginnie Mae did its first securitization trancaction on a passthrough structure. Ginnie Mae's pass-throughs were securities backed by mortgages insured by Federal Housing Administration (FHA). These passthroughs had the full credit and the backing of the U.S. government., as Ginnie Mae guaranteed both the repayment of principal and timely payment of interest. It is important to note that since Ginnie Mae is on the federal budget, its securities have a full faith and credit federal guarantee.

• In 1983 Ginnie MAe launched another pass-through program called GNMA-II. This program had a range of interest rates and sellers, while GNMA-I was designed for a single seller and a single rate of interest. These programs are further classified based on the type of mortgages pooled therin, such as single family loans and multifamily loans (Mishra, Navin, Geeta, 2006).

The Freddie Mac

• The Freddie Mac (FHLMC) was created in 1970 to promote an active national secondary market in residential mortgage and has been issuing mortgage-backed securuties since 1971. Freddie Mac was created to be a secondary market for savings and loans industry. In 1977 Bank of America issued the first private label residential mortgage pass-through bond.

• Freddie Mac and Fannie Mae are private corporations and neither has an explicit guarantee, however both have an implicit guarantee. Fannie Mae and Freddie Mac have lower interest rates on bonds they issue in comparison to similarly rated commercial banks. Both are regulated by Housing and Urban Development (HUD) for their public-purpose missions and by the Office of Federal Housing Enterprise Oversight for theis risk exposure. Freddie Mac and Fannie Mae are competitors (McDonald, 2013).

In 1970's there was a significant increase in the demand for credits in the property market attributable to demographic developments in the USA. In the order to systematically assist with the growing demand in the mortgage credit market Ginnie Mae stepped in by established Government Sponsored Entities (GSE). The GSE's pool the different receivables from mortgage credits and make the structure of the securitization available for trade. The use of this structure enables the banks to detach the credits from their balance sheets and to distribute more credits by freeing up regulatory capital. These securities backed by mortgage are referred to as Mortgage Backed Securities (MBS). The next step was the development of

Asset Backed Securities (ABS) structures, which were not backed by mortgages, but with other assets and receivables. Such a transation was first executed in the 1985.

In the 1990's commercial mortgages began to be securitised. The first securitizations of sub-prime residential mortgages were done in the early 1990's. During the next decade the growth in the volume of sub-prime mortgages that were securitised was huge.

Another effect of the exponential growth of securitization as a vehicle for all forms of lending was the change in the balance of the relationships between lenders and borrowers. This became very clear post-2008 in the aftermath of the financial crisis. Large institutions failed, deals defaulted, bankruptcies proceeded, investors sued and regulators in many jurisdictions proposed regulations to deal with various aspects of the collapse.

Types and major players

The goal of securitization is to transform the promises of individuals and corporations to make future payments into freely transferable securities that are appealing to investors. Financial instrument and bonds can be viewed as having three general features which will determine their investment characteristic:

1. Timing of repayment of principal.

2. The amount and form of interest paid on the amount of outstanding

principal.

3. The credit quality of the instrument (Davidson, Sanders, Wolff and

Ching, 2004).

A securitization is a financial transaction in which assets are pooled and securities representing interests in the pool are issued. Securitization is a process by which a company clubs its different financial assets to form a consolidated financial instrument which is issued to investors. Securitization enhances liquidity in the market. This serves as a useful tool, especially for financial companies, as its helps them raise funds. If such a company has already issued a large number of loans to its customers and wants to further add to the number, then the practice of securitization can come to its rescue. In such a case, the company can club its assets/debts, form financial instruments and then issue them to investors. This enables the firm to raise capital and provide more loans to its customers. On the other hand, investors are able to diversify their portfolios and earn quality returns.

All sorts of assets are securitized:

- auto loans
- student loans
- mortgages
- credit card receivables
- lease payments
- accounts receivable
- corporate or sovereign debt

According to Constantinides, Harris and Sultz (2013) there are four special types of securitization:

Master Trust – this type is intended for handling revolving credit card balances. Master trusts allow an issuer to sell a number of securities at different times from the same trust. All

of the securities rely on the same pool of receivables as collateral. In a master trust, each certificate of each series represents an undivided interest in all of the receivables in the trust. This structure provides the issuer with much more flexibility, since issuing a new series from a master trust costs less and requires less effort than creating a new trust for every issue. In addition, credit evaluation of each series in a master trust is much easier since the pool of receivables will be larger and less susceptible to seasonal or demographic concentrations. Credit cards, home equity lines of credit, and other revolving assets are usually best packaged in these structures.

Stand-Alone Trust – a single group of accounts whose receivables are sold to a trust and used as collateral for a single security, although there may be several classes within that security. When the issuer intends to issue another security, it simply designates a new group of accounts and sells their receivables to a separate trust.

Grantor Trust – the certificate holders or investors are treated as beneficial owners of the assets sold. The net income from the trust is taxed on a pass-through basis as if the certificate holders directly owned the receivables. To qualify as a grantor trust, the structure of the deal must be passive — that is, the trust cannot engage in profitable activities for the investors, and there cannot be "multiple classes" of interest. Grantor trusts are commonly used when the underlying assets are installment loans whose interest and principal payments are reasonably predictable and fit the desired security structure.

Owner Trust – the assets are usually subject to a lien of indenture through which notes are issued. The beneficial ownership of the owner trust's assets is represented by certificates, which may be sold or retained by the bank. An owner trust, properly structured, will be treated as a partnership under the Internal Revenue Code of 1986. A partnership, like a grantor trust, is effectively a pass-through entity under the Internal Revenue Code and therefore does not pay federal income tax. Instead, each certificate holder including the special-purpose corporation must separately take into account its allocated share of income, gains, losses, deductions, and credits of the trust. Like the grantor trust, the owner trust is expressly limited in its activities by its charter, although owner trusts are typically used when the cash flows of the assets must be managed to create "bond-like" securities. Unlike a grantor trust, the owner trust can issue securities in multiple series with different maturities, interest rates, and cash flow priorities.

The major players in the securitization, all of whom require legal representation to some degree, are as follows (according to Leixner):

Originator – the entity that either generates receivables in the ordinary course of its business, or purchases and assembles portfolios of receivables. Its counsel works closely with counsel to the underwriter or placement agent and the rating agencies in structuring the transaction and preparing documents and usually gives the most significant opinions. It retains and coordinates local counsel in the event that it is not admitted in the jurisdiction where the originator's principal office is located and in situations where significant receivables are generated and the security interests are governed by local law rather than the law of the state where the Originator is located.

Issuer – the special purpose entity, usually an owner trust, another form of trust or a corporation, partnership or fund, created pursuant to a trust agreement between the originator and the trustee, that issues the securities and avoids taxation at the entity level. This can create a problem in foreign securitizations in civil law countries where the trust concept does not exist.

Trustees – usually a bank or other entity authorized to act in such capacity. The trustee, appointed pursuant to a trust agreement, holds the receivables, receives payments on the receivables and makes payments to the security holders. In many structures there are two trustees. For example, in an owner trust structure, which is most common, the notes, which

are pure debt instruments, are issued pursuant to an indenture between the trust and an indenture trustee, and the certificates, representing undivided interests in the trust, are issued by the owner trustee. The trust owns the receivables and grants a security interest in the receivables to the indenture trustee. Counsel to the trustee provides the usual opinions on the trust as an entity, the capacity of the trustee.

Investors – the ultimate purchasers of the securities. Usually banks, insurance companies, retirement funds and other qualified investors. In some cases, the securities are purchased directly from the issuer, but more commonly the securities are issued to the originator or intermediate SPE as payment for the receivables and then sold to the investors, or in the case of an underwriting, to the underwriters.

Underwriters, Placement Agents – the brokers, investment banks or banks that sell or place the Securities in a public offering or private placement. The underwriters, placement agents usually play the principal role in structuring the transaction, frequently seeking out originators for securitizations, and their counsel or counsel for the lead underwriter, placement agent is usually, but not always, the primary document preparer, generating the offering documents purchase agreements, trust agreement, custodial agreement, etc. Such counsel also frequently opines on securities and tax matters.

Custodian – an entity, usually a bank, that actually holds the receivables as agent and bailee for the trustee or trustees.

Rating Agencies – Moody's, S&P, Fitch IBCA and Duff & Phelps. In securitizations, the rating agencies frequently are active players that enter the game early and assist in structuring the transaction. In many instances they require structural changes, dictate some of the required opinions and mandate changes in servicing procedures.

Servicer – the entity that actually deals with the receivables on a day to day basis, collecting the receivables and transferring funds to accounts controlled by the trustees. In most transactions the originator acts as servicer.

Backup Servicer – the entity, usually in the business of acting in such capacity, as well as a primary servicer when the originator does not fill that function, that takes over the event that something happens to the servicer. Depending upon the quality of the originator the need and significance of the backup servicer may be important. In some cases the trustee retains the backup servicer to perform certain monitoring functions on a continuing basis.

Future of securitization

The future of securitization will be determined by four key factors:

1. Demand for asset-backed securities – the sources of demand can be

categorised into three types of investors:

- domestic financial institutions
- domestic fixed income investors
- global investors (financial institutions and bond investors).
- 2. Supply of asset-backed securities.
- 3. Market liquidity be able to facilitate the purchase or sale of an asset

without causing drastic change in the asset's price.

4. Regulatory framework for securitization.

Because securitization is an efficient financial tool, its future should be assured no matter how investors or politicians might temporarily overreact. Nonetheless, in the near future at least, it is likely that securitization transactions will need to refocus on basic structures and asset types in order to attract investors.

To this end, there likely will be an emphasis on cash-flow securitizations in which there are the traditional "two-ways out." An example of this would be the securitization of prime mortgages, in which payment can come from the borrower or the collateral.

Securitization can and be applied to microfinance to disintermediate the need for commercial banks. Profit motivated investors should want to invest in microfinance lending as a means of diversifying their portfolios, thereby protecting themselves from market risk. The challenge is to ensure that microfinance securitization transactions are structured with the lessons of the failure of subprime mortgage securitization in mind, and to resist political pressures to cut corners.

Microfinance refers to providing small loans and other proportionally sized financial services to low-income individuals and the poor, in order to enable them to start or expand small businesses.

Conclusion

In paper we point out that securitization is the process of taking an illiquid asset, or group of assets, and through financial engineering, transforming them into a security. It is the financial practice which include various type of financial contracts and promises. Securitization was influenced by financial crises and collaps. The first efforts to securitizing financial assets were made in the U.S. There was established two agencies, Federal National Mortgage Association and Government National Mortgage Association. There is four special type of securitization. And in the securitization is also major players whom require legal representation to some degree. The future of securitization is determined by demand and suply of asset-backed securities, market liquidity and regulatory framework.

References

ACHARYA, V. – RICHARDSON, M. – NIEUWERBURGH, S. V. – WHITE, L. J. (2011). *Fannie Mae, Freddie Mac and the Debacle of Mortgage Finance*. [2011]. [online]. Available at the URL: https://research.stlouisfed.org/conferences/gse/White.pdf>. [accessed 27.06. 2015].

ALLEN, L. (2009). *The Encyclopedia Of Money*. London: ABC-CLIO. 2009. 203 p. ISBN 978-159884251.

AMERICAN ECONOMIC ASSOCIATION. (2015). *JEL Classification Code Guide*. [online]. Available at the URL: https://www.aeaweb.org/jel/guide/jel.php>. [accessed 21.07.2015].

CLASOCIETY.ORG. (2015). *Securitzation;For Funding & Risk Sharing*. [online]. Available at the URL: <<u>http://www.cfasociety.org/srilanka/Linked%20Files/Securitisation.pdf</u>>. [accessed 27.06.2015].

CONSTANTINIDES, G. M. – HARRIS, M. – SULTZ, R. M. (2013). Handbook of the Economics of Finance SET: Volumes 2A & 2B. Newnes. 2013. ISBN 978-0444535948.

DAVIDSON, A. – SANDERS, A. – WOLFF, L-L. – CHING, A. (2004). Securitization – Structuring and Investment Analysis. John Wiley & Sons, 2004. ISBN 978-0-471-02260-2.

ELSEVIER.COM. (2015). *JEL Code Article Recommender*.[online]. Available at the URL: <<u>http://www.elsevier.com/books-and-journals/content-innovation/jel-classifications></u>. [accessed 21.07.2015].

KOTHARI, V. (2006). Securitization: The Financial Instrument of the Future. John Wiley & Sons, 2006. ISBN 978-0-470-82195-4.

LEIXNER, T. C. (1999). *Securitization of Financial Asset*. [online]. [1999, September, 01]. Available at the URL: http://mx.nthu.edu.tw/~chclin/Class/Securitization.htm. [accessed 27.06.2015].

MCDONALD, O. (2013). Fannie Mae and Freddie Mac: Turning The American Dream Into a Nightmare. A&C Black. 2013. ISBN 978-1-780-93523-2.

MISHRA, R. K. – NAVIN, B. – GEETA, P. (2006). *Economic Liberalisation and Public Enterprises*. Concept Publishing Company, 2006. ISBN 978-8-180-69257-4.

Regulation of Monopoly in terms of Economic Practice

Bernadeta Siváková, Monika Jančovičová

University of Economics in Bratislava Faculty of Business Management, Department of Business Economics Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: bernadeta.klucikova@gmail.com, jancovicova.monikaa@gmail.com

Abstract

Power is from an economic point of view the main part of the economy of each country. It is a primary input for production in all sectors and indispensable part of modern life which today manifests itself by a significant dependence on energy resources. In the last decade, the consumption of energy in relation to increasing demand from emerging economies increased significantly. Energy is included into the sphere of network industries which are regulated by the state. The main reason for topic selection was the fact that the regulation of network industries, despite the growing importance, is not too often analysed. The aim of this topic is to define a monopoly under the present conditions, hybrid regulatory. As an example a Slovak producer of power was chosen.

Keywords: monopoly, regulation of monopoly, regulatory mechanisms *JEL classification:* D41, Q41

1. Introduction

In the past, the term "monopoly" was used to express right to exclusive sales, which means control of trade with the product in a particular relevant market carried out by the company or a smaller number of more companies. "Monopoly is a company that is the sole seller in the market. It arises when one company owns a key resource, when the government assigned the company the exclusive right to produce a certain farm, or if one company is able to cover the entire market demand at a lower cost than what can be achieved by other companies" (Mankiw, 2000).

2. Characteristics of monopoly structure

Monopoly is the opposite of imperfect competition. The production in a perfectly competitive market is produced by larger number of smaller companies, while in the sector of the monopoly the entire output is produced by only one company. The key difference between a perfectly competitive firm and the monopoly *"lies in the fact that the monopoly is not forced to market price only passively accept but it can establish an active"*(*Frank, 2000*). The market is therefore very often manifested in the ability to set the price above the cost of production. Model of perfect competition is further characterized by the production of homogeneous products of different manufacturers, which can be substituted. Monopolist is the only manufacturer on the contrary manufactures products for which there are no close substitutes. Overview of the market structure of monopoly defined Table 1.

Table 1 Monopoly structure

Monopoly structure	
Number of sellers/producers	• one seller
Number of buyers	 not specified, a lot of small buyers with no power to influence the price
Product differentiation	• highly differentiated product
Conditions for market entry and exit from the market	• very difficult or almost impossible to enter the market

Source: FENDEK, M. – FENDEKOVÁ, E. (2008). *Mikroekonomická analýza*. Iura Edition: Bratislava, 2008. 575 p. ISBN 978-80-8078-180-4.

Monopoly market is defined by the existence of a single bidder who may at any given time to decide on the size of the output produced, but also on the level of prices. This characteristic of monopoly is called as pure or absolute monopoly. We are thinking about it but only in theory, because it is assumed that in the absolute monopoly doesn't exist close substitutes of producing goods. Since in the real life, at the market there are closer, respectively, distant substitutes, monopoly cannot be absolute or unlimited. Based on the method of distinction between the following two basic types of monopolies:

- Natural monopoly,
- Administrative monopoly.

Natural monopoly arises when the company is able to supply goods or services for the entire market alone, at a lower cost than if the given output was produced by a number of independent companies. Ownership of a key resource is the foundation which the company guarantees a unique position in the market without state support. Based on the above facts, we can say that the monopoly of this type, there is no government intervention in the certain concentration sectors where it would be given the capacity to the market several business entities inefficient. Natural monopolies now we refer mainly to utility because demand across the network is possible at the lowest cost to satisfy only by means of a single operating entity. According Tokárová" it is not a national economy effectively builds duplicate or multiple parallel pipelines, water pipes, sewers or transmission system electrical high voltage, because the character of the technology and organization as well as its capital intensity excludes substantially competition and its self-regulatory effects." (Tokárová, 2008)

Administrative monopoly by Sherman "created on the basis of administrative arrangements, which shall ensure for a particular company the prerogative to produce for a longer certain period of time. For a specific type of administrative monopoly, we consider monopoly based on proprietary rights. This is a temporary monopoly that is protected by the state only during the term of the patent."(Sherman, 1989) The goal in this type of administrative monopoly is refund the costs associated with research and development for new products. The primary purpose, in this case, is driving innovative activity. Typical instrument for influencing the behavior of a monopoly, in this case, we consider regulatory measures.

3. Regulation of monopoly

Functions of regulator of monopoly position of individual companies are ensured by the state. While monopoly based on its dominant position on the market is capable of in the same capacity demand and an unchanged technology expressed identical cost function as in the case of perfect competition to produce a profit, while perfectly competitive firm is a loss, which

results from higher market prices, compared with the average cost of production, it is important for the state to determine the boundaries within which it is possible to accept this situation and thus enable economically strong company as mostly monopolies, they should be able to obtain through the market price at the expense of social welfare a surplus.

For the state, therefore, there is the possibility of setting regulated prices through legislative instruments, but with controlling compliance with market principles. Regulatory mechanisms are substantially oriented to natural monopolies in the economy, which are desirable and beneficial market structure, creating economies of scale. "The natural monopoly is a situation in the market, where as a result of achieving economies of scale, total volume of marketed production efficiently provides by one producer"(Lisý, 2011) Other market structures would also produce more expensive and therefore more effective market dominance only major company that wins in the competition.

By E. Fendeková, for the most widely used theoretical concepts that can be used when setting regulated prices of companies' active in the field of network industries, are considered:

- a) the regulation of the rate of return on investment,
- b) the regulation of return output,
- c) the regulation of return on sales,
- d) the regulation of cost recovery,
- e) the regulation on the basis of performance.

3.1 The Regulation of the rate of return on investment

"The traditional methodological tool for price regulation that implements the pricing regulators in determining the prices of utilities, regulation is based on rate of return (Rate of Return Regulation), which regulates in most advanced economies as production cost, electricity, gas and other companies. The aim is to ensure that the regulated entity established cost of production or services to their customers in order of their sales paid all of its reasonable and prudent costs incurred, as well as, the regulated rate of return on its prudent investment." (Fendek – Fendeková, 2008) This means that a company subject to regulation optimizes its behavior to obtain corresponding unit of output did not exceed the threshold controller. Company controlled by this principle is motivated in an effort to increase their allowed "reasonable" profit to excessive build up of capital investment.

This regulatory mechanism is especially popular among investors due to its ability to long-term sustainability and resilience to climate conditions of the company.

3.2 The regulation of the return output

Return output control mechanism enables companies to achieve a certain amount of profit on each unit of production. Their behavior in the market regulated company optimizes the consumption of production factors, the volume of output and the price of production determined by the regulator without limits. Manufacturing strategy monopoly firm is optimized, while a monopoly on the production unit accepts only the income limit. Company subject to regulation tends to adjust their behavior in that direction, which means the regulator will limit the maximum gains.

The company according to the principle of regulating the output of return "does not tend to build up of wasteful consumption of factors of production, as was the case with the regulation of rates of return on capital employed. Conversely, the company tends to increase volume output while reducing production cost, thus contributing to the growth of social welfare. By reducing the rate of profit in the regulation of the return of output, the company is positively motivated to restructuring costs and increase production efficiency in order to avoid the trend of further increasing the output of a fall in market prices and risk localizes its production strategy to the zone of inelastic demand." (Fendek – Fendeková,2008) This type of regulatory mechanism has a better motivation and security features than the previous method.

3.3 The regulation of return on sales

Where it is easier and more efficient quantified rather than the volume of sales of the outlet, it is preferred to control the return of sale. The point is that "the regulator as a basis for defining adequate profit of regulated entity uses its revenues and a reasonable profit then defined as a certain percentage allowed RoS of its revenues." (Fendeková, 2006)

3.4 The regulation of cost recovery

Regulation of natural monopolies by regulating cost recovery is different from previous instruments. It constructed namely *"the threshold for maximum profit level of the regulated company on the basis of its total cost. (Fendeková, 2006)* The basis for the definition of reasonable profit entity subject to regulation is the total cost of which is then reasonable profit defined as a certain percentage allowed.

