# Factors Affecting the Financial Performance of Enterprises Listed on the Slovakia Stock Exchange

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Abstract. The financial performance of a company is one of the key indicators that show the public whether the company is doing well, moreover, improving financial performance should be a top priority in order to be attractive to investors. Financial performance is reflected in financial statements, which provide financial information by which investors make their investment decisions. A company's performance could be explained as the rate of achievement of set targets. The aim of this study is to find out the factors that affect financial performance and identify the key factors among the selected ones. The subject of this study is the companies listed on the Stock Exchange of the Slovak Republic during the period 2010-2021. The data for this study is based on secondary data collected by analysing the financial statements of the selected companies. The data is then analysed using IBM SPSS Statistics 26 software. The research findings yielded the following results: all the selected independent variables show an impact on financial performance. Firm age showed a clear positive effect, cost of capital showed a clear negative effect and factors such as liquidity, debt, firm size and credit risk did not show a clear negative or positive effect.

**Keywords:** Company performance, Cost of capital, Credit risk, Firm age, Firm size, Leverage, Liquidity, Multiple regression, Slovak Stock Exchange.

JEL classification: C19, P47

## 1 Introduction

Financial performance determines the level at which a company generates revenue and manages its assets, liabilities and the financial interests of its shareholders and stakeholders. The most commonly used financial performance ratios include Gross Profit, Net Profit, Working Capital, Operating Cash Flow, Current Ratio, Debt-to-Equity Ratio, Inventory Turnover, Return on Equity. Before investing their funds, investors should first obtain information about the company's performance. The easiest way to find out a company's performance is to look at the company's financial statements. Thus, financial performance emphasizes variables directly related to financial management. In addition, a new trend is emerging - corporate sustainability, from voluntary engagement in sustainable activities to requirements arising from societal expectations and regulatory pressure. The number of companies using sustainability strategies and disclosing environmental, social and governance information is steadily increasing. [31]

Given the importance of firm performance and the availability of influencing variables, the topic remains topical and often debated. Moreover, firm performance plays an important role in the structure and development of a firm, but its improvement is often challenged by many factors that lead to a slowdown. High financial performance attracts the main attention of every manager, including trade creditors, bondholders, investors and employees. Therefore, the study of the determinants of financial performance becomes essential for companies in every industry.

It is essential to use financial performance analysis to evaluate financial performance and the influencing factors. Financial performance analysis is the process of identifying operational and financial characteristics to determine efficiency. This study examines how financial and non-financial factors such as leverage, liquidity, size, age, credit risk, cost of capital and others affect the financial performance of firms. These factors can be easily measured using available data.

# 2 Financial performance of enterprises

Although there has been a growing interest in studying the relationship that may exist between stock market liquidity and the economic performance of companies, studies have been done only sparingly in this regard. Three measures namely Economic Value Added (EVA), Return on Investment (ROI) and Return on Assets (ROA), can be used to assess the economic performance of companies, each of which has specific advantages. [5]

The literature has long examined the relationship between financial performance and other factors that affect it. Consequently, this interaction is comprehensively analysed in a regression framework. The results for causal effects are then revealed by replacing the dependent and independent variables, they are accepted as a strong indicator. [15]

Performance measurement is an integral part of managing any business strategy and is constantly evolving as a separate body of knowledge with a primary focus on financial performance. [32] The association of EVA and traditional performance measures with stock prices and stock returns suggests an insignificant correlation of stock prices or stock returns with EVA or residual income. On the other hand, scholars establish the relationship between the firm's market value added, current operating value, and the value of future growth. Their result further reinforces the importance of EVA in predicting the market value of firms. [7,29]

As corporate social responsibility (CSR) continues to be a hot topic for firms and the investment community, many of the largest firms are not only investing significant resources in implementing these initiatives but are also working to disclose their social activities to various stakeholders and potential investors through a variety of including annual sustainability reports. Given the increased attention paid to CSR by financial markets, it is not surprising that firms with good performance seem to have better access to capital. In addition, green bonds are becoming more prevalent to finance CSR-focused projects among firms where environmental issues are particularly acute. [6]