The company's profit is a function of its cost, which "prevents natural monopolies and advocated that such a combination of its offer and monopolistic market prices, which would allow him to implement compared to the costs incurred inadequate earnings." (Fendek – Fendeková, 2008)

3.5 The regulation on the basis of performance

The regulation is based on the performance of a certain modification of a regulation on the basis of return. This mode is based on a rigorous in-depth analysis of the substance of some of the existing companies in the market. It also includes elements of the rational individual regulations described in this section. Mode also enhances the performance of the regulated entity through creating incentives.

4. Slovenské elektrárne, j.s.c.

Slovenské elektrárne, j. s. c. is a company whose main business is the production and sale of electricity. According to the available installed power plant, it is the largest producer of electricity in Slovakia and one of the largest in Central and Eastern Europe. The company also produces and sells heat, and provides support services for the power system. Slovak power plants have 4,992 MW of gross power production and have the perfect mix - core, water and classical sources. It operates 31 water up plants, 2 nuclear plants, two thermal and two solar power plants.

The company had two shareholders at the date of 31 December 2014. The majority shareholder is an Italian company Enel Produzione S. p. a shareholding of 66%. Minority shareholder is the Slovak Republic (Slovakia), represented by the Ministry of Economy of the Slovak Republic (MoE) owning 34%.

4.1 Regulation of energy prices

Year 2014 belonged to the five-year regulatory period 2012-2016, which is aimed at stabilizing the variable and fixed costs, respectively long-term return on investment. Range of costs during this period remains virtually unchanged, but the legislative amendment changed

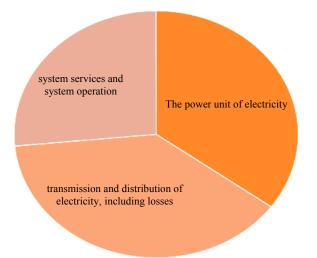
certain rules for keying costs in combined heat and power. An item emission allowance has been added to the variable cost. Determined heat prices are subject of regulatory decisions at the end of the regulatory settlement actually removed amount of heat and the eligible costs actually incurred.

Despite the regulation overall price rising trend is adequate due to the decline actually heat sold. Growth in unit prices partially maintains the downward trend in sales. Prices of the commodity of electricity are determined by the market without any form of regulation. Retail price of electricity for households, however, consists of several components. Some of these components, particularly fees related to transmission and distribution and system fees are regulated and set by the decision of the Office for Regulation of Network Industries.

The final price included fees system used for providing ancillary services, promoting the use of renewable energy sources and electricity from domestic brown coal. Through transmission and distribution fees are reimbursed costs of transmission and distribution systems. In addition to these duties, the final customers - except households - pay excise duty and all consumers pay VAT in accordance with relevant laws. Decomposition of energy prices is seen in Graph 1.

Graph 1

Decomposition of energy prices for households in 2014



Source: Slovenské elektrárne. (2016). Annual report. [online]. Available at the URL: http://www.seas.sk. [accessed 2016-01-15].

The final price of electricity does not affect only the very commodity price of electricity which forms, in the case of households, about 35% of the final price of electricity, but especially other charges related to the transmission and distribution and system fees, which are regulated by the RONI. Slovak power plants operate in a fully liberalized market environment in which there are no access restrictions entities which hold individual permits and licenses. Most shops run through brokerage platforms or through regional PXE, which together form the market environment.

The price of electricity is produced in a transparent market environment, based on the balance between supply and demand, and in this way provides a permanent market participants price information. The market operates a large number of companies that were active at the daily buying and selling side, which promotes market liquidity. Under such conditions, there is no room for manipulation or deviation in electricity prices to market environment.

4.2 Trading in electricity and gas

Sale of production is realized by Slovak power through transactions concluded on market terms, usually through brokerage platforms and Prague Energy Exchange (PXE), which are in the region considered to be the most transparent and appropriate way trade in electricity. This strategy has long been positively accepted by trading partners of Slovak plant. Most of the production is sold to companies based on three years of the forward advance of the delivery according to the marketing strategy. This strategy is an effective way to ensure sales prices and planned production volumes. The residual electricity that is not sold on an annual basis is traded on the basis of short-term spot market for Slovak and neighboring markets on a bilateral basis, in particular through brokerage platforms. This volume represents approximately 7% of the total annual production and is essential for maintaining balances, positions Slovak power, respecting the water resources and the unpredictability of possible failures of other resources in the production portfolio of companies. Export and / or import on a daily basis are necessary in view of the size and liquidity of the Slovak energy market.

5. Conclusions and policy implications

Business Sectors belonging to network industries where natural monopolies are formed are strategically important areas, as commodities delivered in utilities represent basic living needs of the population. Ensuring the quality of these commodities is therefore one of the basic prerequisites for functioning of the economy. The existence of monopolistic entities determines the mutual relations arising in the context of network industries between producers, distributors, suppliers of these commodities and their customers. Rate of severity of the impact of the behavior of such a monopoly on the economy is so significant that in all countries of the European Union is reflected in the form of state regulation of network industries.

In the article we analyzed the regulation in Slovenské elektrárne. We found that the regulatory period 2012-2016, is aimed at stabilizing the variable and fixed costs, respectively long-term return on investment. Despite this regulation is adequate overall price upward trend. Price of electricity itself is wholly state regulated. Retail price for households is composed of several components, which are particularly fees related to transmission and distribution and system fees. These are regulated and set by the decision of the Regulatory Office for Network Industries, as the state-appointed administrator.

References

Slovenské elektrárne. (2016). Annual report. [online]. Available at the URL: <http://www.seas.sk>. [accessed 2016-01-15].

FENDEK, M. (2007). Modely cenovej regulácie sieťových odvetví. *Medzinárodná vedecká konferencia Znalostná ekonomika*. 2007.

FENDEK, M. – FENDEKOVÁ, E. (2008). *Mikroekonomická analýza*. Iura Edition: Bratislava, 2008. 575 p. ISBN 978-80-8078-180-4.

FENDEKOVÁ, E. (2006). *Oligopoly a regulované monopoly*. Iura Edition: Bratislava 2006. 205 p. ISBN 80-8078-080-3.

FENDEKOVÁ, E. (1995). Podmienky rovnováhy firmy v rôznych typoch trhových štruktúr. In: *Zborník príspevkov z vedeckej konferencie*. 1995.

FRANK, R. H. (2008). *Microeconomics – and behavior*. 7th. ed. New York: The McGraw-Hill Companies, 2008. 727 p., ISBN 978-0-07-337573-1.

LISÝ, J. et al. (2011). *Ekonómia*. Bratislava: Iura Edition, 2011. 714 p. ISBN 978-80-8078-406-5.

MANKIW, G. (2000). Zásady ekonomie. Grada Publishing: Praha, 2000. ISBN 80-7169-891-1.

SHERMANN, R. (1990). *The regulation of monopoly*. Cambridge: Cambridge University Press, 1990. ISBN 0-521-36315-2.

TOKÁROVÁ, M. (2008). Protimonopolná politika. Sprint: Bratislava, 2008. ISBN 978-80-89085-98-9.

Selected Aspects of Access to Finance of Small and Medium-sized Enterprises in V4 countries

Alžbeta Thiessen

University of Economics in Bratislava Faculty of Business Economics with seat in Košice, Department of Management Tajovského 13 Košice, 041 30 Slovak Republic E-mail: alzbeta.thiessen@euke.sk

Abstract

Access to finance is the main obstacle to the growth of Small and Medium-sized Enterprises (SMEs). They prefer to finance their growth using mostly debt originating from either banks, or other external sources. The European Commission is trying to improve financial conditions for small enterprises in Europe through various policies and initiatives. One of these is collaboration with the European Central Bank on the Survey on the Access to Finance of Enterprises (SAFE). The aim of this paper is to evaluate and compare the selected aspects of access to finance of SMEs in V4 countries based on the last SAFE survey's results from April to September 2015. When measuring financial access, a variety of proxy variables may be used. Our chosen variables or aspects are: the perception of access to finance as the most pressing problem, the percentage of firms with bank loans, the outcome of negotiation for bank loan financing (only firms which applied for a bank loan), the reason why the bank loans are irrelevant for a firm, and the size of the last bank loan that a firm obtained in the past six months.

Keywords: access to finance, bank loans, V4 countries *JEL classification*: G 30, E 44

1. Introduction

Small and medium-sized companies (SMEs) are the main source of economic growth and new jobs. They represent over 99% of businesses in the European Union (EU) making it crucial to support their growth and innovation. However, one of the most important problems facing SMEs is the difficulty accessing finance. The European Commission (EC) works to improve the financing environment for small businesses in Europe.

On 7 December 2011 the Commission adopted an Action Plan outlining the various policies that it is pursuing to make access to finance easier for Europe's 23 million SMEs. Proposed regulatory and other measures are aimed at maintaining the flow of credit to SMEs and at improving their access to capital markets. This is through increasing the visibility to investors of SME markets and SME shares and also by reducing the regulatory and administrative burden. Other main EU initiatives include:

- Competitiveness and Innovation framework Programme (CIP) (2007-2013), financial instruments to help SMEs raise equity and debt financing.
- Competitiveness of Enterprises and Small and Medium-Sized Enterprises (COSME) (2014-2020), programme to make it easier for SMEs to access loans and equity finance.

- COSME financial instruments operating in conjunction with those of the Horizon 2020 Framework Programme for Research and Innovation: InnovFin – EU Finance for Innovators.
- The SME Instrument of the Horizon 2020 Framework Programme for Research and Innovation offers funding and support for innovation projects that help SMEs grow and expand their activities into other countries (EC, 2016).

With regard to policy areas, the EC uses financial instruments and helps EU countries share good policy in areas such as loans and guarantees, venture capital, business angels, growth stock markets, and crowdfunding. Secondly, it organizes a series of EU Access to Finance Days for SMEs across all EU countries to raise awareness of the availability to EU funding. Thirdly, it monitors developments in SMEs' access to finance through the joint EC/European Central Bank (ECB) Survey on the access to finance of enterprises (SAFE) (EC, 2016).

Assessment of access to finance is described and evaluated throughout the above mentioned initiatives and issues. However, in this paper we focused on the selected aspects of access to finance in V4 countries based on the SAFE survey.

Most relevant sources of external financing for SMEs are bank loans, credit lines or overdraft, all opposite to equity. Leasing and hire purchase is considered to be the third most relevant source. SMEs prefer debt financing over equity financing (EC SAFE, 2015).

1.1 Access to finance and its measurement

Access to finance may be broadly defined as, "access to financial products (e.g. deposits and loans) and services (e.g. insurance and equity products) at a reasonable cost. Given the widely recognized link between access to finance, growth, income smoothing and poverty reduction, many countries have adopted the goal of universal financial access." (Beck et al., 2006). Demirgüç-Kunt et al. (2008) defined access to finance as, "the ability of individuals or enterprises to obtain financial services, including credit, deposit, payment, insurance, and other risk management services."

Measuring financial access is essential for strengthening the link between theory and empirical evidence. Currently, the main proxy variables that measure financial access for firms include: the percentage of firms with bank loans, credit line or credit card, willingness of banks to lend money, the main obstacle to growth, perception of access to finance as an obstacle, credit-constrained status measured on scale from "no obstacle" to "very severe obstacle" (Cressy, 2002; Kuntchev et al., 2014; the World Bank GFDR, 2014; Erdogan, 2015). Sometimes it is difficult to determine which firm has doesn't have access to finance, because it depends on which proxy variables are chosen.

In our paper we selected five proxy variables, i.e. aspects of access to finance: the perception of access to finance as the most pressing problem, the percentage of firms with bank loans, the outcome of negotiation for bank loan financing (only firms which applied for a bank loan), the reason bank loans are irrelevant for a firm, and the size of the last bank loan obtained by a firm in the past six months.

According to the World Bank's Enterpriser Surveys (2013) dataset for 2002-2013, approximately 20% of the firms in V4 countries identified access to finance as a major constraint. The perception by firms of this constraint is decreasing yearly throughout the EU. Currently, access to finance is the least pressing problem for SMEs. However, the situation differs between countries, for instance, in Greece (30% of SMEs) and Cyprus (25% of SMEs) but less so in Estonia (5% of SMEs).

In European countries in 2015, 78% of SMEs received all or part of their requested loans and the rejection rate for those loans decreased to 8%. This decrease was perhaps caused by the European Commission's initiatives and/or by the slow economic recovery after the recent financial crisis. Sometimes bank loans are not the best option for SME financing. Some of the reasons for this may include: high interest rates, insufficient collateral, too much paperwork, unavailability of loans, or lack of need. Loan refusals decrease with both the size of firms and the amount of collateral available. Firms may use external sources to finance: working capital or inventory, developing new products, hiring and training employees, refinancing obligations, etc. (EC SAFE, 2015).

2. Data and Selected Sample

Since 2008, the EC and the ECB collaborated on the Survey on the Access to Finance of Enterprises (SAFE). They published the first survey in 2009. It's conducted in all EU countries as well as several additional countries including Iceland, Turkey, Montenegro, Albania and Macedonia. A more comprehensive survey has been run every year since 2013 (previously every two years). The last report discusses the results of the April - September 2015 wave and presents significant developments over time. It provides evidence on the financing conditions faced by SMEs compared with those of large firms during the previous six months.

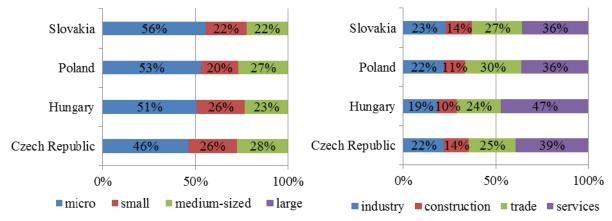
The SAFE survey is an online survey. The interviewee from each company is a top-level executive (general manager, financial director or chief accountant). The companies in the sample are selected randomly from the Dun & Bradstreet business register. In some countries, where the Dun & Bradstreet register was not sufficient or not available, other (mainly local) sources have also been used in the past.

The sample is stratified by country, enterprise size class and economic activity. We chose to include only the Visegrad Group (V4) countries: the Czech Republic, Hungary, Poland and the Slovak Republic. Size class of firms are defined as micro (1-9 employees), small (10-49 employees) and medium-sized (50-249 employees) enterprises, taking into account the total employment in each of these size classes. In addition, a sample of large enterprises (250 or more employees) was included in order to make it possible to compare developments for SMEs with those for large enterprises. The enterprises are split into four major groups based on economic activities at the one-digit level of the European NACE classification: industry, construction, trade and other services (ECB, 2015).

We focused on the evaluation of a firm's current financial condition within the V4 countries, i.e. April – September 2015. We selected several aspects of access to finance: the perception of access to finance as the most pressing problem, the percentage of firms with bank loans, the outcome of negotiation for bank loan financing (only firms which applied for a bank loan), the reason bank loans are irrelevant for a firm, and the size of the last bank loan obtained by a firm in the past six months. The completed interviews number 503 (the Czech Republic), 503 (Hungary), 1306 (Poland) and 500 (Slovakia). The selected sample from the V4 countries does not include large companies and almost half of the firms are micro size. Most firms come from the services sector, and then from trade, industry and construction (Figure 1).

Figure 1

Firms size class and main economic activity in V4 countries, (% of firms) April - September 2015

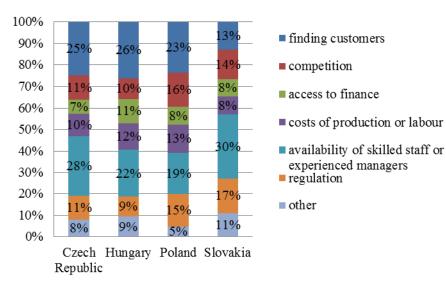


Source: own processing, data extracted from Data and Surveys - SAFE, Results 2015

3. Results

The results in Figure 2 indicate the percentage of SMEs from the V4 countries that consider a specific problem to be their most urgent problem in the past six months (April – September 2015). The availability of skilled staff or experienced managers is a relatively big issue in Slovakia (30%) and the Czech Republic (28%). It is the most pressing problem in all V4 countries. With regards to access to finance, firms in Hungary face this problem most often (11%) when compared to the average over all V4 countries of 9%.

Figure 2



The most important problem currently facing firms (% of firms, V4 countries, April - September 2015)

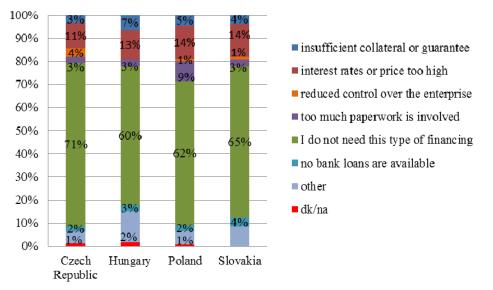
Source: own processing, data extracted from Data and Surveys - SAFE, Results 2015 Notes: unweighted number of observations: Czech Republic (448), Hungary (453), Poland (1193), Slovakia (450)

The SMEs which reported that bank loans are not relevant to their enterprise (Czech Republic 57%, Hungary 73%, Poland 53% and Slovakia 60%) were asked why this was the case (Figure 3). The main reason given was that they do not need this type of financing (65% of firms in average). Fourteen percent of SMEs in Poland and Slovakia indicated that bank

loans are not relevant due to high interest rates or price too high. Firms in Poland most often site too much paperwork involved, in comparison to the rest of the V4 countries. In Slovakia 4% of firms site a loan to be irrelevant because no bank loan was available. The largest percentage of firms that site a bank loan to not be relevant due to a lack of collateral are in Hungary.

Figure 3

The main reason that bank loans are irrelevant for firms in past 6 months (% of firms, V4 countries, April - September 2015)



Source: own processing, data extracted from Data and surveys - SAFE, Results 2015

Notes: unweighted number of observations: Czech Republic (448), Hungary (453), Poland (1193), Slovakia (450) dk - do not know, na - not available

The proportion of SMEs in the V4 countries that applied or did not apply for a bank loan in the past 6 months due to various reasons is shown in Figure 4 along with the corresponding success rates. The proportions presented refer to SMEs that indicated bank loans to be relevant for their enterprise.

On the right side of Figure 4 we see that in the V4 countries, except the Czech Republic, more than one third of SMEs did not apply for a bank loan because they had enough internal funds while more than another third did not apply due to other reasons. The Czech Republic has the highest percentage of SMEs that did not apply for a bank loan due to having sufficient internal funds (44%). Internal funds include: internal equity such as retained earnings, sales of assets, cash and cash equivalents from savings, profits or operating revenue (EC SAFE, 2015). On average, 5% of the SMEs surveyed did not apply for a loan siting that they believed the banks would refuse their application. Approximately 24% of SMEs surveyed applied for a bank loan in the past 6 months.

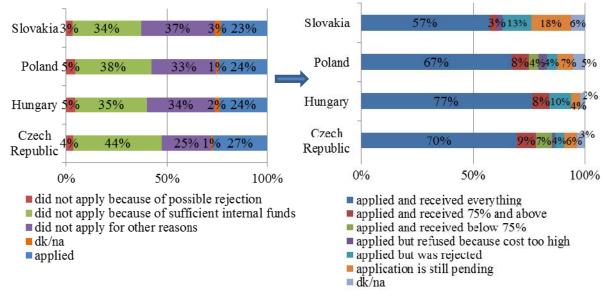
The left side of Figure 4 shows that most of the SMEs that applied for a bank loan in the past 6 months were successful in all V4 countries, with the largest percentage of SMEs granted full loans in Hungary (77%). Another 8% of SMEs in Hungary were granted the majority of the amount for which they applied. However, we see that in general, the success rate for securing any bank loan was the highest in the Czech Republic at 86% (70% were granted the full loan, 9% gained >=75%, 7% gained <75% of applied loan). In Slovakia, the rejection rate for bank loan applications is the highest. Slovakia also has the most applications of SMEs still pending. On average, only 2% of SMEs in the V4 countries refused a bank offer

of a loan due to the high cost. The total number of loan applications rejected is lowest in the Czech Republic and Poland.

Figure 4

Firms applied or did not for the bank loan in the past 6 months (on the left)

The success of firms that applied and tried to negotiate for the bank loan in the past 6 months (on the right), (% of firms, V4 countries, April - September 2015)



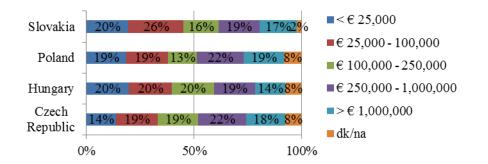
Source: own processing, data extracted from Data and surveys - SAFE, Results 2015 Notes: L - unweighted number of observations: Czech Republic (253), Hungary (199), Poland (682), Slovakia (222) R - unweighted number of observations: Czech Republic (70), Hungary (52), Poland (168), Slovakia (53)

dk - do not know, na - not available

In regards to the actual size of the loans obtained, Figure 5 shows that SMEs in Slovakia were most often (26%) granted between 25,000 - 100,000 EUR. In the Czech Republic and Poland, however, SMEs were most often granted between 250,000 - 1,000,000 EUR. In Hungary we see the smallest number of SMEs granted a loan over 1,000,000 EUR. In the Czech Republic approximately the same percentage of SMEs are depicted in each of the categories in Figure 5 from 25,000 to over 1,000,000 EUR.

Figure 5

The size of the last bank loan obtained/renegotiated/attempted to obtain in the past 6 months (% of firms, V4 countries, April - September 2015)



Source: own processing, data extracted from Data and surveys - SAFE, Results 2015

Notes: unweighted number of observations: Czech Republic (68), Hungary (51), Poland (160), Slovakia (50) dk - do not know, na - not available

4. Conclusions and policy implications

Access to finance refers to the possibility that individuals or enterprises can access financial services, including credit, deposits, payment, insurance, and other risk management services. Financing access is the main obstacle to SMEs growth. Sources of finance can be both formal and informal and can range from banks, near banks, non-banks, community organizations to friends and family.

The European Commission tries to enhance financial conditions for small business in Europe through various policies and initiatives, which includes cooperation with the European Central Bank monitoring access to the finance of SMEs via the Survey on the Access to Finance of Enterprises (SAFE) from 2009. The SAFE online survey is conducted in all EU countries and several additional countries. The interviewee for each company is a top-level executive. The aim of this paper is to evaluate and compare the selected aspects of access to finance of SMEs in the V4 countries based on last SAFE survey results from April to September 2015. We focused on the perception of access to finance, the percentage of enterprises that gained bank loans, the success of negotiating bank loan financing, the reason that bank loans were not relevant, as well as the size of bank loans.

Firms that have made a recent credit application have a lower tendency to see access to finance as an obstacle (Erdogan, 2015). It is evident that the EC initiatives also have an influence on this tendency to see access to finance as an obstacle. Most often the perception of access to finance as an obstacle is seen in SMEs in Hungary. Just because this perception that financing is becoming less of an obstacle does not necessarily mean that SMEs have better access to bank loans.

Smaller and younger firms have lower success rates in their loan applications (Levenson and Willard, 2000). Our results confirm that a lower percentage of SMEs in Slovakia received the full amount of their requested bank loans and the rejection rate for bank loan applications is higher than in the other V4 countries. The size of a firm has a positive relationship with the probability of being approved for a loan (Chakravarty and Yilmazer 2009). Our sample includes only micro, small and medium-sized companies. The results reveal that most of the SMEs that applied for a bank loan, received the full amount requested (the least in Slovakia). The highest percentage of SMEs gained bank loans in the Czech Republic, total of 86%.

The access to finance would perhaps be more evident if there would be an increase in the percentage of start-up, micro and small businesses which could get financing from financial institutions to cover the costs of working capital or inventory, developing new products, investments, or hiring employees.

Government policies aimed at reducing the information asymmetry problem devise regulations on financial reporting and disclosure and the use of appropriate accounting and auditing standards (Hashi and Toçi, 2010). Screening and monitoring by banks will be easier when there is more transparency from SMEs and the information provided from financial statements becomes more accurate and reliable. This then enables banks to adopt lending technologies based on hard data. Seeing as weak transparency is an inherent feature of micro and small firm reporting, the costs of screening applications for loans could perhaps be decreased by boosting the availability of credible information using credit registers and other systems of notice.

References

BECK, T. et al. (2006). Banking Services for Everyone? Barriers to Bank Access and Use Around the World. *World Bank Policy Research Working Paper No. 4079*.

CHAKRAVARTY, S. – YILMAZER, T. (2009). A Multistage Model of Loans and the Role of Relationships. *Financial Management*. Vol. 38, Issue 4, pp. 781-816. ISSN 1755-053X.

CRESSY, R. (2002). Introduction: Funding Gaps. In *Economic Journal*. Vol. 112 (477), F1-F16. ISSN 1468-0297.

European Central Bank (ECB). (2015). *Survey on the access to finance of enterprises, Methodological information on the survey and user guide for the anonymised micro dataset.* [online]. Available at the URL: http://www.ecb.europa.eu/stats/money/surveys/sme/html/index.en.html. [accessed 16.02.2016].

European Commission (EC). (2016). *Access to finance for SMEs*. [online]. Available at the URL: http://ec.europa.eu/growth/access-to-finance/>. [accessed 15.02.2016].

European Commission (EC SAFE). (2015). Survey on the access to finance of enterprises (SAFE) Analytical Report 2015. Luxembourg: Publications Office of the European Union, 2015. ISBN 978-92-79-51675-7.

ERDOGAN, A. (2015). Which SMEs perceive access to finance as an obstacle to their operations? Evidence from Turkey. *Journal of Economic and Social Development*. Vol. 2, Issue 2, pp. 13-19. ISSN 2199-6873.

DEMIRGÜÇ-KUNT, A. et al. (2008). *Finance for All?: Policies and Pitfalls in Expanding Access*. Washington, D.C.: The World Bank. 246 p. ISBN 978-0-8213-7292-0.

HASHI, I. – TOÇI, V. Z. (2010). Financing constraints, credit rationing and financing obstacles: evidence from firm-level data in South-Eastern Europe. *Economic and Business Review*. Vol. 12, Issue 1, pp. 29–60. ISSN 2335-4216.

KUNTCHEV, V. et al. (2014). What Have We Learned from the Enterprise Surveys Regarding Access to Credit by SMEs? *World Bank Policy Research Working Paper No.* 6670.

LEVENSON, A. – WILLARD, K. (2000). Do firms get the financing they want? Measuring credit rationing experienced by small business in the U.S.. *Small Business Economics*. Vol. 14, pp. 83-94. ISSN 1573-0913.

World Bank. (2014). *Global Financial Development Report (GFDR)*. International Bank for Reconstruction and Development / The World Bank. Washington DC 20433. 203 p. ISBN 978-0-8213-9990-3.

World Bank Enterpriser Surveys. (2013). *Custom Query*. [online]. Available at the URL: <<u>http://www.enterprisesurveys.org/Custom-Query></u>. [accessed 15.02.2016].

Descriptive Factor Analysis of the Latvian Corporate Bond Market

Natalja Tocelovska

University of Latvia Faculty of Economics and Business Administration Aspazijas bulvaris 5 Riga, 1050 Latvia E-mail: natalja.tocelovska@sseriga.edu

Abstract

The recent financial crisis and the subsequent changes in the regulation in the banking sector made the increasing pressure both on the regulators as well companies to look for the potential alternative financing sources. As a result, the European Commission is developing the Capital Markets Union with the aim to develop the capital market, thus lowering the cost of funding and making the financial system more resilient (European Commission, 2016). The goal of this article is to analyze the development of the Latvian compared bond market

The goal of this article is to analyse the development of the Latvian corporate bond market and, thus, to evaluate the presence of the alternative to bank financing. The paper argues that while many academics have studied the development of the corporate bond market, most of the researchers introduce the descriptive framework to analyse the emerging economies. The more structured frameworks in the form of the comparative factor analysis introduce the ratio type comparison and it is applied to the developed economies. The paper analyses the Latvian corporate bond market with the descriptive factor analysis framework. The paper discovers that the Latvian corporate bond market is reasonably represented and developed when analysed by the selected descriptive factor analysis framework. The paper concludes that the current level of the development of the Latvian corporate bond market makes it possible to attract the capital for the sovereign, quasi-sovereign and financial sector companies. The paper suggests the further analysis by applying a comparative factor analysis framework where the Financial Sector Development Indicators (FSDI) study and the study by Wyman (2015) should be applied.

Keywords: corporate bond market, development, indicators, analysis *JEL classification*: G23, G24

1. Descriptive factor analysis theories

Latvian corporate bond market is developing for 23 years, where the number of the issues outstanding in 2015 and 2016 is at the record level (Nasdaq Riga, 2016). While Latvian corporate bond market is experiencing quick growth the analysis of the level of the development of Latvian corporate bond market should be introduced. Measuring and defining the level of the development of Latvian corporate bond market should assist in selecting the correct future steps to increase the role of Latvian corporate bond market. The need is amplified by the increasing focus from the European Commission on capital markets as the alternative source of financing.

In order to define the level of the development of Latvian corporate bond market the reasonable framework should be selected. Many researchers have analysed bond market segment, some academic studies are made on the corporate bond sector while no research is done on Latvian corporate bond market. The previous attempts of the researchers to analyse

the level of the development of corporate bond market can be divided into two types of the analysis:

- descriptive factor analysis: Fabella and Madhur (2003), Burger and Warnock (2005), Braun and Briones (2006), Stewart (2009), and Dittmar and Yuon (2008);
- comparative factor analysis: the research by the World Bank (2015) introducing Bond market development indicators, Wyman (2015).

Comparative factor analysis studies are providing the numerical ratio evaluation of the development of the bond market and are applied to developed markets. Descriptive factor analyses are qualitative based and are applied to emerging markets mostly. The study by Tocelovska (2016) reveals that descriptive factor analysis frameworks provide the dimensions for assessment of the current situation of the corporate bond market. Size of the market and legal framework are the two corporate bond market factors covered by the numerous descriptive factor analysis studies. The study chooses the framework developed by Fabella and Madhur (2003) to analyse Latvian corporate bond market. The framework explores the bond market by applying descriptive factors: size of the bond market, secondary market turnover, maturity structure of bonds, investor base, tax treatment of bonds, market infrastructure, primary issuance method, secondary market transactions, cross-country electronic connection, qualitative assessment of the legal and regulatory framework (Fabella R., Madhur S., 2003).

2. Analysis of Latvia corporate bond market

In order to analyse the factors responsible for the development of Latvian corporate bond market the descriptive factor analysis framework of Fabella and Madhur (2003) is introduced. The framework groups the factors into two clusters:

- measurement factors;
- ➢ legal and macroeconomic factors.

Both of the factor clusters will be applied to analyse Latvian corporate bond market.

2.1 Measurement factors

Measurement factors introduce the quantitative evaluation of the scope and activity in the bond market. Measurement factors include: size of the bond market, secondary market turnover, maturity structure of the bonds, investor base, bond issuers.

2.1.1 Size of the bond market

Latvian bond market is represented by two types of bonds: sovereign bonds (both domestic and international) and corporate bonds. Even though the gap between the amounts outstanding of domestic and corporate bond segments is shrinking, the substantial domination of the sovereign segment of 87% of all the issues outstanding is present (Bloomberg, 2016). Latvian State Treasury is the main present issuer in Latvian bond market. Presence and regular activity of the sovereign issuer is found to be positively affecting the corporate bond segment by the studies of Dittmar and Yuan (2008), where the research finds that sovereign bond segment acts as the benchmark for the corporate bond market and stimulates its development it. Contrary to Dittmar and Yuan, the research by Eichengreen and Leungnareumitchai (2004) finds little interconnection between corporate and sovereign segments.

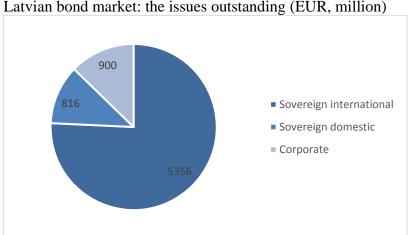


Figure 1

Latvian bond market: the issues outstanding (EUR, million)

Source: Author's based on data extracted from Bloomberg (2016)

As of 17 February, 2016 the size of Latvian corporate bond market is EUR 900 million, from which EUR 678 million are issues done by the banking sector companies, EUR 186.6 million are issues done by the non-financial sector companies and EUR 35.5 million are issues done by the alternative financing sector companies. The total number of issues outstanding is 43 or 74% the number of issues done by the banking sector, 12% by nonfinancial sector and 14% by alternative financing sector. The number of the corporate bonds outstanding has been fluctuating substantially in the period of 2008-2016, where the number of public issues was decreasing in the crisis period reaching the minimum of 14 issues listed in Nasdaq Riga in 2011. The number of public issues outstanding started to rise in 2012 and reached 43 issues on 17 February, 2016 (Nasdaq Riga, 2016). The increase in the number of public issues was driven by the financial sector issues. (Table 1) Additionally the sovereign bond market has started the active development in 2011 and thus created the benchmark for the corporate segment (Nasdaq Riga, 2016).

Table 1

Latvian corporate bond	market:	the issue	s outstandin	g in Na	sdaq Ri	ga (nun	nber)

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of public									
corporate bond issues	29	26	22	14	19	26	36	48	43
Source: Author's based on data extracted from Nasdag Rigg (2016)									

Source: Author's based on data extracted from Nasdaq Riga (2016)

Traditionally Latvia had a weak public bond market segment- the need for intensive borrowing has not been faced by the country. Thus meeting the challenges of the financial crisis in years 2008- 2010, the government of the Republic of Latvia had relatively limited capacity to borrow locally. The Treasury of the Republic of Latvia started with short-term and high-yield borrowing in order to attract the investors to the domestic bond market. The number of new issues with the maturity less than 1 year has picked up in 2009. After the austerity funding from the IMF and EC was agreed in December 2008, the country gradually was getting back its confidence in the eyes of the investors in 2009. As the result the Treasury of Latvia started to gradually borrow longer term in 2010 from the domestic market, with maturities reaching 10 years in 2011 (Latvian Central Depositary, 2015). Only when the investor loyalty in the domestic market was established, the Treasury was ready to come to the international market- the government of the Republic of Latvia has returned to the Eurobond market in June 2011 borrowing 500 million USD for 10 years. The bid/cover ratio reached 7 times thus indicating that the investors were ready to lend at least 3 billion USD more to the Republic of Latvia, which is the potential for the future borrowing. The State Treasury of Latvia has stepped into international market almost every year since 2012 as well forming the issue schedule on the domestic issues (Bloomberg, 2015). In 2013 the Primary dealer system was introduced with the aim to stimulate activity and development of the government debt securities market – new borrowing instruments, broadening of investor base, more active, liquid and attractive securities market for investors, as well as to reduce risks associated with servicing government debt (Treasury of the Republic of Latvia, 2015).

2.1.2 Secondary market turnover

Liquidity or investors' ability to buy/sell securities in the secondary market is one of the indicators market participants assess before making an investment decision. Liquidity factor affects the pricing of the bond both in the primary and secondary market. The proxy of the liquidity risk is measured by the activity of the bond in the secondary market or daily buy/sell deal statistics with the bonds.

Secondary market activity of the bond segment lacks the transparency since most of the buy/sell activity takes place over-the-counter (OTC) or outside of the regulated market. In Latvia, all locally issued bonds should be registered in Latvian Central Depositary, while no requirement about being listed on Nasdaq Riga is present (Latvian Central Depositary, 2015). Comparison of the total number of the bonds outstanding and the number of the bonds listed on Nasdaq Riga reveals that only 2 out of 45 bonds or 4% are not listed on Nasdaq Riga (Nasdaq Riga, 2016). The liquidity of the corporate bond market is Latvia will be analysed for the bonds listed on Nasdaq Riga (Table 2).

Table 2

Latvian corporate bond market: secondary market activity on Nasdaq Riga

Year	2008	2009	2010	2011	2012	2013	2014	2015
Secondary market								
turnover (EUR, million)	1,49	2,72	1,32	1,32	32,7	97,9	141,5	139,7
Number of deals	98	114	19	8	151	239	377	578

Source: Author's based on data extracted from Nasdaq Riga (2016)

The average annual secondary market liquidity in Nasdaq Riga Bond List has reached EUR 1.71 million during the crisis period afterwards increasing to EUR 102 million. The raise in the activity of the financials market issues has influenced the activity in the secondary market - 99% from all the secondary market activity in 2012 came from the buy/sell transactions with financial market issues. The same dynamics was observed in the period 2012-2015 where annual activity of the issues by financial sector formed 99% of all the secondary market activity (Nasdaq Riga, 2016).

2.1.3 Maturity structure of bonds

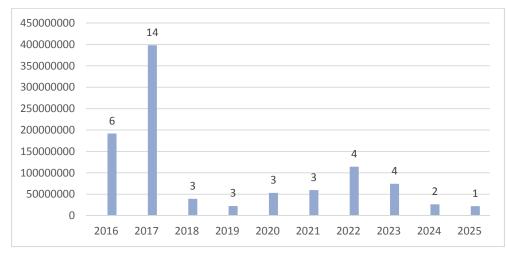
Maturity structure of the debt outstanding is an important indicator of the perception of the credit risk and interest rate structure by investors. Maturity structure of the sovereign bond segment is formed by both the needs of the Republic of Latvia to finance its debt and budget needs as well as the recommendations about the investor appetite provided by the Primary Dealers to the State Treasury of Latvia. Maturity structure of the corporate bond market is formed by the financing needs of the issuer and the investor appetite respectively.

Latvian corporate bond market maturity curve exists for every year in the period of 2016-2025. The presence of the up to 9 year-long bonds reflects the situation in the sovereign bond market where EUR 1.375 billion Eurobond was issued by the State Treasury of Latvia on September 23, 2015 with maturity in 10 years (Bloomberg, 2016). The maturity curve of

Latvian corporate bond market reveals that while the longer maturity issues are present in the market, the majority of the issues both from the absolute size amount (EUR 398 million) and the number of issues outstanding (14 issues) is present in 1 year to maturity segment (Nasdaq Riga, 2016).

Figure 2

Latvian corporate bond market: the issues outstanding grouped by the maturity year and the number of issues (EUR, number of issues)



Source: Authors based on data extracted from Bloomberg (2016)

2.1.4 Demand side (investor base)

The importance of the investors is stressed in the study of Borensztein et al (2006). The research by Braun and Briones (2006) highlight the importance of two factors for the development of corporate bond market: presence of institutional investors and openness of foreign investors for investment in the local market. Wyman (2015) explores the development of the investor base in the relation to the development of the corporate bond of the country. During the development process divided into five stages Wyman finds the group of the investors growing from: foreign investors, banks, domestic institutional investors in Stage 1 to: foreign investors, banks, institutional investors, retail investors, alternative investors in stage 5. The study reveals the importance of the retail and alternative investors as the sign of the development of the market.

Traditionally Latvian corporate bond market was characterised by the main investor type present in the market- pension funds. The reason for high asset manager activity was the constantly rising funds of the 2nd pillar pension capital, which needed to be invested, accompanied by the high level of understanding of local risks and comparatively high for the Eurozone debt returns. Overall 2nd pillar pension capital has reached EUR 2.34 billion on 17 February 2016 (Manapensija, 2016). Still according to Borensztein et al (2006) the current investor base of the corporate bonds issued in Latvia has costs as pension funds and insurance companies follow a buy-and-hold strategy- thus resulting in another problem - lack of liquidity where it is difficult to increase or close the open position in securities without being noticed. Non-transparent over-the-counter market and the lack of liquidity form the buy-and-hold strategy of investors rather than speculating. Those factors negatively affect the demand for corporate bonds by increasing the liquidity spread in the primary market and increasing the bid-ask spread in the secondary market. Excessive premiums act as the compensation for the inconvenience and potential liquidity troubles. Still the analysis of the most recent issue of the non-finance corporate bond issue indicates the changes in the situation.

On 10 June 2015 Latvenergo AS issued of seven-year green bonds in the total nominal value of EUR 75 million with a maturity date of 10 June 2022. The issue attracted various types of investors: banks (including retail) 71%, asset managers 28%, insurance 1%. Moreover only 54% of the issue was placed in Latvia while 18% in Estonia, 11% in Lithuania, 15% in Germany, 1% in Austria and 1% in Finland (Latvenergo, 2016). The diverse investor base of international origin indicates the presence of the developed investor base in the corporate bond segment in Latvia. The challenging topic is to explore the weight of the retail investors in the bank investor segment.

2.1.5 Supply side (bond issuers)

Latvian corporate bond market is represented by 43 public bond issues. While the number of issues has more than doubled in the last 5 years, the presence of 74% of all the issued done by the banking sector indicates the skewedness to the financial sector issuers (Nasdaq Riga, 2016).

Wyman (2015) explores the development of the issuer base in the relation to the development of the corporate bond of the country. During the development process divided into five stages Wyman finds the group of the investor growing from: government, quasi-government in Stage 1 to government/quasi, financial institutions, wide range of corporates in Stage 5. Latvian corporate bond market shows the signs of expanding the non-financial corporate bond issuers, where the segment has 21% weight from all the corporate bond issues outstanding, from which 95% is represented by one issuer- Latvenergo AS (Nasdaq Riga, 2016).

2.2 Legal and macroeconomic factors

Legal and macroeconomic factors provide the qualitative view on the corporate bond market. Measurement factors include: tax treatment of bonds, market infrastructure, and qualitative assessment of the legal and regulatory framework.

2.2.1 Tax treatment of bonds

Tax regulation defines the propensity to issue and invest in the corporate bond market by the issuers and investors respectively. In Latvia, two laws regulate the tax payments related to the bonds: Law on Corporate Income tax and Law on Personal Income tax. From the investors' point of view the taxation in Latvia is acting as a help for government bond market while being neutral to the corporate bond segment. Law on Personal Income tax makes tax-exempt interest payment on the government and municipal bonds of European Union (EU) and Organisation for Economic Co-operation and Development (OECD) countries- the coupon payments on those bonds are not the subject to any interest payment. Bank deposits in Latvia, which are the perfect substitute for the government bonds are subject to 10% tax. Other government bonds and all corporate bonds are subject to 10% tax from the regular coupon payments. Taxation rate for the capital gains for any type of securities is 15%. (Law on Personal Income tax, 2015)

The administrative process for tax payment should be mentioned as when complicated it can act as a discouraging factor for the investors. Tax payment on bank deposits in Latvia is simplified for the investors- banks act as intermediaries in tax administration and investors receive net interest on the deposit. Bond investor needs to know tax administration process, be aware of the changes in the taxation and tax administration made, and pay the interest him/herself by physically coming to the Tax authorities. In the situation where the bond market started its development in 1993 and the most significant changes in the tax regulation were made in 2010, besides to the absence of reasonable electronic tax administration system and expertise accumulated on the subject, the tax administration can be viewed as a hurdle for the development of the corporate bond market (Tocelovska, 2016).

2.2.2 Qualitative assessment of the legal and regulatory framework.

The regulation of the bond market can be observed from two perspectives:

- > regulation based on the origin of the market: primary and secondary;
- regulation based on the origin of the market participant: issuer of bonds, intermediary, investor.

The laws and terms and conditions controlling market segments and participants in Latvia are:

- Civil Law- the general regulatory framework for contractual regulation;
- Law on the Financial Instruments- framework for the operation of the financial instrument market activity by stimulating: stability of the financial market and its trustworthy, security of investors' interest, equal information availability on the instruments to all the market participants;
- Commercial Law- framework on the capital and debt structure of the company;
- Law on the Protection of Investors- framework for the actions of the investors upon the inability of intermediary to fulfil its contractual obligations;
- > Terms and conditions of Financial and Capital Market Commission;
- Terms and conditions of Nasdaq Riga;
- > Terms and conditions of Latvian Central Depositary.

The general legal regulation of the bond issuing and trading process can be described in three steps:

- Prospectus of the bond issue is prepared in accordance with Commercial Law and the Law on the Financial Instruments. The prospectus should include the terms and conditions of the debt: amount borrowed, interest payment amount and regularity, duration of the debt, covenants of the issue, financial information of the issuer, an audit of the financial statements, description of the issuer and its areas of operation.
- Prospectus is submitted to Financial and Capital Market Commission (FCMC), which controls the fulfilment of the regulation norms. Only when the prospectus gets the approval from FCMC, the issue can be placed with the investors.
- New issue is registered in the depositary in accordance with Terms and conditions of Latvian Central Depositary and listed in Nasdaq Riga Baltic Bond List. (Burokas, 2015)

The regulatory framework of the bond market in Latvia is rather broad and covers all the important areas of interests. Still in the comparatively young securities market and actively developing bond segment, the legal framework is rarely employed. This makes the use of the legal framework rather challenging as there is considerable absence of the legal consultants specialized in the bond market processes, and no precedents in the courts.

The role of the regulator in the debt market in Latvia is done by Financial and Capital Market Commission. From the market participants point of the view the role of the Financial and Capital Market Commission is to provide the guidelines for the processes taking place in the securities market: how to interpret the law, terms and conditions, MiFID regulation. So that the regulator is both supervisor and the help for the market participants to interpret legal regulation in the same most applicable to the market and business environment way still being compliant to the legislative framework. FCMC is effective with covering its functions of controlling market participants and supporting the investors when needed by investigating the precedents.

2.2.3 Macroeconomic factors

In their research Borensztein et al (2006) points that a healthy corporate bond market is unlikely to develop in a volatile macroeconomic environment, which the authors characterize by volatile inflation and interest rates. The authors stress that low inflation and stable interest rates are key factors for stable and predictable macroeconomic environment. As the part or European Union since 2004 and Eurozone area since 2014, Latvia has stable macroeconomic environment. (European Union, 2016)

3. Conclusions and policy implications

Despite the slow start in the pre-crisis period the need for the sovereign debt financing and activity in the financial sector issuers has fuelled the development of Latvian corporate bond market. The analysis of Latvian corporate bond market by applying the descriptive factor framework of Fabela and Madhur (2003) reveals that Latvian corporate bond market has positive dynamics in both factor clusters: measurement factors and legal and macroeconomic factors. The measurement factors introduce the quantitative evaluation of the scope and activity in the bond market. The size of Latvian corporate bond market is EUR 900 million where issues made by financial sector form 75% of the total amount outstanding, non-financial sector- 21% and alternative-financing- 4%. The number of the issues has started to rise rapidly starting from 2012, which is related to the activity by the issuers in the financial sector as well as the formation of the sovereign curve. The trends in the size of the market ar reflected in the secondary market activity indicator where the secondary market turnover from EUR 1.71 million during the crisis period has increased to EUR 102 million starting from 2012 (Nasdaq Riga, 2016).

The maturity structure of Latvian corporate bond market is well-established and is reflecting the situation in Latvian sovereign bond market. While the majority of issues by both number of issues and the total amount outstanding is present in 1 year- segment, the existence of the issues outstanding with the maturity in every year starting from 2016 to 2025 is a positive indicator for the market. The diverse investor base of the international origin indicates the presence of the developed investor base in the corporate bond segment in Latvia. The challenging topic is to explore the weight of the retail investors (if any) in the bank investor segment. The issuers of the bonds are skewed to the financial sector, where only 1/5 is represented by the quasi-sovereign issuer. According to Wyman (2015) the further development of Latvian corporate bond issuer base should be made by adding more medium – large corporates.

Latvian corporate bond market has reasonable legislative and taxation base. From the investors' point of view the tax regulation in Latvia is acting as a help for government bond market while being neutral to the corporate bond segment. The administrative process for tax payment should be mentioned as when complicated it can act as a discouraging factor for the investors. In Latvia current lack of the tax reporting practice and standardized electronic reporting can be a hindrance for more active retail segment participation in the bond market. The legislative base is developed still could be challenged by more practical utilisation.

References

Bloomberg. (2016). [System accessed 17.02.2016].

BORENSZTEIN, E. – EICHENGREEN, B. – PANIZZA, U. (2006). *Building Bond Market in Latin America*. Proceedings of the conference. Inter-Development Bank, Washington (D.C.).

BRAUN, M. – BRIONES, I. (2006). *The Development of Bond Markets Around the World*. Proceedings of the conference. Working paper. Universidad Adolfo Ibanez.

BURGER, J. D. – WARNOCK, F. E. (2005). *Foreign Participation in Local-Currency Bond Markets*. Proceedings of the conference. [Working paper].

BUROKAS, I. (2015). *Personal interview*. Head of Baltic origination, SEB Baltic Division. [online]. [accessed 10.12.2015].

DITTMAR, R. F. – YUAN, K. (2008). Do Sovereign Bonds Benefit Corporate Bonds in *Emerging Markets?* Oxford University Press, Volume 21, Issue 5.

EICHENGREEN, B. – LUENGNARUEMITCHAI, P. (2004). *Why Doesn.t Asia Have Bigger Bond Markets?* Proceedings of the conference. [online]. [NBER Working Paper no. 10576].

European Commission. (2016). [online]. Available at the URL: http://ec.europa.eu/finance/capital-markets-union/index_en.htm>. [accessed 10.01.2016].

European Union. (2016). [online]. Available at the URL: http://europa.eu/index_en.htm>. [accessed 10.01.2016].

FABELLA, R. – MADHUR, S. (2003). Bond market development in East Asia: Issues and challenges. Proceedings of the conference. [ERD Working Paper 35]. Asian Development Bank.

Latvian Central Depositary. (2015). [online]. Available at the URL: http://www.nasdaqbaltic.com/en/csds/latvian-csd/. [accessed 20.12.2015].

Law on Corporate Income tax. (2015). [online]. Available at the URL: http://likumi.lv/doc.php?id=34094>. [accessed 10.12.2015].

Law on Personal Income tax. (2015). [online]. Available at the URL: http://likumi.lv/doc.php?id=34094>. [accessed 10.12.2015].

Latvenergo. (2016). [online]. Available at the URL: http://www.latvenergo.lv/eng/investors/financial_information/bonds/. [accessed 10.01.2016].

Manapensija. (2016). [online]. Available at the URL: http://www.manapensija.lv/en/2nd-pension-pillar/statistics/. [accessed 18.02.2016].

STEWART, A. (2009). *The Development of Bond Markets in Barbados, Jamaica and Trinidad & Tobago*. Proceedings of the conference. [Working paper]. The Sir Arthur Lewis Institute of Social & Economic Studies.

TOCELOVSKA, N. (2016). *Descriptive factor analysis of Latvian corporate bond market*. Proceedings of the conference. [Working paper]. Latvia University of Agriculture.

Nasdaq Riga. (2016). [online]. Available at the URL: ">http://www.nasdaqbaltic.com/market/?lang=en>. [accessed 17.02.2016].

Treasury of the Republic of Latvia. (2015). [online]. Available at the URL: http://www.kase.gov.lv/. [accessed 25.12.2015].

World Bank. (2006). *Financial Sector Development Indicators. Bond market development Capital Markets indicators.* Proceedings of the conference. [Working paper]. Financial Sector Operations and Policy.

WYMAN, O. (2015). Accelerating Emerging Development Corporate Development Corporate Bond Markets. Proceedings of the conference. [Working paper]. World Economic Forum.

Understanding Communication Competency

Daniela Trnovcová

University of Economics in Bratislava Faculty of Business Management, Department of Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: trnovcovad@gmail.com

Abstract

One of the most important skills that employers ask for their employees is effective communication. When people think about communication, they usually describe a process, where two or more individuals are related to each other using a common set of symbols and signs to share thoughts, ideas and feelings with one another. However, oral and written communication is not only about sharing information. Communication is about creating appropriate message with the aid of different communication channels to create an understanding between interacting people. Communication is a complicated human activity. Effective communicator has to have knowledge about the communication process, skills for interacting with others and must understand different rules that guide human interactions in various environments. Therefore, individuals must carefully think about different factors that affect the communication process and the presumption of success in each interaction, especially in the workplace.

Keywords: communication competency, impression management, personal brand *JEL Classification:* A10, M12

1. Introduction

The term communication competency is created from two different individual words – communication and competency. At first, we need to have a better understanding of how communication and competency works and how it is defined. Then we can examine what these terms mean together, when they are combined. Many people think, that communication is "just talking". Management and people, who need communication for their work, describe communication with a more elaborated definition. Ojomo (2004) defines communication as "the process of sharing ideas, feelings, thoughts and messages with others" (Ojomo, 2004).

More advanced communication process involves two or more people, who exchange their feelings, thoughts and ideas with one another. The word "exchange", does not mean that person's feelings, thoughts and ideas (in a word form) are merely transmitted to the other person. In reality, individuals do not only transmit information. They rather try to communicate information, so that others understand what they mean with it. A fundamental component of communication is to create a shared meaning on the level of understanding communicators' feelings, thoughts and ideas that the individual wants to convey to others.

This shared meaning is noticeably influenced by what is said, how it is said and what channel is used to share the information. The result of communication (at creating and understanding shared information) depends upon competency. Competency is the necessary skill, knowledge and ability to perform a specific task.

2. Definition of Communication Competency

Spitzberg and Cupach define communication competency as follows: "Communication competency is a person's ability to select communication behaviors and strategies best suited for a specific communication act. Communication competency refers to accuracy, clarity, comprehensibility, coherence, expertise, effectiveness and appropriateness" (Spitzberg – Cupach, 1984). Consequential upon this definition of communication competency there is the intention of desired effects or goals that the sender has when interacting (verbal or non-verbal communication) with others. The interpersonal communication competency is composed of three components - knowledge, skills and motivation. Knowledge is the number of information a person possesses about communication. Skills are the competences to apply communicators to apply the knowledge and skills they have about communication to a specific communication situation and interaction. The motivation is important to employ communicators' knowledge and skills.

Communication competence and its three components are influenced by a variety of variables:

- language (a set of signs and symbols needed to communicate in oral or written form);
- grammar (word choice, rules of effective writing and speech, sentence structure);
- jargon (a language associated with a specialized group or industry);
- culture (the beliefs, attitudes, values or relationship rules respected by a specific group or groups);
- communication channels (the mechanism we use to interact with other individuals);
- communication situation (the context and factors associated with the communication act);
- social structures (the hierarchy and arrangement of people within a group or groups);
- tone (the sound of an interaction or message).

Communication competency varies by situation, that's why each of these variables affects communication and the effectiveness of human interactions. Competent communicator has to have all of the communication competencies, which means knowledge, skills and motivation all together and make conditions for variables that affect and fit to the whole communication process – complex communication competency. In order to gain a better understanding of communication competency, there are some examples. The communication knowledge and skills needed to deliver a public presentation are much different from the communication knowledge and skills an employer or manager needs to be an effective team member or leader. Rubin (1985) states that, "Communication competency is an impression formed about the appropriateness of another's communicative behavior" (Rubin, 1985). Another impressive definition is from Friedrich (1994), he defines communication competency as "a situation ability to set realistic and appropriate goals and to maximize their achievement by using knowledge of self and others, context and communication theory to generate adaptive communication performance" (Friedrich, 1994).

Information about elements and forms of human interaction is crucial to advance your knowledge about communication. It is important to understand that communication process and communication competency varies by situation. The right communication is the key to successful management on the workplace. It is helpful to know what does "impression management" mean and how it helps us in learning more about ourselves as communication participants.

3. Impression Management

The theory of impression management was created by Goffman (1959) and refers to the ways how people perform with different audiences in different situations. Goffman (1959) argues that, individuals possess multiple selves consisting of the authentic self (how we see ourselves), ideal self (what we wish we could be or who we wish we were) and tactical self (public image usually viewed by others favorably), because audiences and situations change quickly. People use various presentation techniques to show each of their selves (Goffman, 1959). There are two strategies how to reveal or conceal aspects of ourselves – self-disclosure management and appearance management. Self-disclosure management describes the sharing of personal information with individuals that are not normally common to share with others. On the other hand, how we cope with the situation to communicate specific message about ourselves that should or should not be detailed, is described by appearance management. For example, people use appearance management when they need to control their emotions in a heated discussion or when individuals need to convey a particular socioeconomic status with the way they dress (brand of clothing or expensive technologies) or act to be admired by others.

Although Goffman classified the selves and ideas about impression, Kacmur and Carlson (1999) defined the process of impression management as the "attempts carried out by the individuals to portray the desired images in their social networks" (Arif et al., 2011). Norris and Porter (2011) further explained, that "people interested in making positive impressions present themselves in socially desirable ways" (Arif et al., 2011). Jones and Pittman (1982) described self-promotion (promotion including advertising and publicity of oneself effected by oneself), integration (to establish oneself in the good grace or favor of others, especially by deliberate effort), exemplification, intimidation (to make timid or to fill someone with fear) and supplication as some terms of strategies of the impression management. Individuals use this, when they try to control and affect what others think of them.

Everyone uses impression management to create an image, which is appropriate for a specific situation. For example, company's leaders use impression management when they are anxious to control what their colleagues, stakeholders and other subordinates think of them (Harris et al., 2007).

Employees also use impression management, when they want to show their credible and competent image of themselves, as well as to influence their supervisors to elevate their position and status in a company. These multiple selves can be changed to interact with various individuals and circumstances. Every person appreciates specific characteristics, which are valuable for him/her. Therefore it is hard to identify desirable traits sought by various individuals, to analyze and identify what other people value.

4. Personal branding

Employee's skills desired by their employers vary depending on the job specifications. However, according to research that was led by U.S. Department of Labor (2013), employers are generally looking for interpersonal skills and communication in their employees / potential employees. In the second place, they appreciate additional skills involving work ethics, teamwork, professionalism and problem solving (U.S. Department of Labor, 2013). Some specific skills were also identified in the SCANS report (Secretary's Commission on Achieving Necessary Skills). The purpose of the SCANS report was "to document the skills and behaviors that have been identified as essential for a workforce facing the challenges of global competition in an environment of rapidly changing markets" (U.S. Department of Education National Center for Educational Statistics etc., 2000). These skills are:

- Workplace Competencies Resources (Allocates time, money, materials and facility resources and human resources)
- Information (Acquires and evaluates information, organizes and maintains them, interprets and communicates messages, uses computers to process information)
- Interpersonal (Participates as a member of a team, teaches others, serves clients/customers, exercises leadership, negotiates to arrive at a decision and works with cultural diversity)
- Systems (Understands systems, monitors and corrects performance, improves and designs systems)
- Technology (Selects technology, applies technology to tasks, maintains and troubleshoots technology)
- Foundation Skills/Basic Skills (Reading, writing, mathematics, listening, speaking)
- Thinking Skills (Creative thinking, decision making, problem solving, seeing things in one's mind's eye, knowing how to learn)
- Personal Qualities (Responsibility, self-esteem, social self-management; integrity/honesty)

To create a tactical image that shows the traits sought by employers, individuals need to possess the skills named above. Person, who seeks for the right job, needs to develop an appropriate message that articulates these skills and reflects them to his/her personal brand. According to Stanton and Stanton (2013), a personal brand "is a perception held in someone else's mind that must be managed effectively in order to influence how an individual is viewed". Individual's personal brand is created and recreated with each interaction with other people, especially when it involves online communication and interaction, which is generated now but stays a part of online identity in future (Wetch, 2012). Personal brand is a communication concept that allows you to differentiate yourself from the others and it is composed of various types of interaction (Morgan, 2011). Individuals need to think carefully about their authentical, ideal and tactical self. They should have special and individual skills and knowledge beside others in order to have their required personal brand which is wanted by all the adequate employers.

4. Conclusion

Communication is an interdisciplinary science. It deals with the issues on how to effectively interact with others in our daily lives. For many of us, the majority of our day is spent at work or in a professional place related to our career. Work is in the human experience and our personal/professional lives one of the most important affairs, because we spend a great part of a day in it. Therefore it is critical to understand the relationship between our image and our communication in the workplace and maintain this image properly. In studying this relationship, it is also important to highlight another common component of our lives, interpersonally and work related - modern technologies. Technological devices have changed the way how we communicate and interact, perform workplace tasks and create our professional images. Regardless of the position or industry, the ways in which employees fulfill tasks and manage relationships, involves both communication and technologies.

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References

ARIF, A. – RIZVI, S. H. M. – ABBAS, Q. – AKHTAR, S. – IMRAN, M. (2011). Impact of impression management on performance rating. In *Interdisciplinary Journal of Contemporary Research in Business*. Vol. 3, no. 2 (June), pp. 711–729. [online]. Available at the URL: http://poseidon01.ssrn.com/delivery.php. [accessed 07.02.2016].

FRIEDRICH, G. (1994). *Strategic communication in businesses and other professions*. 1994. Houghton Mifflin, Boston, MA. ISBN 000-0205693113.

GOFFMAN, E. (1959). *The presentation of self in everyday life*. Doubleday Anchor, Garden City, N.J., 1959. ISBN 978-0385094023.

HARRIS, K. J. – KACMAR, K. M. – ZIVNUSKA, S. – SHAW, J. D. (2007). The impact of political skill on impression management effectiveness. In *Journal of Applied Psychology*. Vol. 92 (2007), no. 1, pp. 278–285. [online]. Available at the URL: http://www.case.edu/provost/ideal/doc/PoliticalSkill.pdf>. [accessed 20.02.2016].

JONES, E. E. – PITTMAN, T. S. (1982). Toward a general theory of strategic selfpresentation. In J. Suls & AG Greenwald Eds, *Psychological perspectives on the self*, pp. 231–262. Erlbaum, Hillsdale, NJ.

MORGAN, M. (2011). Reaching your career goals. In Strategic Finance. ISSN 1524-833X.

NORRIS, S. E. – PORTER, T. H. (2011). The changing face of leadership: Making an impression in the technically mediated landscape. In *Journal of Leadership Studies*. Vol. 4, no. 4, pp. 69–73. ISSN 1935-262X.

OJOMO, O. W. (2004). Communication: theory and practice. In E. Adegbija (Ed.), Language, Communication and Study Skills, pp. 77–95, Ota: Covenant University, 2004.

RUBIN, R. B. (1985). The validity of the communication competency assessment instrument. In *Communication Monographs*. Vol. 52, pp. 173–185.

SPITZBERG, B. H. – CUPACH, W. R. (1984). *Interpersonal communication competence*. Sage, Beverly Hills, CA.

STANTON, A. D. – STANTON, W. W. (2013). Building "brand me": Creating a personal brand statement. In *Marketing Education Review*. Vol. 23, no. 1, pp. 81–85. ISSN 2153–9987.

U.S. Department of Education National Center for Educational Statistics to the U.S. Department of Labor Employment and Training Administration in August 2000. ACT INC. (2000) *Workplace essential skills: Resources related to SCANS competencies and foundational skills.* 2000. [online]. Available at the URL: http://wdr.doleta.gov/opr/fulltext/00-wes.pdf>. [accessed 20.02.2016].

U.S. Department of Labor. (2013). *Essential Skills for Getting a Job: What Young People with Disabilities Need to Know* produced by the Office of Disability Employment Policy (2013). Mastering soft skills for workplace success. [online]. Available at the URL: http://www.dol.gov/odep/topics/youth/softskills/Communication.pdf>. [accessed 28.02.2016].

U.S. Department of Labor. (2013). Skills to pay the bills. [online]. Available at the URL: http://www.dol.gov/dol/media/webcast/20121015-softskills/. [accessed 27.02.2016].

WETCH, L. R. (2012). A personal branding assignment using social media. In *Journal of Advertising Education*. Vol. 16, No. 1, pp. 30–36. ISSN 1098-0482.

Economic Policy and Environmental Concerns: Fiscal Situation in the European Context

Elena Villar-Rubio

University of Granada Department of Applied Economics Campus La Cartuja, s/n Granada, 18071 Spain E-mail: elvillar@ugr.es

María-Dolores Huete-Morales

University of Granada Department of Statistic and Operational Research Campus Fuentenueva, s/n Granada, 18071 Spain E-mail: mdhuete@ugr.es

Abstract

The indiscriminate use of natural resources has highlighted the need to coordinate market instruments in order to encourage greater commitment to environmental responsibility, and to this end, environmental (or Pigouvian) taxes are increasingly used in many countries. In this paper, we examine the main types of environmental taxes applied and analyse patterns of convergence/divergence among the 27 countries of the European Union regarding levels of environmental taxation, through an analysis of sigma convergence. This analysis reveals a slight trend towards the harmonisation of 'green' taxes.

Keywords: Environmental taxes, Sigma-convergence, European Union. *JEL classification*: H20, H23.

1. Introduction

The economy and the environment are interrelated areas presenting numerous points of contact, because without public intervention and the resolute commitment of all involved, the ambitious goals implicit in the development of a sustainable economy cannot be achieved. Various areas of economic policy are affected, and in the coming years, reforms are expected to become even further reaching, with an ever-greater use being made of economic or market-based instruments.

By the late 1990s, environmental taxation and the 'Green Tax Shift' had been introduced into most European countries, driven by reformist experiences in Sweden (1991), Denmark (1994), Netherlands (1995) and Finland (1997). Despite environmental improvements throughout Europe (in areas such as innovation in eco-efficient technologies, the transition to service economies and higher levels of environmental awareness), overriding economic and social conditions continue to necessitate the creation of market mechanisms to limit the misuse of natural resources.

In the EU, two main types of market instruments are used to avoid distortions in the internal market caused by divergent approaches among Member States (Villar *et al.*, 2015): on the one hand, those which modify prices, mainly through taxes (which increase the price of the product or service) and financial or fiscal incentives (which reduce the price), and on the

other, those which affect quantities, by setting the maximum amount that may be issued, by means of systems such as tradable permits; for example, the greenhouse gases emissions trading scheme (Quesada *et al.*, 2010; 2011).

The aim of this study is to extend our understanding of one of these market instruments, environmental taxation. This line of research is of great social significance, as the population is affected by this form of taxation as both the source and the destination of the tax revenues generated. After the initial issues addressed in this introduction, in which we consider the current status of the issues involved and the problems associated with environmental taxation, the rest of the paper is structured as follows; in section two, we explain the concept of environmental tax and its classification into three principal groups. We go on to describe the methodology applied, based on sigma convergence; this is the theoretical basis for the subsequent empirical analysis, in section four, which presents the main results of the convergence analysis of environmental taxation in the EU-27 countries for the period 1995-2012. We also study the net change in the study variable for each of these countries, between the first and last years of this period. Finally, section five sets out the main conclusions drawn and the policy implications of this study, thus providing a solid basis for addressing the harmonisation of environmental taxation.

2. Concept and classification of Environmental Taxes

Environmental taxes are among the most powerful tools available to policy makers (Markandya, 2011; Faen *et al.*, 2009 Markandya *et al.*, 2012). Properly designed and implemented, they can benefit all three elements of sustainable development: the environment, economic growth and employment.

The concept of environmental tax was introduced by Pigou (1920), who proposed the use of taxes and subsidies in order to internalise externalities, that is, the effects on third parties that are not taken into account by the market. Strictly speaking, an environmental tax is one whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment, and that is identified as a tax in ESA 95¹. This definition has been jointly approved by Eurostat, the European Commission, the Organization for Economic Cooperation and Development, and the International Energy Agency, in accordance with Regulation (EU) No. 691/2011. Among other definitions proposed by authors who have worked in this line of research, a major contribution is that of Álvarez and Gago (2002), who defined an environmental tax as "one that has the ability to modify the behaviour of taxpayers, by impacting on their income, in a way that is favourable to environment policies".

Within national economies and Europe-wide, the environmental taxes applied are composed of three main groups (Villar, 2012). The most important tax type, in terms of tax revenue raised, are *energy taxes*, which provide approximately three-quarters of total environmental tax revenues and nearly a twentieth of total revenues from taxes and social contributions. Therefore, it is on the basis of this group of taxes, composed of hydrocarbon taxes and the tax on electricity, among others, on which it is possible to establish a green tax reform that offers the possibility of improving the economy, because these instruments have enough tax-raising potential to enable reductions in social security contributions and in direct taxation, while protecting the environment and contributing to reducing dependence on external sources of energy (Buñuel, 2002). Energy taxes include those which are levied on energy products, whether used for transportation or other purposes. The most important energy products (which account for almost 80% of total energy taxation) are those utilised as

¹The system of accounts adopted in the European Union is termed the European System of Accounts (ESA95).

fuel for transport, such as petrol and diesel fuel. Energy products for non-transport use include heating oil, natural gas, coal and electricity.

The second most important group of taxes, by tax revenue obtained, is that comprising *taxes on transport* (excluding fuel). This type of tax accounts for about a quarter of environmental tax revenues and 1.4% of all revenues from tax payments and social security contributions. The taxes imposed on transport (excluding fuel) are mainly related to the ownership and use of motor vehicles. They also include taxes on other types of transport (such as aircraft) and services related to transport (for example, taxes on charter or scheduled flights) when they fall within the general scope of environmental taxes. Taxes on transport may be "exceptional", and related to the import or sale of equipment, or recurrent, as with the annual road tax. As indicated in their title, taxes on petrol, diesel and other transport fuels are not included in this section, but in that of energy taxes.

The third group of taxes is divided into two sub-categories: *taxes on pollution* and *taxes on environmental resources*. This group represents a residual aspect of total taxation in this field, accounting for about 5% of environmental taxes. Taxes on pollution are those applied to average or estimated emissions of solid waste into the air and/or into water and the creation of noise (Huete *et al.*, 2014), except for taxes on CO_2 , which, as indicated above, are classified within the group of energy taxes. The second group, taxes on resources, includes any tax related to the extraction or use of natural resources. This means that payment for licences to hunt, fish and the like are classified as taxes on resources, as these activities deplete natural resources.

One of the instruments used to measure the impact of environmental taxes on a national economy is that of environmental fiscal pressure (henceforth, EFP), which is the reference variable used in our study of convergence (Villar *et al.* 2012). EFP is defined as the percentage contribution of the total environmental tax collection (consisting of the sum of the three groups of taxes) to GDP.

3. Methodology

In order to analyse convergence in the Member States the environmental fiscal pressure variable (subsequently EFP) has been used. It is calculated as the relation between environmental tax revenues and Gross Domestic Product (GDP). Most of the literature on convergence employs per capital income as the main indicator, within the framework of economic growth. Sometimes a cross-section approach is taken, using beta, sigma, and gamma-convergence (Barro and Sala-i-Martín, 1992; Mankiw *et al.*, 1992; Boyle and McCarthy, 1999. Alternatively, time series approaches have been used (Quah, 1993; Bernard and Durlauf, 1996; Oxley and Greasley, 1995) employing several empirical testing techniques: absolute, unconditional, or long run convergence; stochastic convergence or catching-up, and deterministic convergence.

However, very few studies have been undertaken on fiscal convergence (Esteve *et al.*, 2000; Delgado, 2009; Sosvilla *et al.*, 2001; Gemmell and Kneller, 2003) despite its great importance within the framework of economic integration and fiscal harmonisation. In this paper we have explored this subject in more depth, by analysing the convergence of fiscal pressure in the ambit of environmental taxation.

Sigma convergence exists when the dispersion of the variable of interest in the "n" countries analysed tends to decrease over time. A relative measure of dispersion, such as the coefficient of variation (CV), is usually used to measure this dispersion:

$$CV_{t} = \frac{\sigma_{t}}{\overline{y}_{t}}$$
(1)

where $\bar{y}_t = \frac{1}{n} \sum_{i=1}^n y_{it}$, $\sigma_t = \sqrt{\frac{1}{n} \sum_{i=1}^n (y_{it} - \bar{y}_t)^2}$ and y_{it} represents the value of the magnitude studied, y, in the i-th country for the year t. The standard deviation of the logarithms y_{it} can also be used, which can be expressed as:

$$SDln_{t} = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(\ln y_{it} - \overline{\ln y_{t}})^{2}}$$
with $\overline{\ln y_{t}} = \frac{1}{n}\sum_{i=1}^{n}\ln y_{it}.$
(2)

In addition, the annual rate of σ -convergence, taken to be the percentage change in the CV each year, has been calculated to analyse the trajectory followed by the σ -convergence. This type of studies is frequently complemented by the use of inequality indicators such as the Theil and Gini indexes. In this paper we have used the Theil index, which can be expressed as follows:

$$T_t = \sum_{i=1}^n s_{it} \ln\left(\frac{s_{it}}{1/n}\right) \tag{3}$$

where s_{it} represents the proportion of the magnitude of the country *i* in the year *t*. By doing this it can be affirmed that sigma-convergence exists when the dispersion shows a decreasing tendency over time. We can therefore intuitively conclude that sigma-convergence is the concept which is closest to the general understanding of convergence, although it is not the only possible one.

4. Results

The σ -convergence results are shown in Figure 1, illustrating the dispersion pattern of environmental taxation, expressed in terms of the coefficient of variation and the Theil index.

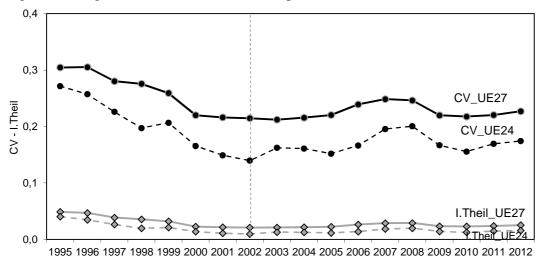
It was considered important to distinguish, for each of these indicators, the evolution presented by the EU-27 countries. In addition, the same analysis was performed after excluding Denmark (DK), the Netherlands (NL) and Slovenia (SI) to form the group we term EU-24. These three countries were excluded from the second analysis because they present a very different pattern from the other Member States, with levels of environmental tax that are constantly well above the European average, from the start to the end of the study period.

Between the first and last years of this series, there was a slight reduction in the dispersion of environmental taxation among the EU-27 countries, which is indicative of a slight convergence process, which intensified during the first sub-period (1995-2002), with an evident reduction in the rate of dispersion, followed by a second sub-period (2002-2012) with a slight tendency toward divergence, as detailed below. For the EU-24, a similar pattern was observed. The coefficient of variation and the Theil index were similar in each of the groups of countries².

 $^{^{2}}$ The Pearson correlation coefficient between the Theil index and the coefficient of variation, both for EU-27 and for EU-24 is 0.989.

Figure 1

Sigma convergence in environmental fiscal pressure. 1995-2012. EU-27 and EU-24



Source: the authors.

Analytically, the equation of σ -convergence³ produces complementary quantitative results (Table 1). The σ -convergence analysis for the period 1995-2012 indicates the existence of a process of convergence, at an annual rate of 1.55%; for the period 1995-2002 alone, this rate increased to 4.73%, and the β parameter continued to be negative and statistically significant. During the second period (2002-2012), however, this trend was reversed (β >0), which is indicative of a process of σ -divergence in environmental taxation, at an annual rate of 0.55%. As the coefficient of variation does not follow a smooth path, the overall fit of the model is low and non-significant.

Table 1

Estimation of the equation σ -convergence in EFP. EU-27 and EU-24

	α	β	p-value	R^2	Annual rate of
	ŭ	(S.E)	p vulue	(S.E)	σ-convergence
Total period, 1995-2012	8,090	-0,004	0,002	0,449	-1,55%
UE-27		(-0,001)		(-0,024)	
Total period, 1995-2012	8,334	-0,004	0,010	0,346	-1,99%
UE-24		(-0,001)		(-0,031)	
1° period, 1995-2002	30,495	-0,015	0,000	0,938	-4,73%
UE-27		(-0,002)		(-0,010)	
1° period, 1995-2002	39,119	-0,019	0,000	0,964	-8,80%
UE-24		(-0,002)		(-0,009)	
2° period, 2002-2012		0,001		0,061	
UE-27	-1,722	(-0,001)	0,463	(-0,013)	0,55%
2° period, 2002-2012	-4,391	0,002	0,194	0,180	1,93%
UE-24		(-0,002)		(-0,017)	

Source: the authors.

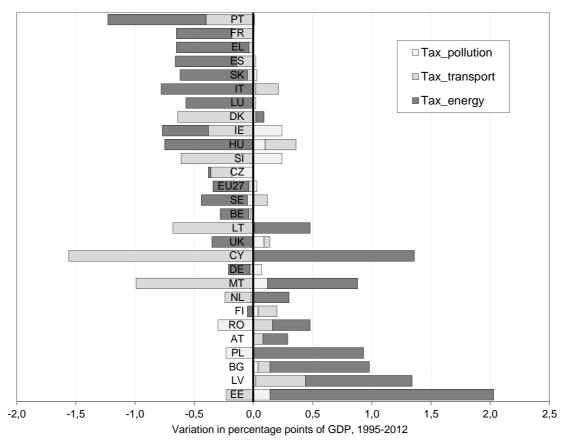
³ $CV_t = \alpha + \beta t + \varepsilon_t$, where "t" represents the study year (1995, 1988...2012).

The analysis carried out for the EU-24 group is analogous to that for EU-27, and obtained similar results. For the whole period (1995-2012) a higher rate of convergence (nearly 2%) was observed. In the first sub-period (1995-2002), excluding the three countries with the highest levels of environmental taxation, the rate of convergence of the remaining 24 countries was much higher, reaching an annual rate of σ -convergence that was almost twice as high (8.80%). In the second sub-period, the trend of σ -divergence persisted, at a significantly higher rate (1.93%).

A country-by-country analysis, comparing the variation from the start to the end of the study period (1995-2012) (Figure 2), shows that the EU countries present different patterns of evolution of environmental taxation. Thus, eight countries recorded a net increase in this respect, led by Estonia (EE), with an overall increase of 1.8 percentage points and Latvia (LV), with a variation of 1.35 points. The largest reductions in net terms took place in Portugal (PT), France (FR), Greece (EL), Spain (ES) and Slovakia (SK), with reductions ranging from 1.21 percentage points of GDP for Portugal to 0.6 for Slovakia. In general, these increases and reductions are caused by changes in the rates applied to energy taxes.

Figure 2

Variation in environmental taxation in percentage points of GDP, for the period 1995-2012. EU-27



Source: The authors. Data obtained from Eurostat (2015)

5. Conclusions and policy implications

Environmental taxes are imposed with the aim of achieving a double dividend. On the one hand, they generate environmental benefits, and on the other, they produce a positive economic and social outcome. However, our analysis shows this policy instrument is under-

exploited, as the average level of environmental taxation in the EU-27 countries is only 2.6%, which represents about 6% of total tax revenue.

According to the econometric analysis performed (in terms of convergence), there has been a slight reduction in the dispersion of environmental taxation values among the EU-27 countries, with a sigma convergence rate of 1.55% per annum during the period 1995-2012. An early period (until 2002) of much more intense convergence was followed by a sustained trend to the contrary (until 2012). In considering these effects, it is necessary to take into account the existence of outliers; thus, Denmark, the Netherlands and Slovenia all presented values well above the average. These countries constitute an independent cluster. However, our analysis of the group from which these outliers were excluded (EU-24) yielded identical results in terms of the trends observed, although they varied in the rate of convergence/divergence.

At the other end of the scale is the situation of the three EU-27 countries with the lowest rates of environmental taxation, namely Spain (1.6%), Lithuania (1.7%) and Slovakia (1.8%). This situation is particularly alarming in view of the fact that Spain and Slovakia belong to the group of countries that underwent the greatest percentage reduction in environmental taxation between 1995 and 2012, caused by decreases in the rates of energy taxation.

Taking into account the above considerations, we believe that a new type of mechanism is needed to curb environmental degradation, one that acts preferentially on activities that have a particularly negative impact on the environment. Such a mechanism would also contribute to the overall efficiency of the tax system by reducing taxes on labour, savings and capital. As Rosembuj (2004) observed, the tax system must be 'dressed in green'.

Countries in which tax reform is still at a very preliminary stage must take urgent steps to integrate environmental issues into the mainstream of government policies. Not only environmental, but also economic and social aspects of sustainability must be taken into account, and citizens and businesses should be involved in this process. In this respect, the following possibilities, among others, could be considered: applying a reduced or super-reduced VAT rate to products with a positive environmental impact (organic fertilisers, organic farm produce, etc.); encouraging the labelling and distinctiveness of products of organic origin; with respect to corporation tax, increasing the amount and range of deductions for environmental investments (such as renewable energy installations); establishing reimbursement mechanisms (by which the revenue from environmental taxation is returned to the parties affected by environmental degradation); designing and establishing preventive measures and monitoring outcomes to determine the real effect of the tax; and introducing income tax deductions for the purchase of public transport bonds. With these and other measures, the aim should be not to make those who contaminate pay for it, but to make contamination unprofitable.

And this should be done in terms of Europe-wide regulation, thus forming the basis for a new process of tax harmonisation with respect to environmental issues, unifying the design of environmental taxes as a whole (by means such as defining taxable transactions and determining tax bases, rates and deductions), coupled with enhanced awareness and environmental education programmes seeking to achieve a real change in behaviour patterns.

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References

ÁLVAREZ, X. C. – GAGO, A. (2002). La imposición energético-ambiental: Análisis de datos de recaudación. In GAGO, A., LABANDEIRA, X. *Energía, Fiscalidad y Medio Ambiente*. Madrid: Instituto de Estudios Fiscales, 2002. pp. 151-170. ISBN 84-8008-111-2.

BARRO, R. – SALA-I-MARTÍN, X. (1992). Convergence. In *Journal of Political Economy*, 1992, vol. 100, No. 2, pp. 223-251.

BERNARD, A. B. – DURLAUF, S. N. (1966). Interpreting tests of convergence hypothesis. In *Journal of Econometrics*, 1966, vol. 71, pp. 161-173.

BOYLE, G. E. – MCCARTHY, T. G. (1999). Simple measure of convergence in per capita GDP: a note on some further international evidence. In *Applied Economics Letters*, 1999, vol. 6, No. 6, pp. 343-347.

BUÑUEL, M. (2002). Teoría de la imposición ambiental. In GAGO, A., LABANDEIRA, X. *Energía, Fiscalidad y Medio Ambiente*. Madrid: Instituto de Estudios Fiscales, 2002. pp. 85-102. ISBN 84-8008-111-2.

DELGADO, F. (2009). Tax burden in the European Union: An analysis of beta, sigma and gamma convergence. In *Revista de Economía Mundial*, 2009, vol. 22, pp. 141-166.

ESTEVE, V. – SOSVILLA-RIVERO, S. – TAMARIT, C. (2000). Convergence in fiscal pressure across EU countries. In *Applied Economics Letters*, 2000, vol. 7, No.2, pp. 117-123.

FAEN, T. et al. (2009). Can a carbon permit system reduce Spanish unemployment?, In *Energy Economics*, 2009, vol. 31, No. 4, pp. 595-604.

GEMMELL, N. – KNELLER, R. (2003). *Fiscal policy, growth and convergence in Europe*. New Zealand: Treasury Working Paper Series 03/14, 2003. 24 p.

HUETE, M. D. – QUESADA, J. M. et al. (2014). Geostatistical analysis of the causes of environmental noise in Spain. In *Environmental Engineering and Management Journal*, 2014, vol. 13, No. 10, pp. 1535-1545.

MANKIW, G. et al. (1992). A contribution to the empirics of economic growth. In *The Quarterly Journal of Economics*, 1992, vol 107, No. 2, pp. 407-437.

MARKANDYA, A. (2011). Environmental taxation: what have we learnt in the last 30 years?. In *Rivista di Politica Economica*, 2011, vol. VII-IX, pp. 11-58.

MARKANDYA, A. et al. (2012). *Environmental fiscal reform and unemployment in Spain*. Cheltenham, UK: BC3 Working Paper Series, 2012. 22 p.

OXLEY, L. – GREASLEY, D. (1995). A time-series perspective on convergence: Australia, UK and USA since 1870. In *The Economic Record*, 1995, vol. 71, pp. 259-270.

PIGOU, A. C. (1920). Economics of Welfare. London: McMillan and Co., 1920. ISBN 9780230249318.

QUAH, D. T. (1993). Galton's fallacy and tests of the convergence hypothesis. In *The Scandinavian Journal of Economics*, 1993, vol. 95, No 4, pp. 427-443.

QUESADA, J. M. – VILLAR, E. et al. (2011). Carbon Dioxide Emissions Vs. Allocation rights: Spanish case analysis. In *International Journal of Environmental Research*, 2011, vol. 5, No. 2, pp. 469-474.

QUESADA, J. M. – VILLAR, E. et al. (2010). The gap between CO2 emissions and allocation rights in the Spanish industry. In *Environmental Engineering and Management Journal*, 2010, vol. 9, No. 9, pp. 1161-1164.

ROSEMBUJ, T. (2004). Los intangibles y la fiscalidad ambiental. In *Crónica Tributaria*, 2004, vol. 111, pp. 149-159.

SOSVILLA, S. – GALINDO, M. A.– ALONSO, J. (2001). Tax burden convergence in Europe. In *Estudios de Economía Aplicada*, 2001, vol. 17, pp. 183-191.

VILLAR, E. (2012). La recaudación de tributos en España: incidencia y eficiencia territorial. PhTesis. Granada: Editorial Universidad, 2012.

VILLAR, E. – QUESADA, J. M. – MOLINA, V. (2015). Convergence analysis of environmental fiscal pressure across EU-15 countries. In *Energy and Environment*, 2015, vol. 26, No. 5, pp. 789-802.

VILLAR, E. – QUESADA, J. M. – MOLINA, V. (2012). Comparativa en fiscalidad ambiental entre los Estados Miembros de la UE-15. In *Estudios de Investigación sobre turismo y Medio Ambiente. Nuevas líneas de trabajo y tendencias actuales.* Madrid: Académica Española, 2012. 304 p. ISBN 978-3-659-04080-1.

Demand Analysis of Selected Food Products in the Slovak Republic for the Period 2004-2014

Kristína Vrtíková

University of Economics in Bratislava Faculty of Business Management, Department of Business Economics Dolnozemská cesta 1 Bratislava, 85235 Slovak Republic E-mail: kika.vrtikova@hotmail.com

Abstract

Food consumption in Slovakia has been recently subject to several changes and this trend is still continuing. There are more significant changes not only in the volume, but also in the structure of consumption of each of the food groups. The changes were caused by a number of factors that influence food consumption, and in particular the development of consumer prices, the development of the income of the population, the development of the distribution network, the level of advertising, etc. The Slovak Republic is part of the European region, which includes different cultures characterised by not only different languages, but also a variety of dietary traditions and practices. The development of tourism, and the movement of the labour force, as well as the impact of the extension of the European internal market will bring together different cultures and a wide range of food specialties and culinary technology is accessible throughout the continent. The behaviour of the consumers is positive if they prefer domestic food consumption, goods and services and thus contribute to the increase in demand, which is an essential part of the further development of production and the market, and thus the overall economic growth of the country. Demand analysis is focused on the basic food of Slovak households, especially rice, bread and sugar during the period 2004-2014.

Keywords: consumption, price elasticity, pension elasticity *JEL classification*: D 01, D 24, D 91

1. Introduction

The goal of each consumer that comes on the market is to satisfy their own needs with the largest benefits. Understanding consumer behaviour is one of the most important tasks of the economics. Through the analysis of the behaviour of the consumers we derive individual consumer demand for goods and services. The size of the demand for goods and services affect a number of factors, the most important of which affect the price and the amount of disposable income, consumer demand. For example, dependency between the amount of goods and demand through the factors that affect it. Among the economic factors that affect the demand we include price, the amount of disposable income, the consumer prices of similar goods, market size, but also the number of households. Demand is influenced by non-economic factors, which include, for example, as well as consumer preferences, trends, traditions, expectations, and others. These factors operate at many levels, but broadly divided into two levels, i.e. macro and micro (Madaan, 2009).

The examination of the issue of the size of the supply and demand of humanity before the creation of money as deals with the General tender, for the exchange of goods and services, up to the present day. Examination of the demand, as a result of the diversification of the production and distribution of consumer preferences, changing markets, becoming an increasingly difficult and complex discipline.

From the level of demand with the existing supply of goods and services, as well as their price in the market unfolds. Therefore, knowledge of the size of future demand and elasticity of demand is an important factor in pricing in the business. On the basis of the price consumers are revising their shopping behavior, as well as preferences. The aim of the company is therefore not only the determination of the size of the demand, but also the identification of changes depending on the price. Elasticity measures the willingness and ability of buyers and sellers to alter their behavior in response to changes in their economic circumstances (McEachern, 2016).

The economic theory distinguishes price, cross-elasticity, and the pension elasticity of demand. Based on distinction of the outcome of the values we can determine the behaviour of the consumer, with an elastic, inelastic demand can be distinguished and unit elasticity of demand.

Among the basic food of Slovak households include bread, rice and sugar, on which we carried out an analysis of the income elasticity of demand and price.

1.1. Model and Data

Data necessary to calculate the price elasticity of demand we have received from the pension and the Statistical Office of the Slovak Republic from the database and data published on the website of the social security Slovstat. For the relevance of the results obtained, we opted for a period of ten years, namely from 2004 to 2014. Prices displayed in Slovak koruna, were miscalculated by the conversion rate $30,1260 \in$ into euro.

Calculation of price and income elasticities, we carried out using regressions. Like regression refer we the dependence of one variable to another. Assuming that there is a link between two variables, which expresses a common power dissipation, it is possible to use this information to approximate the one variable by a second and to create a regression model. Regression models allow you to better and deeper definition of the investigated phenomena in context, using the relationships between variables.

1.1.1. A linear regression model

After finding the values of xi and yi and direct them according to the diagram, there is a point estimate of the points the regression line is $y'_j = b_0 + b_1 x_j$. This represents the best estimate of the linear regression model of addiction. Constant b0 in the graphical view of the regression line determined by the point where the line crosses with the y. Coefficient b1 represents the regression line and the directive indicates the number of units of measure are, on average, change the dependent variable, independent variable changes by one if the unit of measure. This coefficient gives the information about the subject and it is called regression coefficient.

We assume that the value of y is not exactly equal to the actual values of the character, and for this reason we have the designation (s) calculated an error and call the different values for \hat{y} we refer to as "e".

y- $\hat{y} = e$

The distance of a particular isolated point from a line, represents the residual variance. So we don't have to distinguish whether they are positive or negative, we will distance exponent, and the get squares residual variance e2. The aim is to find values for the coefficients of the b0 and b1, such that the sum of the squares of the deviations of $\Sigma e2$ has been minimal. The procedure whereby we obtain specific numerical values for these coefficients, is called the method of least squares (Vančo, 2004).

1.1.2. Non-linear regression model

If the dependency between variables x and y is not linear, we can express the progress of her non-linear functions with two or more parameters. Non-linear regression model coefficients can be expressed directly by using the method of least squares, or indirectly by using a transformation to a linear function. (Regresná a korelačná analýza, 2016)

The most commonly used non-linear function with two parameters, it is possible to transform to a function, which is the estimate of the regression function $w'_j = b_0 + b_1 z_j$, where w and z represent the transformed x and y functions. the shape is possible, consequently, transform to logarithmic or exponential function. (Analýza závislosti dvoch veličín, 2016)

2. The calculation of income elasticity of demand and the price of rice, bread and sugar to Slovakia for the period 2004-20014

The price, as well as pension affect to a significant extent the volume of consumption of selected foods. To determine the amount of the impact of individual factors, it is necessary to carry out the calculation of the price and income elasticity of demand for rice, bread and sugar.

2.1. The calculation of the price elasticity of rice

The price of rice since 2004 has been increasing from year to year, which reflected a decline in per capita consumption. The average price of rice has seen a decline in prices in 2010 and 2011, which could be affected by the persistent economic crisis and efforts to increase the interest of the population of this commodity traders. The course of the evolution of average income, prices and consumption in kg of rice is shown in the Table 1.

Year	The average price in EUR/kg per year	Consumption and per capita per year (kg)	The average income per capita in the Slovak Republic	Basic index of price	Basic index of consumption	
2004	p 0,95	y 6,3	R 525,3	I p 1,000	1,000	
2004	1,02	6,8	573,4	1,000	1,000	
2006	1,03	5,8	622,8	1,084	0,921	
2007	1,16	6,1	668,7	1,221	0,968	
2008	1,33	5,6	723,0	1,400	0,889	
2009	1,56	5,4	744,5	1,642	0,857	
2010	1,39	5,3	769,0	1,463	0,841	
2011	1,36	5,1	786,0	1,432	0,810	
2012	1,48	5,1	805,0	1,558	0,810	
2013	1,45	4,6	824,0	1,526	0,730	
2014	1,36	4,7	858,0	1,432	0,746	

Table 1

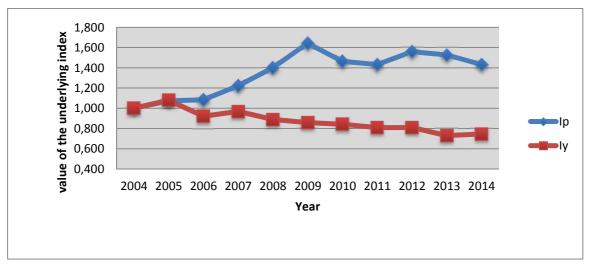
Development of pension, consumption and the average price of rice

Source: ŠÚSR, www.statistics.sk, Sociálna poisťovňa, own processing

The price of rice has risen in 2014 about 43,2% compared to 2004. This phenomenon had resulted in a drop in consumption in the 74% compared to 2004. The development of the basis of the average price indices and the consumption of rice is shown in the Figure 1.

Figure 1

Development of basic index prices and consumption of rice



Source: own processing

To calculate the price elasticity of demand of rice, it is necessary to determine the coefficient of determination. We estimate the linear, pawer law, exponential, and logarithmic regression function, with the following results:

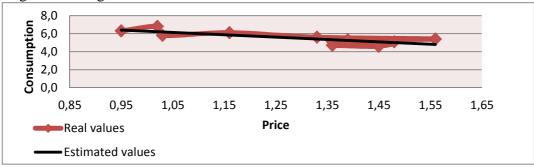
linear function y = -2,623x + 8,888 R² = 0,640, logarithmic function y = -3,23ln(x) + 6,288 R² = 0,654, power law function y = 6,278x-0,57 R² = 0,636,

exponential function $y = 9,930e^{-0,46x}R^2 = 0,623$.

In terms of the coefficient of determination made me the highest value of the logarithmic regression function, which is shown in the Figure 2.

Figure 2

Logarithmic regression function



Source: own processing

From the investigation carried out shows that the coefficient of determination of the regression function is logarithmic in R^2 , therefore the relationship between the price and the consumption of rice 0,654 is quite high and the price of rice affects consumption 65,4%.

The calculation of the price elasticity is given in the Table 2.

Year	The development of prices (EUR/kg)	The para logarithi			Estimated consumption	Price elasticity of demand
	X	lnx	a	b	y'	E _{PD}
2004	0,95	-0,05129	6,288	-3,23	6,4537	-0,5005
2005	1,02	0,01980	6,288	-3,23	6,2240	-0,5190
2006	1,03	0,02956	6,288	-3,23	6,1925	-0,5216
2007	1,16	0,14842	6,288	-3,23	5,8086	-0,5561
2008	1,33	0,28518	6,288	-3,23	5,3669	-0,6018
2009	1,56	0,44469	6,288	-3,23	4,8517	-0,6658
2010	1,39	0,32930	6,288	-3,23	5,2243	-0,6183
2011	1,36	0,30748	6,288	-3,23	5,2948	-0,6100
2012	1,48	0,39204	6,288	-3,23	5,0217	-0,6432
2013	1,45	0,37156	6,288	-3,23	5,0878	-0,6348
2014	1,36	0,30748	6,288	-3,23	5,2948	-0,6100

Table 2

Price elasticity of demand of rice

Source: own processing

From the results shown in the Table 2, it is evident that it is an inelastic demand and price change causes a smaller percentage change in consumption of rice consumers.

2.2 Calculation of the income elasticity of rice

Income of consumers constitutes one of the most important factors affecting the demand for goods and services. For this reason, it is necessary to carry out an analysis of the impact of income on consumption of rice in the Slovak Republic.

When rice consumption and the amount of the average income unchanged referred to in the Table 1, after finding the amount of calculations and the coefficient of determination, we can conclude that there is a strong relationship between the amount of the income of consumers and the volume of consumption of rice.

The function of the linear regression demonstrated to 87,2% dependence of the income and consumption. We estimated each of the regression function with the following results:

linear function y = -0,005x + 9,753 $R^2 = 0,872$, logarithmic function $y = -3,95\ln(x) + 31,48$ $R^2 = 0,850$, power law function $y = 562,0x^{-0,70}$ $R^2 = 0,845$, exponential function $y = 11,68e^{-0,00x}R^2 = 0,872$.

Due to the highest values of the coefficient of determination for linear regression, we carried out the calculation of the income elasticity of the demand function with the given data.

Year	The development of income	the linear function		Estimated consumption	The income elasticity of demand
	X	a	b	y'	E _{PD}
2004	525,3	9,753	-0,005	7,127	-0,3686
2005	573,4	9,753	-0,005	6,886	-0,4164
2006	622,8	9,753	-0,005	6,639	-0,4690
2007	668,7	9,753	-0,005	6,410	-0,5216
2008	723	9,753	-0,005	6,138	-0,5890
2009	744,5	9,753	-0,005	6,031	-0,6173
2010	769	9,753	-0,005	5,908	-0,6508
2011	786	9,753	-0,005	5,823	-0,6749
2012	805	9,753	-0,005	5,728	-0,7027
2013	824	9,753	-0,005	5,633	-0,7314
2014	858	9,753	-0,005	5,463	-0,7853

Table 3 Pension Elasticity of Demand of rice

Source: own processing

The resulting value of the income elasticity represent inelastic demand. This means that the average income of consumers, increasing demand for rice is declining and consumers find their way to other products that satisfy their needs.

In general, we can say that the amount of the pension, the price of rice but also affect to a significant extent the volume of rice consumption in the reference period.

2.3. Calculation of the price elasticity of the bread

Bread is one of the staple foods in the Slovak households. The volume of consumption since 2004, and it declined from 46,4 kg per capita to 36,4 kilograms per capita in 2014, representing a decrease of consumption of 10 kg. The price of bread has grown during the reporting period. In 2014, the price has risen to $\leq 1,33$ per kg compared to 2004, when the price was $\leq 0,90$ per kg. The evolution of prices and consumption, is given in the Table 4.

Table 4

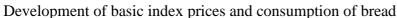
Development of consumption and the average price of bread

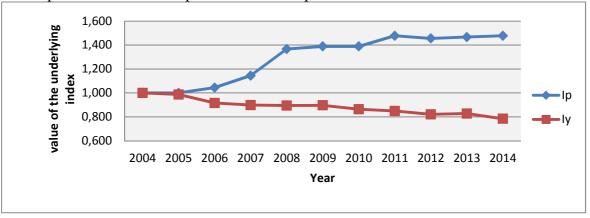
Year	The average price in EUR/kg per year	Consumption per capita per year (kg)	Basic index of price	Basic index of consumption
	р	У	Ip	I J
2004	0,90	46,4	1,000	1,000
2005	0,90	45,8	1,000	0,987
2006	0,94	42,5	1,044	0,916
2007	1,03	41,7	1,144	0,899
2008	1,23	41,5	1,367	0,894
2009	1,25	41,6	1,389	0,897
2010	1,25	40,1	1,389	0,864
2011	1,33	39,4	1,478	0,849
2012	1,31	38,1	1,456	0,821
2013	1,32	38,4	1,467	0,828
2014	1,33	36,4	1,478	0,784

Source: ŠÚSR, own processing

The development of base indices prices and bread consumption is shown in the Figure 3. With the growing price (Ip), decreased year on year (Iy) consumption.

Figure 3





Source: own processing

To carry out the calculation of the price elasticity of demand, it is necessary to determine the most appropriate type of regression coefficients of determination and the amount. When estimating regression functions of various types, we came to the following results:

linear function $-y = -15,18x + 58,74 R^2 = 0,793$ logarithmic function $-y = -16,7ln(x) + 43,40 R^2 = 0,791$ power law function $-y = 43,32x^{-0,40} R^2 = 0,781$ exponential function $-y = 62,61e^{-0,36x} R^2 = 0,785$.

Of these functions has the highest coefficient of determination function of linear regression, and to $R^2 = 0,793$, on the basis of which we have carried out the calculation of the price elasticity of demand. The amount of other regression functions showed the same high volume size dependence of consumption of bread from the price, and it's up to about 80%.

On the Figure 4 shows the demand curve, which has a downward shape. This phenomenon demonstrates the assumption that the growth in the average price of bread, its consumption is declining.

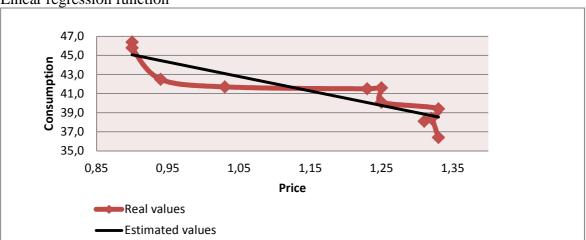


Figure 4 Linear regression function

Source: own processing

Due to the highest values obtained in linear regression models and demonstrate the highest addiction rates, we will use these data to calculate the consumption from price elasticity of demand of the bread. The calculation and the results are shown in the Table 5.

Table 5

Year	The development of prices (EUR/kg)	-	ameters of r function	Estimated consumption	Price elasticity of demand
	x	а	b	y'	E _{PD}
2004	0,90	58,74	-15,18	45,078	-0,3031
2005	0,90	58,74	-15,18	45,078	-0,3031
2006	0,94	58,74	-15,18	44,471	-0,3209
2007	1,03	58,74	-15,18	43,105	-0,3627
2008	1,23	58,74	-15,18	40,069	-0,4660
2009	1,25	58,74	-15,18	39,765	-0,4772
2010	1,25	58,74	-15,18	39,765	-0,4772
2011	1,33	58,74	-15,18	38,551	-0,5237
2012	1,31	58,74	-15,18	38,854	-0,5118
2013	1,32	58,74	-15,18	38,702	-0,5177
2014	1,33	58,74	-15,18	38,551	-0,5237

Price elasticity of demand of bread

Source: own processing

The results of the price elasticity of demand of bread represent inelastic demand. Consumers will find their way to other products in the same or meet their required needs increased. $E_{DP} < 1$, which means that price change will trigger smaller percentage change in volume of bread.

2.4. Calculation of income elasticity of demand of the bread

To determine the size of the impact of income on volume of bread were being consumed, as a very significant factor, we carried out the calculation of the pension demand elasticity. The amount of the average pension in the Slovak Republic is given in the Table 1.

To determine the size of the impact of the various types of regression function, we calculate with the following results:

linear function $y = -0.027x + 61.03 R^2 = 0.940$ logarithmic function $y = -18.8 ln(x) + 164.6 R^2 = 0.931$ power law function $y = 795.5x^{-0.45} R^2 = 0.921$ exponential function $y = 66.23e^{-7E-0x} R^2 = 0.935$.

Addiction bread consumption is largely dependent on the amount of the average income of the population. The estimated regression functions achieve high values of the coefficient of determination, with the highest value in the linear regression functions R² = 0,940. Income affects the amount of consumption of up to 94%.

The calculation of income elasticity is given in the Table 6.

Year	The development of income	-	ameters of r function	Estimated consumption	The income elasticity of demand
	X	а	b	У'	E _{PD}
2004	525,3	61,03	-0,027	46,847	-0,3028
2005	573,4	61,03	-0,027	45,548	-0,3399
2006	622,8	61,03	-0,027	44,214	-0,3803
2007	668,7	61,03	-0,027	42,975	-0,4201
2008	723	61,03	-0,027	41,509	-0,4703
2009	744,5	61,03	-0,027	40,929	-0,4911
2010	769	61,03	-0,027	40,267	-0,5156
2011	786	61,03	-0,027	39,808	-0,5331
2012	805	61,03	-0,027	39,295	-0,5531
2013	824	61,03	-0,027	38,782	-0,5737
2014	858	61,03	-0,027	37,864	-0,6118

Table 6

Pension Elasticity of Demand of bread

Source: own processing

The price elasticity of demand as well as bread, even the pension amounts to negative values and regards the elasticity inelastic demand.

With increasing average income consumers are shifting their attention to the consumption of other commodities, and reduces the volume of consumption of bread. Due to the possibility of some upmarket products, bread, a staple food for consumers, and can cease to be geared to meet the individual needs commodities that consumers as far as possible.

2.5. The calculation of the price elasticity of sugar

Sugar is one of the most basic food in Slovak households. The influence of price on volume of consumption is evident also in the Table 7, where the price of sugar, its volume decreases with increasing consumption. However, for the quantification of the impact of prices, it is necessary to carry out the calculation of the price elasticity of demand for sugar.

The average price of sugar fell year on year since 2004, and that of the original $1,11 \in 0,79 \in in 2010$, however, there has been a gradual increase in the average price again in 2011 and $\in 1,09$ in 2014. This phenomenon was due to a lack of sugar in the whole of Europe.

The average consumption of sugar per capita declined from year to year depending on the climb of the price. In 2004, the consumption of sugar per capita in kg capacity 30,2 kg. With the decline in prices in 2010 increased to 34,3 kg, but with the growing consumption of sugar consumption, and price it to 30,0 kg per capita in the year 2014.

Year	The average price in EUR/kg per year	Consumption per capita per year (kg)	Basic index of price	Basic index of consumption		
	р	У	Ip	$\mathbf{I}_{\mathbf{y}}$		
2004	1,11	30,2	1,000	1,000		
2005	1,10	34,0	0,991	1,126		
2006	1,08	31,9	0,973	1,056		
2007	1,07	29,8	0,964	0,987		
2008	0,96	34,5	0,865	1,142		
2009	0,87	33,4	0,784	1,106		
2010	0,79	34,3	0,712	1,136		
2011	1,07	31,3	0,964	1,036		
2012	1,14	29,5	1,027	0,977		
2013	1,09	31,1	0,982	1,030		
2014	1,09	30,0	0,982	0,993		

Table 7

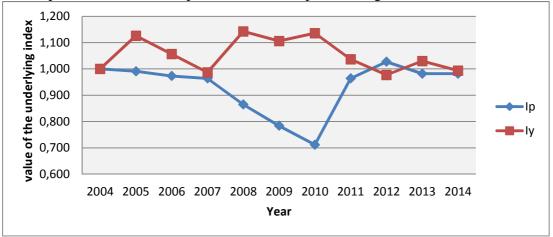
Development of consumption and the average price of sugar

Source: own processing

The development of the basis price indices and the consumption is shown in figure 5. The development of the sugar price level (Ip) from 2004 to 2010, declined, but there has been a price increase again in 2011. The volume of consumption of sugar per capita (Iy), depending on the price undercutting increased with the growth of prices and consumption volume declined.

Figure 5

Development of basic index prices and consumption of sugar



Source: own processing

On the basis of the calculation of values of individual types of regression functions, we came to the following results:

linear function $y = -12,21x + 44,44 R^2 = 0,504$ logarithmic function $y = -11,51n(x) + 32,13 R^2 = 0,490$ power law function $y = 32,07x^{-0.35} R^2 = 0,487$ exponential function $y = 47,07e^{-0.38x} R^2 = 0,501$. All of the above regression functions show approximately 50% of the volume of consumption of sugar addiction from the price. The highest value of the linear regression function which achieves a coefficient of determination we used to calculate the value of price elasticity of demand.

Declining demand in the shape of a curve linear regression function is displayed on the Figure 6. This phenomenon demonstrates the dependence of a quantity of sugar consumption from prices. While increasing the price of sugar, its consumption is declining.

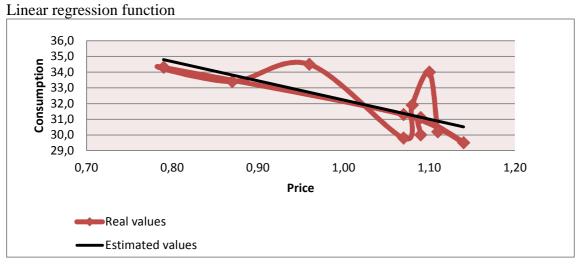


Figure 6

Source: own processing

On the basis of the highest values of the coefficient of determination for linear regression function, we use the following values to calculate the price elasticity of demand for sugar. The calculation of the price elasticity is given in the Table 8.

Table 8

Year	The development of prices (EUR/kg)	The paran	neters of the function	Estimated consumption	Price elasticity of demand
	X		b	y'	E _{PD}
2004	1,11	44,44	-12,21	30,887	-0,4388
2005	1,10	44,44	-12,21	31,009	-0,4331
2006	1,08	44,44	-12,21	31,253	-0,4219
2007	1,07	44,44	-12,21	31,375	-0,4164
2008	0,96	44,44	-12,21	32,718	-0,3583
2009	0,87	44,44	-12,21	33,817	-0,3141
2010	0,79	44,44	-12,21	34,794	-0,2772
2011	1,07	44,44	-12,21	31,375	-0,4164
2012	1,14	44,44	-12,21	30,521	-0,4561
2013	1,09	44,44	-12,21	31,131	-0,4275
2014	1,09	44,44	-12,21	31,131	-0,4275

Price elasticity of demand of sugar

Source: own processing

The results of the price elasticity of demand of sugar reaching negative values $E_{DP} < 1$, which represents an inelastic demand. The change in the price of sugar, it triggers a minor change in the amount of sugar by consumers.

2.6. The calculation of the income elasticity of sugar

The influence of price on the size of the volume of consumption of sugar we showed in section 2.5. To determine the size of the impact of income on the amount of sugar as one of the most important factors were being consumed, we carried out the calculation of the income elasticity of demand. The amount of the average pension in the Slovak Republic is given in the Table 1.

To determine the size of the impact of the various types of regression function, we calculate with the following results:

linear function $y = -0,002x + 33,66 R^2 = 0,020$ logarithmic function $y = -1,36ln(x) + 40,78 R^2 = 0,012$ power law function $y = 42,16x^{-0,04} R^2 = 0,013$ exponential function $y = 33,66e^{-8E-0x} R^2 = 0,021$.

From the values of the coefficients of determination indicates very low (2%), between the amount of the average pension, dependency and the volume of consumption of sugar.

On the basis of the facts established, the calculation of the income elasticity of demand for sugar, it doesn't make sense, since it has not been proven dependence of the size of the volume of consumption of sugar from the amount of the average pension in Slovakia for the period 2004-2014.

3. Conclusions and policy implications

Selected food items such as rice, bread and sugar constitute the staple food of Slovak households. To determine the impact of the two fundamental factors affecting the level of the volume of consumption, and retirement prices it is necessary to carry out the calculation of the income elasticity of demand and price.

The results identified in chapter two shows that the consumption of rice and bread to relies largely on the amount of the average food prices, as well as the level of the average income of consumers. Rice consumption depends on the height of the average price in 65,4%, in the amount of the pension depends consumption on 87,2%. The volume of consumption of bread varies depending on the price, which represents 79,3% and depending on pension is 94%.

In both of the products price and income elasticity of demand is making a negative value, which represents an inelastic demand. Consumers with the increasing price of the goods, as well as increasing the average pensions are shifting their attention to goods that meet their individual needs.

When estimating the values of the coefficient of determination in sugar, we have come to the conclusion that consumption of sugar will depend on the prices and volume amounting to 50,4%. The volume of sugar consumption, consumer focused mainly on the basis of the amount of the price. Price elasticity reaches negative values, which means that the change in price causes a smaller percentage change in quantity demanded.

Effect of the amount of the pension to the volume of consumption of sugar we have not demonstrated, since the coefficient of determination for exponential regression function has reached the value of 2,1%.

References

Analýza závislosti dvoch veličín. (2016). [online]. Avaliable at the URL: http://www.fberg.tuke.sk/upam/SSD4.pdf>. [accessed 2016.01.20].

ARNOLD, R. (2008). *Microeconomics*. 9th ed. Cengage Learning, 2008. 576 p. ISBN 978-03-2478-549-4.

AYERS, R.M. – COLLINGE, R. A. (2004). *Microeconomics: Explore and Apply*. 1st ed. New Jersey: Pearson Education, 2004. 832 p. ISBN 0-13-016424-0.

BAUMOL, W. – BLINDER, A. (2015). *Microeconomics: Principles and Policy*. Cengage Learning, 2015, 528 p. ISBN 978-13-0553-404-9.

FENDEKOVÁ, E. – STRIEŠKA, L. (2007). Mikroekonómia. Bratislava: Ekonóm. 2007. 253 p. ISBN 978-80-225-2304-2.

MADAAN, K. (2009). *Fundamentals of retailing*. New Dehli: Tata McGrew Hill, 2009. 305 p. ISBN 978- 0-07-009149-8.

McEACHERN, W. (2016). *Microeconomics: A Contemporary Introduction*. Boston: Cengage Learning, 2016. 528 p. ISBN 978-1-30-588759-6.

NOVÁKOVÁ, G. (2008). Základy štatistiky pre geografov. Bratislava, 2008. 218 p. ISBN 978-80-8931-702-8.

Regresná a korelačná analýza. (2016). [online]. Avaliable at the URL: http://svf.utc.sk/kgd/skripta/vp2/kap09.pdf>. [accessed 2016.01.20].

Sociálna poisťovňa. (2016). [online]. Available at the URL: http://www.socpoist.sk. [accessed 2016.01.20.].

Štatistický úrad Slovenskej republiky. (2016). [online]. Available at the URL: http://www.statistics.sk/. [accessed 2016.01.20.].

VANČO, B. (2004). *Ekonometria pre manažérov*. Žilinská univerzita, 2004. 199 p. ISBN 978-80-9690-1480-7.

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Social Stratification in Slovakia in relation to Position on the Labour Market

Petr Zadražil

University of Economics in Bratislava Faculty of National Economy, Department of Social Development and Labour Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: petr.zadrazil@euba.sk

Abstract

Social structure represents a hierarchical system where all individuals have their positions depending on either innate, or acquired characteristics. The same applies to labour market stratification. This paper focuses on social structure related to position on the labour market and in the work process. As people are different, these differences influence their labour market position which further translates into creation of groups of people with differentiated occupation and remuneration. Wages are the key source of income of Slovak households and therefore they determine the standard of living in a significant way. The aim of this paper is to describe these differences through analysis, focusing on stratification by status in employment (employees/self-employed and their subcategories) and by NACE sectors of economic activity.

Keywords: social stratification, economic activity, NACE sectors. *JEL classification*: J21, Z13

1. Introduction

This paper is focused on stratification of Slovak population in relation with position on labour market. The aim is to research on employment statistics in time series, using analysis as method. Data from the Statistical Office of Slovak Republic are used, specifically SLOVstat database, providing data in time series from 1994 until the latest published data for 2014. This is the case of statistics of employment status. Statistics of economic activity went through a significant change in 2008 when the former OKEČ classification was replaced with EU-harmonised nomenclature SK NACE rev. 2 that is not fully compatible and comparable. NACE statistics are available starting from 2000.

1.1 Social structure and stratification of society

Social structure is one of key characteristics of each society, sourced from differences of its individual members as well as previous development and other determinants that create hierarchical relations in given society. Differentiation emerges naturally, facilitating orientation of people in society, setting everyone in specific social position depending on division of roles, statuses, division of labour and various other attributes. These attributes must have a social basis, they have to be based on differences accepted by all members of society as a result of agreement or enforcement. Affiliation to a part of social structure enables a clear limit between members and non-member, and also strengthens inner sense of belonging within group. Participation in a social structure is a result of external classification. Besides demographic characteristics, such as gender or age, cultural differences like ethnicity or nationality, also the socio-economic characteristics form an important set of attributes, namely occupation or employment status. While for demographic and cultural characteristics

the classification is relatively strong and stable, for socio-economic characteristics related to position in labour process the classification is often looser, and its strength grows with growing prestige of profession. In relation to labour market, the determining factor for one's classification within social structure is a complex of their attributes, innate characteristics, capabilities, and acquired set of knowledge and ability to use these. Mareš (1999) says that *"unequal position of persons on labour market comes from their usability in production. It is the human capital, the amount of which places an individual in favourable or unfavourable position on the labour market, and predestines them to higher or lower income, and higher or lower security of employment, and through this to other things that are related to income and security of employment. Human capital is associated primarily with education."*

Theoretical conceptions show numerous approaches to stratification theories. Simplifying them, it is possible to define two key points of view at social structure; theory of classes, as understood in the works of Karl Marx and following authors, and theory of social classes of Max Weber. These two differ in how a person gets their position in respective class as well as in the way the classes are related and built. Nový and Surynek (2002) explain that the difference between Weber's and Marx's classes is that the first represent a set of gradual, natural, and temperate differentiation of a higher number of relatively open levels of social hierarchy, while the latter concept describes a hierarchy of small number of steeper and stable levels, permeable only a little or not at all. Both theories, however, consider a person's position in labour process, apart from wealth or ownership of resources, a key factor of affiliation to specific class. While Marx's system expects polarity and antagonism when sorting people to classes, Weber's hierarchy is a result of a scale of combination of power, wealth, and prestige from profession. With these basic definitions, societies in today's conditions rather match the concept of Weber, a system of layers without strong tendencies to conflicts between classes.

A high level of equalisation of social classes was typical for today's post-communist countries before 1989, formed by dominant ideology forcing equality with no respect to individual contribution. The years of transformation in the 1990's set the society to a new reality of creating new social classes that started to move away from each other through increasing inequality. Opposite to developed western countries, Czechoslovakia was missing a long-years tradition that would anchor the classes in the society as a whole, for which the process of social changes was rather spontaneous to a greater extent than of the political and economic changes. Stratification of the Slovak society was changing under influence of sectoral shifts, decline of enterprises and overall change of economy. In later years, effects of globalisation and internalisation, growth of information and communication technology and economic crisis became significant factors of changes in social structure, as a result of social dynamics. While a hundred years ago one's position in employment was rather stable, allowing any promotion only after having served certain number of years, nowadays the conditions are turbulent, and social mobility is incomparably higher. Either changing departments or positions within organisation, changing employer or place of work, these changes are connected with movements in social structure or movements across classes, that are more often now and for this higher dynamics also looser than in the past.

When looking at two possible points of view at social stratification as horizontal, with absent interdependencies and relations, and vertical, with existing hierarchical sort, the matter of following analysis, status in employment and employment by NACE classification may both be considered a horizontal stratification.

2. Labour market situation in Slovakia

Before analysing the particular criteria of social stratification in relation to labour market, it is convenient to analyse labour market as whole. Table 1 shows time series of statistics for total population and economic activity, in years 1994 - 2014, which is, without one year, the period of existence of independent Slovak republic. A trend of increase of working population is apparent at first sight, which is positive, as it indicates higher participation on labour market that further replicates in social life through higher income. This expressed is 12.0 % increase of working population, as a result of new workers, generation of 1970's population boom entering the labour market, later compressed by the generation of people born during the boom after WWII leaving the market. This increase of employed people must necessarily be set in context with other demographic changes, such as increase of total Slovak population, and especially with changes of population in productive age. Compared to this, the increase of employed does not seem as positive as before. While total population grew by 1.5 % in the 21 years, with 22.3 % increase of population in productive age only 12.0 % increase of employed is accompanied with more unemployed people, whose total number rose by 7.6 % during the period. Some of the productive age population growth also translated to increase of economically inactive, so more people left the labour market which certainly has influence over their lower participation in social life for missing source of income.

Unfavourable demographic structure, with decreasing number of children and aging of society, assumes decline of productive age population and of employed population, and growth of pensioners depending on social transfers financed mostly from contributions of employed people. High numbers of unemployed, not showing quite positive trend in long run, is also a problem. The highest unemployment rates from about 2000 were compressed after 2004 with positive tendencies in economy, but these were interrupted by global crisis after 2008, which lead to increase of unemployment that improved only slightly with end of crisis. Unemployment is a negative phenomenon leading to fall of income and related social exclusion, and to drop of standard of living, not only of the unemployed themselves, but also their entire households, as people classified as unemployed are usually the breadwinners of whole families.

Table 1

in thousands	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014
Population total	5336.5	5367.8	5387.7	5398.7	5402.5	5379.7	5389.2	5397.3	5421.8	5404.3	5415.9
Population in productive age	3151.6	3230.8	3299.6	3361.1	3389.8	3801.6	3862.2	3893.3	3926.9	3881.1	3852.9
Economically active population	2443.7	2509.1	2544.8	2608.2	2628.2	2658.6	2654.8	2691.2	2706.5	2706.5	2721.8
o/w employed	2110.2	2224.9	2198.6	2101.7	2127.0	2170.4	2301.4	2433.8	2317.5	2329.0	2363.0
o/w unemployed	333.5	284.2	346.2	506.5	501.2	488.2	353.4	257.4	389.0	377.5	358.8

Economic activity in years 1994-2014

Source: Statistical office of the Slovak republic. (2016). [online]. *Ekonomická aktivita obyvateľstva podľa pohlavia v tis. osobách, miera aktivity v %*. Database SLOVSTAT. Available at the URL: //www.statistics.sk/pls/elisw/vbd/

2.1. Structure of employed by status in employment

Table 2 displays time series of employed by status in employment for years 1994 - 2004, comparable with previous table. This table splits the population of employed into employees, self-employed (entrepreneurs), and a small group of unspecified workers not falling under any of the previous two categories. Employees are further divided into these of public sector, meaning various forms of public administration or enterprises ran by the state, and employees

Table 2

in private sector, namely private enterprises, cooperative organizations, other organizations and production cooperatives. The self-employed include entrepreneurs with and without employees, and contributing family members.

In 2014, the total number of employed across all groups was 2363.0 thousand of people, of which 1999.3 thousand and 84.6 % were employees. Among them, the greatest portion was formed by these in private sector, 1363.9 thousand, of which 96.2 % in private enterprises, 2.7 % in cooperative organizations, other two types employed only 1.1 % of private sector workers. The remaining employees, 635.3 thousand, worked in state enterprises and public institutions, forming 31.8 % of all employees in Slovakia. There was significantly lower number of self-employed in compare with employees, with 363.8 thousand representing only 15.4 % of all employed. Among self-employed group them, these without employees dominated with 78.9 %, the remaining 21.1 % were entrepreneurs with employees. There were only 1.8 thousand people employed as contributing family workers. The number of non-classified worker that wouldn't match any previous category was statistically unimportant, with zero value.

In the observed period of 21 years, there was no significant increase in the number of employees, comparing the first and last year, the total grew only by 1.1 %, 22.1 thousand persons. Development within the period duplicates trends in economy, with a slight delay, so there is a decline in years 1999 - 2005, with year 2004 showing absolutely lowest number of employees at value 1904.2 thousand. Later years show an increase until 2008 when the total was the highest, at 2094.2 thousand, and afterwards there is an apparent decline related to global crisis. It is still possible to state that the number of employees is relatively stable in the economy, with only 10.0 % delta between the highest and lowest position.

Time series - emplo	1994	1996	1998	2000	2002	2004		2008	2010	2012	2014
in thousands	2110.3	2225.0	1998 2198.7	2000	2002	2004	2006 2301.0	2008	2010 2317.3	2012 2329.0	2014
Employed total											
1 Employees total	1977.2	2082.5	2046.3	1931.0	1941.0	1904.2	2002.7	2094.2	1947.1	1968.9	1999.3
1a Employees in public sector	1350.4	1237.8	1072.6	1006.9	864.1	797.5	667.9	639.6	607.6	633.8	635.3
o/w employees in state enterprises	1350.4	1237.8	1072.6	1006.9	864.1	797.5	667.9	639.6	607.6	633.8	635.3
1b Employees in private sector	626.8	844.7	973.7	924.1	1076.9	1106.7	1334.8	1454.6	1339.5	1335.1	1363.9
o/w employees in private enterprises	413.4	659.4	823.0	804.8	958.6	1011.4	1243.7	1393.0	1285.0	1286.6	1311.9
o/w employees in cooperative org.	170.8	119.9	111.6	87.3	75.7	63.9	54.7	46.4	39.8	33.5	36.9
o/w employees in oth. types of org.	42.6	33.9	24.1	19.6	29.6	26.9	30.4	10.0	9.1	9.7	9.7
o/w members of production coop.	0.0	31.5	15.0	12.4	13.0	4.5	6.0	5.2	5.6	5.3	5.5
2 Self- employement total	133.0	142.4	149.7	167.4	183.2	259.9	289.1	335.2	370.2	360.1	363.8
2a Self-employed total	130.7	139.5	148.6	164.4	181.2	256.8	288.0	332.2	367.1	358.5	362.0
o/w self-employed without employees	90.6	96.1	93.8	112.4	129.4	185.1	216.7	254.3	284.4	288.0	285.6
o/w self-employed with employees	40.1	43.4	54.8	52.0	51.8	71.7	71.3	77.9	82.7	70.5	76.4
2b Contributing	2.3	2.9	1.1	3.0	2.0	3.1	1.1	3.0	3.1	1.6	1.8

Time series - employed by status in employment in years 1994-2014

family workers											
3 Workers not classified	0.1	0.1	2.7	3.3	2.7	6.0	9.2	4.3	0.0	0.0	0.0

Source: Statistical office of the Slovak republic. (2016). [online]. *Pracujúci podľa postavenia v zamestnaní a pohlavia v tis. osobách*. Database SLOVSTAT. Available at URL: http://www.statistics.sk/pls/elisw/vbd. [accessed 09.02.2016].

A closer view at numbers of employed in the particular categories of status in employment shows more dynamic changes on the labour market. Economic transformation of the 1990's led to significant decrease of employment in state enterprises and public sector as a result of privatization, followed by rationalization of public administration in years 1998 – 2004. In 2014 there were 635.3 people employed in public sector, which number is only at 47.0 % of the original 1994 position. While back then the public sector employed majority of Slovak workers, 68.3 %, and remaining 31.7 % worked in private sector, the ratio turned upside down during the year that in 2014 68.2 % people worked in private sector and 31.8 % in public sector. This sector is now mostly represented with state or self-government institutions, with state enterprises being just a minor employer, unlike in the beginning of the 1990's when most enterprises were in state's hands as a heritage of the previous regime.

A similar course can be seen at the annual numbers of employees in cooperative organizations, a form of ownership preferred by the socialist regime beside state ownership, where there were 170.8 thousand people employed in cooperative organizations in 1994, but this number dropped to 36.9 thousand in 2014, as a result of year-by-year decrease. The reason can be found in low economic success of cooperatives, burdened with complications of economic restructuring, despite the indisputable advantage of their concept of everyone participating in their own interest in production.

An opposite trend appears for numbers of employees in private enterprises, fully in line with shift from central economy from before 1989 towards market-run economy. From initial 413.4 thousand, their number more than tripled to 1311.9 thousand employees in 2014. Growth was apparent in most years, interrupted only during periods of weaker performance of economy.

Figures of self-employed progressed similarly. While in first observed year, their numbers totalled at 130.7 thousand making 6.2 % of all employed, in following years numbers of self-employed rose up to 15.3 % share of employed in 2014, 363.0 thousand persons, being 2.8 times higher than the initial position. Yet, this growth was rather fluctuating than stable for the split into self-employed with and without employees. In the first year entrepreneurs employing at least one person formed 44.3 % of all self-employed, and their economic success therefore replicated into increase of total employment in the economy in greater extent than in later years. In 2014, the total number of self-employed with employees was higher absolutely than 21 years ago, but they represented smaller portion of all self-employed, only 26.8 %. This said, it brings a question in what extent is the increase of self-employed driven by semi-legal system, an arrangement where a firm dismisses employees only to hire them back as self-employed to do the same job as before, but with the burden of contribution and tax payment with the workers, doing dependent work.

The next sub-category of self-employed is represented by contributing family members, but their total figure was insignificant in whole observed period, likewise the last main category of unspecified workers.

Each particular position in the employment status classification is related to a different social position that is in certain extent expressed monetarily in wage of employees or profit of entrepreneurs. In average, public sector shows lower remuneration than private, the more in

self-government organizations, on the other hand there are some exceptions such as in the top state institutions or employees in mixed international ownership where the wages are high above the national average. The private sector reports overall above-average wages, but they are differentiated based on employer type, being very low in cooperative organizations and above average in private enterprises, higher in international companies. The official incomes of entrepreneurs are usually considered distorted for various ways of tax optimizations that may not show the real figure in statistics, but income of self-employed are usually reported as lower than the ones of employees. All this summarized, there are differences even between the sub-categories within one category and it is not possible to determine hierarchical structure based on status in employment.

2.2. Structure of employed by sectors of economic activity SK NACE rev. 2

Data of employment by SK NACE rev. 2 classification in years 2000 - 2014 are shown in table 3. Data for previous years are not available in the same classification, previously OKEČ was used that is not fully comparable. Evolution of economy led to decline of employment in agriculture, linked to lower income. As a result of higher efficiency, but also low competitiveness of agricultural production and increased imports, the share of employed in this NACE sector fell from 7.2 % in 2000 to 4.2 % in 2014, in absolute numbers from 141.6 thousand persons to 91.7 thousand. Also the share of workers in industry (NACE sectors B-E) reduced from 27.9 % to 22.7 %, with the greatest drop in 2009. Despite this, industrial sectors still keep the position of dominant employers among other sectors, and together these NACE sectors employ the highest share of all Slovak workers. They are mostly paid around the average wage in economy, meaning these employees form the middle class in Slovakia.

The decrease of share of agriculture and industry is related with sectoral shifts of employment that started in the 1960's and 1970's in developed countries and later appeared in our area too, as a result of improved productivity in both agriculture and industry, with lower need for labour force, and related growth of services.

Next important employer is the NACE sector of construction, clearly with growing number of workers, in the pre-crisis years in particular. In 2014 there were 7.1 % of all employees working in this sector. Wholesale and retail grew as well, both absolutely and relatively, from 278.7 thousand persons to 361.0 thousand, by 29.5 % and share of 16.4 %. Growth was visible also in the transportation and storage sector, by 9.3 % to 142.6 thousand persons. The figure for accommodation and food services went up too, probably in relation to positive trends in tourism, but also a growing popularity of eating outside of home that is one of attributes of changing lifestyle. From former 43.3 thousand workers in 2000 their number rose to 56.7 thousand persons. Yet, employment in this NACE sector is linked to ones of the lowest wages in economy, on the other hand, it is often discussed that these employees get only a part of their remuneration the official (and taxed) way, the rest they get in cash outside of the statistics.

Table 3

Time series - Average number of employed persons by economic activity in years 2000-2014 (SK NACE rev. 2)

in thousands	2000	2002	2004	2006	2008	2010	2012	2014
Employees total	1977.0	2008.9	2030.3	2148.2	2280.0	2151.9	2191.3	2204.6
A Agriculture, forestry and fishing	141.6	140.1	122.7	112.7	109.8	94.5	95.3	91.7
B Mining and quarrying	14.1	12.0	10.1	9.1	8.9	7.4	7.4	6.9
C Manufacturing	480.5	488.2	497.3	510.7	532.9	430.7	449.1	453.5
D Electr., gas, steam & air cond. sup.	33.0	32.9	29.8	25.4	21.8	19.9	18.3	18.1

E Water supply, sewerage	23.3	23.7	23.1	23.9	22.5	21.1	20.5	20.8
F Construction	126.3	125.4	133.8	156.3	180.8	179.6	165.3	156.8
G Wholesale, retail, rep. of mot. veh.	278.7	299.0	302.5	339.7	382.6	377.7	370.8	361.0
H Transportation and storage	130.5	132.1	130.0	128.5	138.8	138.8	140.0	142.6
I Accomm. and food service act.	43.3	42.4	44.4	49.4	56.1	50.4	51.4	56.7
J Information and communication	41.1	41.1	44.7	47.5	48.9	47.6	57.2	61.7
K Financial and insurance activities	37.3	38.1	40.6	42.0	42.7	40.8	41.6	41.3
L Real estate activities	31.4	23.5	24.7	24.6	21.3	20.6	21.9	22.4
M Professional, scient. and tech. act.	52.3	60.4	57.5	66.2	73.8	78.8	94.3	92.9
N Admin. and support service act.	79.4	70.3	67.3	79.9	93.9	97.9	114.5	122.0
O Public adm., compul. soc. security	80.1	82.6	92.9	127.1	146.2	148.4	140.7	144.1
P Education	180.1	177.7	173.7	168.7	165.2	166.9	164.4	165.1
Q Human health and social work act.	138.3	139.0	141.2	139.2	141.0	139.7	142.2	147.3
R Arts, entertainment and recreation	22.9	30.0	39.6	41.5	40.9	41.4	44.6	48.6
S Other service activities	42.9	50.4	54.6	56.0	52.0	49.8	51.9	50.8

Source: Statistical office of the Slovak republic. (2016). [online]. Priemerný počet zamestnaných osôb podľa ekonomických činností (SK NACE Rev. 2) v osobách. Database SLOVSTAT. Available at theURL: http://www.statistics.sk/pls/elisw/vbd. [accessed 10.02.2016].

One of the most significant changes in NACE compared to former OKEČ was that a new NACE sector was created, covering information and communication technology, which went through a dynamic development in the observed 15 years. In 2014, there were 61.5 thousands people working there, which represents a 50.0 % growth compared to 2000. Employment in ICT as one of the most dynamic sectors requires constant technical skills actualization and creativity, which are accordingly remunerated by employers in the highest wages on the market in average. In 2014, the average monthly wage 1819 euros, according to the Labour force sample survey, exceeded by 88.7 % the national Slovak average wage. Wages are only slightly lower in the next NACE sector of finance and insurance, which also realized increase of employment, specifically during period after 2004 with development and growth of financial market. There were 41.3 thousand persons employed in finance and insurance, which is a slight increase for the 15 observed years. Opposite to that, the real estate sector shows a decrease of employment by 28.7 %, with overall employment at a low level of 22.4 thousand employees. The figure for professionals, scientists and technical specialists went up year by year in entire observed period, with 92.9 thousand employees being by 77.9 % higher in 2014 than in 2000. Similarly the totals for administrative workers grew, by 53.6 % to 122.0 thousand

The following three NACE sectors are mostly related to public sector. Public administration itself generated increasing number of jobs, from initial 80.1 thousand in 2000 to 144.1 thousand in 2014. Employment in sector of education declined by 15.0 thousand persons to 165.1 thousand, health care and social work was rather unchanged at about 140 thousand. The common problem of these three sectors is that, despite high requirements on professionality and education of the workers, they are remunerated with below-average wages, not reflecting the importance of education and health care for the society. This now became a subject of professional discussion with nurses and teachers striking for higher salaries.

The NACE sector of arts, recreation and entertainment more than doubled its number of employed people through the years to 48.6 thousand persons, but important to mention is the

fact that together with accommodation and food services, this sector reports one of the lowest wages. The number of workers in the last NACE sector of other services did not show any significant change, there were about 50 thousand employed persons in all observed years.

Conclusion

This paper focused on research of social structure in Slovakia related to labour market criteria, employment status and economic activity by NACE sectors specifically, using analysis as key method and examining the key categories of each statistics. The results confirm the impact of major economic and social transformation during the observed period that also pushed on labour market changes in. Besides higher numbers of employed persons, the increase of productive age population also translated to part of them shifting to economically inactive category. This means that one of the characteristics of the social transformation is a growth of population standing outside of the labour market.

Analysing the statistics of status in employment, the key finding is a shift of employees from public sector to private, mostly as a result of privatisation of the 1990's, so as while in 1994 approximately one third of employees worked in private and two thirds in public sector, this share swapped vice versa in 2014. Within the category of private sector, overall economic liberalisation led to accent on private ownership and decline of employment in cooperative organizations. Related to the same cause, the data clearly show that figures for self-employed grew through the years, particularly entrepreneurs. Their number nearly tripled in the observed 21 years.

Looking at the statistics of NACE sectors of economic activity in time series for period 2000 – 2014, the data show continuing sectoral shifts in the Slovak economy, from agriculture and industrial sectors, to sectors of services, yet with the industrial sectors together forming a category of the graters employers in Slovakia, with 23.2 % out of all employees, and with wages about the national average they formed the middle class in the country. Most of the NACE sectors of services, where employees are remunerated relatively the lowest in average, but also in information and communication technology with wages high above the national average on the other hand. This creates an ambiguous effect of the sectoral shifts, higher wages of new excellent professionals, but low wages for these with lower qualification. Another highlight would be a growth of employment in public sector, indicating increasing extent of bureaucratization.

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References

KOŠTA, J. (2004). Sociológia. Third edition. 2004. 167 p. ISBN 80-225-1819-0.

KRIŠKOVÁ, D. (2014). *Štruktúra miezd v SR 2013*. Bratislava: The Statistical Office of the Slovak Republic. 2014. 147 p. ISBN 978-80-8121-318-2.

MAREŠ, P. (1999). *Sociologie nerovnosti a chudoby*. Praha: Sociologické nakladatelství, 1999. 248 p. ISBN 80-85850-61-3.

NOVÝ, I. – SURYNEK, A. (2002). *Sociologie pro ekonomy a manažery*. First edition. 2002. 191 p. ISBN 80-247-0384-X.

PLÁVKOVÁ, O. (2008). Úvod do sociológie. First edition. 2008. 181 p. ISBN 978-80-225-1491-9.

THE STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. (2015). [online]. *Ekonomická aktivita obyvateľstva podľa pohlavia v tis. osobách, miera aktivity v %*. Database SLOVSTAT. Available at the URL: http://www.statistics.sk/pls/elisw/vbd. [accessed 04.03.2015].

THE STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. (2015). [online]. *Peňažné príjmy súkromných domácností v členení podľa ekonomického postavenia prednostu domácnosti v zamestnaní na osobu a mesiac v EUR, Sk v roku*. Database SLOVSTAT. Available at the URL: http://www.statistics.sk/pls/elisw/vbd. [accessed 05.03.2015].

THE STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. (2015). [online]. *Pracujúci podľa ekonomických činností (OKEČ) a pohlavia v tis. osobách.* Database SLOVSTAT. Available at the URL: http://www.statistics.sk/pls/elisw/vbd. [accessed 01.03.2015].

THE STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. (2015). [online]. *Pracujúci podľa ekonomických činností (SK NACE Rev. 2) a pohlavia v tis. osobách (2008 - 2014).* Database SLOVSTAT. Available at the URL: http://www.statistics.sk/pls/elisw/vbd. [accessed 01.03.2015].

THE STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. (2015). [online]. *Pracujúci podľa klasifikácie zamestnaní (KZAM) a pohlavia v tis. osobách*. Database SLOVSTAT. Available at the URL: http://www.statistics.sk/pls/elisw/vbd. [accessed 01.03.2015].

THE STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. (2015). [online]. *Pracujúci podľa postavenia v zamestnaní a pohlavia v tis. osobách*. Database SLOVSTAT. Available at the URL: http://www.statistics.sk/pls/elisw/vbd. [accessed 01.03.2015].

THE STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. (2015). [online]. *Pracujúci podľa klasifikácie zamestnaní (SK ISCO-08) a pohlavia v tis. osobách.* Database SLOVSTAT. Available at the URL: http://www.statistics.sk/pls/elisw/vbd. [accessed 01.03.2015].

Strategic Factors Leading to Better Competitive Position on the Market

Branislav Zagoršek

University of Economics in Bratislava Faculty of Business Management, Department of Management Dolnozemská cesta 1 Bratislava, 852 35 Slovak Republic E-mail: branislav.zagorsek@euba.sk

Abstract

Choosing the right business strategy is the first step for a company to reach the desired goal. Especially in today's changing times it is interesting to challenge the dogmas. In this paper we study the impact of strategic factors like character of strategy, bargaining position and informatisation level on the competitive market position. The research was conducted on a sample of 382 companies using a questionnaire method for data gathering and ANOVA analysis and linear regression analysis for the data evaluation. We found that there is an interesting, at the beginning not expected, relation between the competitive market position and bargaining position and character of the strategy.

Keywords: strategy, market position, bargaining position *JEL classification*: *M10*

1. Introduction

Choosing the right business strategy is the first step for a company to be successful in reaching the desired goals. Strategy as a goal and the way to achieve it is the major building block of the foundation of a company, because it sets the boundaries for further more detailed business concept. It states what to do and even more important what not to do.

In this paper we will examine the impact of strategic factors on the competitive market position. The research was conducted on a sample of 382 companies done in years 2012/2013 using inductive statistical methods.

The aim of this paper is to examine whether there is an influence of character of strategy, bargaining position and informatization level on the market position in the postindustrial era.

Our hypothesis is that the market position can be significantly explained by the character of strategy, bargaining position with suppliers and purchasers and the informatization level. We expect that in the present volatile times the companies have to be able to better adapt to the changing environment by choosing less rigid, more flexible strategy. The bargaining position is representing the common influence power of a company, as the more powerful the position is the more differentiated and valuable is the company and the more valuable is the partnership with this company. The informatization is representing modern era, where more informatized companies having more integrated processed should take an advantage from it and have better competitive position.

When speaking about strategy Porter (1996) defines it as "creation of a unique and valuable position, involving a different set of activities". He also stated that strategy requires trade-offs by companies and it should be a good fit for companies' abilities and activities. Mintzberg (1987) wrote that in the traditional view "by any definition, strategy imposes stability on an organization". Porter (2001) described changes in strategy due to

informatization as intensification of rivalry and reduction of entry barriers. Also it increases the amount of available information and what shifts the bargaining power to purchasers. Eisenhardt and Sull (2001) wrote about strategy as simple rules. They stated that "unpredictable, complicated markets demand especially clear and simple strategies." This makes a company "nimble and flexible enough to capture fleeting but profitable opportunities that others miss. A few hard-and-fast rules provide just enough structure for firms to pursue the hottest opportunities". In later paper they also wrote (Eisenhartd & Sull, 2012) that the effectiveness of strategy is enhanced by the straightforward guidelines to employees for making critical decision. To apply this concept to a company it has to set the corporate objective, identify a bottleneck that keeps it from achieving the objectives and create simple rules for managing the strategic bottleneck.

1.1 Method

The presented research was conducted on a sample of 382 companies using the questionnaire method to collect the data. The data was analyzed using descriptive and inductive statistical methods and processed in statistical software PSPP. The most important methods used were analysis of variance (ANOVA) and linear regression. All the variables were subjectively stated by the examined companies so they evaluate rather perception then behavior. The market position is evaluating the competitive position in the market in regard to the competitors, constructed the higher the number the better the position. The character of strategy is evaluating whether the strategy is either rigid, floating or flexible, the higher the number the more flexible is the strategy. Bargaining position is evaluated in respect to suppliers and to purchasers. The way the indicator is constructed is that the higher the number is the worse is the bargaining position. The indicator of informatization is evaluating the level of informatization of processes in the company, it evaluates whether the company uses the information technologies just for communication purposes, or managing internal processes or internal and external processes, where the higher the number is the more informatized is the company. The sample consisted of 18.32 % (70/382) micro companies, 28.8 % (110/382) small companies, 25.13 % (96/382) middle sized companies and 27.75 % (106/382) large companies. The most companies were from service sector 17 % (65/382), from information technologies sector 13.35 % (51/382), trade 13 % (50/382), construction 9.94 % (38/382) and engineering sector 9.42 % (36/382). The best return on costs was in pharmaceutical industry, followed by information technologies, service, trade and electronics. The most companies (28.03%, 104/371) recognized a slow growth of less than 10% in 3 years, while overall almost 60% (221/371) where growing.

2. Strategic factors influencing the market position

As shown in the Table 1 we analyzed the influence of strategic factors to test our hypothesis using linear regression analysis. The results indicate that the market position in significantly influenced by the character of strategy, bargaining position with suppliers and purchasers and by the level of informatization. This model explains 20 % of variability of the market position. The strongest influence is by character of strategy (β =-.29), followed by bargaining position with purchasers (β =-.23), bargaining position with suppliers (β =-.15), and by weak influence of level of informatization (β =-.09). We are presenting also a model without the level of informatization because its significance is on the brink of scientifical acceptance.

Table 1

Regression analysis of market position

	Market position	Market position
Character of strategy	34***	35***
	(.06)	(.06)
Bargaining position with suppliers	22***	23***
	(.07)	(.07)
Bargaining position with purchasers	34***	34***
	(.07)	(.07)
Informatization	.04*	× ,
	(.02)	
R square adjusted	.20	.19
Standard error in parenthesis		
Significance level *<0.1, **<0.05, ***<0.01		
Source: own processing		

Source: own processing

Our research indicated that better market position is held by companies with more rigid strategies. Traditionally, larger companies are having more rigid strategy as their processes are more bureaucratic. Very interesting is negative association of bargaining power with market position. The fact that the weaker position in regard to suppliers and also to purchasers is associated with better market position indicates that the market leaders are obtaining value by strong established suppliers and are in strong competition so the purchasers are also having the upper hand. Increased utilization of information technologies results in slightly better market position. This can be explained by decreased cost and increased effectivity thanks to information technologies. The general availability of information technologies has the effect of just little impact on market position, so the information technologies are more a requirement then a chance.

3. Conclusions

Our hypothesis that the market position can by significantly explained by the character of strategy, bargaining position with suppliers and purchasers and the informatization level was confirmed. However the factors of character of strategy and bargaining position of suppliers and purchasers have opposite effect as we stated in our hypothesis. Only the informatization level had the expected outcome.

The companies with rigid strategy are possibly prone to experience problems in highvelocity environment, however a strategy to become efficient needs time to develop a momentum like a flywheel, it can be beneficial to have a rigid strategy with a long-term focus and build as efficient competitive skills as possible. Obviously in the business conditions of our research it is crucial to cooperate with strong partners to reach the market leading position despite the diminished control of suppliers and purchasers. The information technologies utilization is more a requirement of competitiveness than a source of competitive advantage. Companies have to realize that whether they want or not they compete in a global environment where such technologies are a necessity.

As shown in this paper the modern times are altering the traditional views, business theory is still developing and no theory is safe from changes. For future research inspired by this paper I recommend to study deeper the causation and conditions of the relationship between character of strategy, bargaining position and market position.

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References

EISENHARDT, K. M. – SULL, D. (2012). Simple rules for a complex world. In *Harvard Business Review*. Vol. 90, Issue 9, pp.68-74. ISSN 0017-8012.

EISENHARDT, K. M. – SULL, D. N. (2001). Strategy as simple rules. In *Harvard Business Review*. Vol.79, Issue 1, pp.106-116. ISSN 0017-8012.

MINTZBERG, H. (1987). Crafting Strategy. In *Harvard Business Review*. Vol. 65, Issue 4, pp. 66-75. ISSN 0017-8012.

PORTER, M. E. (2001). Strategy and the Internet. In *Harvard Business Review*. Vol. 79, Issue 3, pp. 62–78. ISSN 0017-8012.

PORTER, M. E. (1996). What Is Strategy? In *Harvard Business Review*. Vol. 74, Issue 6, pp. 61–78. ISSN 0017-8012.