#### 2.1 Factors affecting financial performance

Leverage refers to the relative proportion of equity and debt that a company has in its financial structure. As an alternative to the debt-equity ratio, we use the equity ratio, which measures the proportion of total assets financed by shareholders rather than creditors. Leverage shows the potential risks or rewards that shareholders face in different economic situations. When a company makes an economic profit, shareholders of companies with low debt receive a high return. [18] The link between financial performance and leverage is undeniable. Various authors in the 20th century suggested the direction of the current capital structure theory, the ideal debt-equity ratio maximizing the value of the firm should be as low as possible. From the lender's point of view, it should reach a maximum value of 1. [26]

Liquidity is defined as the immediacy of repayment of liabilities. Operating liquidity is a major area of working capital and is therefore also referred to as working capital management policy in the financial literature. The main components of liquidity include the amount of cash and cash equivalents, accounts receivable and inventories as expressed in the financial statements. [26]

Both pecking order theory and trade-off theory consider firm size as a variable of capital structure. Firm size is an inverse proxy for bankruptcy costs and earnings volatility. [25] The pecking order theory also predicts that firm size is positively correlated with leverage, as a large firm has high quality and reliable information, which allows for a declining cost of debt. Further research also confirms that firm size is positively correlated with leverage. In [12], the authors also incorporate one of the basic organizational characteristics into the analysis - firm size and the advantage caused by family involvement is significant in private firms with different scales. The static positive effect of family involvement decreased as the scale of the firm increased. After reaching a certain scale, family involvement would have a negative effect on firm performance. [20]

The age of the company means the number of years the company has been in operation. According to [10], shares are negatively related to the age of companies and the results also suggest that obsolete companies are better at using short-term debt than

younger companies. Also, [24] provide evidence that there is a negative correlation between leverage ratio and the age of companies. A young company might be forced to accept debt if it faces constraints in raising the finance it has retained in the first year.

The results of various studies and empirical evidence point to a mixed trend in the impact of credit risk on performance. While some declare a negative relationship between performance and credit risk, some have found a positive relationship. Moreover, some results confirm no relationship between credit risk and profitability. Total risk is mostly considered as a determinant of performance. [22]

The cost of capital is the price of external financing and hence the rate of return required by investors. It is also defined as the cost of raising fund or capital. It is the rate paid for the use of capital. Equity and debt are the only source of financing for firms and the only component of the cost of capital. [16] The reservoir theory points out that the purpose of holding financial assets is to prevent the distortion and distribution of capital caused by cash flow shocks that adversely affect business operations. [32]

## **3** Goal and methods

The purpose of the study is to investigate how and whether Financial Performance is affected by selected variables: leverage, liquidity, size, age, credit risk, cost of capital. The fulfilment of the main objective is preceded by the sub-tasks of selecting the independent variables - as discussed below, selecting the method of measuring the dependent variable, selecting the method of calculating the dependent variable, and finally calculating according to the selected variables using the selected method.



Fig. 1. Thinking framework

Subsequently, a sample was selected - companies listed on the Slovak Stock Exchange with consistently disclosed data on their financial statements. Furthermore, the research period 2010 - 2021 was selected, which represents a total of 33 data samples.

Sampling criteria	Total
Number of firms listed at Slovak Stock Exchange	3
Number of firms listed at Slovak Stock Exchange with consistently published data of their financial statements in the year of the study, the reporting year 2010 – 2021.	3
Companies which fulfil the criteria	3
Research period 2010 to 2021 (Number of years)	11
Total data used as sample	33

**Table 1.** Sampling criteriaSampling criteria

# **3.1** Operational definition and the measurement of scale financial performance

Financial performance is measured using **economic value added (EVA)**. EVA was established by Stern Stewart in 1993 and is one of the methods of evaluating financial performance. EVA has become very popular as "the wonder drug of the millennium in overcoming all corporate ills at once and ultimately helps in increasing shareholder wealth, which is synonymous with maximizing firm value" [8]. EVA is defined as the difference between NOPAT (net operating profit after tax) and the cost of capital - WACC (weighted average cost of capital) multiplied by CI (capital invested). [33] In the study, a well-known formula was used:

$$EVA = NOPAT - WACC \times CI$$

According to Ali et al. **leverage** has a negative but statistically significant effect on firm performance. In this study [2], leverage is measured by the debt-to-equity ratio (DER). According to [27], the debt-to-equity ratio is the total liabilities of a firm divided by its total equity. The formula is as follows:

$$Debt - to - EquityRatio(DER) = \frac{Total \, Debt}{Total \, Equity}$$

**Liquidity** refers to a firm's ability to meet its obligations as they fall due and has an impact on firm performance [14]. In this study, liquidity is measured by Current Ratio (CR) as:

 $Current Ratio (CR) = \frac{Current Assets}{Current Liabilities}$ 

According to [19], there is a positive relationship between **firm size** and financial performance. Absolute firm size plays a significant role in firm performance along with other factors. The following formula has been used to determine the value of firm size:

Firm Size = Logarithm Natural (LN) of Total Assets

**Firm age** is a relevant variable that should be given due consideration in the context of firm performance. A positive effect of this variable on performance is observed in the early years. We also encounter a contradictory effect, namely that firm age on the one hand increases experience, but on the other hand it also increases rigidity. [11] In the study, the year of the firm's establishment was used to determine the age of the firm, as shown in the following formula:

#### Firm Age = The number of years sin c e establishment

**Credit risk** is the probability that a borrower will default on its debt obligations. This condition will affect the capital structure of the firm. According to [3], there is a negative relationship between a firm's capital structure and firm performance. The formula is as follows:

$$Credit Risk = \frac{External Sources}{Total Assets}$$

Both long-term and short-term debt has a negative and significant impact on firm performance. [23] **Cost of capital** must be considered as a vital variable that affects firm performance. For the purpose of this study, the cost of capital is calculated as the weighted average cost of capital (WACC) representing the average rate of return that the firm expects to pay to all its shareholders including debt holders, equity shareholders and preference shareholders. The formula is as follows:

$$WACC = Cost of Equity \times \%E + Cost of Debt \times \%D \times (1 - TR)$$

The data collected in this study is secondary data that comes from the financial statements of the companies that were used as a sample. The data was obtained from the available sources from portals like Finstat, Register of Accounts and the data on Beta coefficient and ERP required for the calculation of EVA were drawn by Damodaran.

#### **3.2 Data analysis method**

#### **Descriptive statistics**

In this study, we used descriptive statistics, which are generally used to tabulate or graphically represent the data obtained. In this study, we used descriptive statistics using tabular representation to show the number of samples, mean, maximum, minimum, standard deviations and results obtained from the data under study.

#### **Pearson test (correlation test)**

Pearson's correlation coefficient is used to measure the strength of the linear association between two variables. The coefficient is denoted by the letter r. The

correlation represents the degree of monotonic association between two variables. A monotonic relationship between variables is defined as a relationship where:

- 1. the value of one variable increase and the value of the other variable also increases.
- 2. the value of one variable increase and the value of the other variable decreases. [28]

The coefficient is considered to be a dimensionless measure of covariance that ranges from -1 to +1. [30] A value of 0 means that there is no correlation between the two variables under study. A value greater than 0 indicates a positive association between the variables, a value less than 0 indicates a negative association between the variables.

#### Normality test

Normal distribution is the most important probability distribution. Various statistical methods used to analyse data assume the normality of the data they are working with, including correlation, regression, t-tests, and analysis of variance. [4] Incorrect selection of representative data and subsequent calculation of significance levels (p-values) can provide incorrect interpretations. [17]

Therefore, we initially test the normality of the collected data. There are two ways to assess the normality of the data: graphical and numerical. [9]

We know various methods to test the normality of data, the most popular of which are Shapiro-Wilk test, Kolmogorov-Smirnov test, box plot, P-P plot and Q-Q plot. Two well-known normality tests, the Kolmogorov-Smirnov test and the Shapiro-Wilk test, are the most widely used methods for testing the normality of data. [21]

The Shapiro-Wilk test is more appropriate when working with a smaller sample of data (n < 50), although it can be used with a larger sample. For a larger sample of data (n  $\geq$  50), the Kolmogorov-Smirnov test is used. In both of the above tests, the null hypothesis that the data have a normal distribution is given. When the p-value > 0.05, we consider the null hypothesis accepted and state that the data are normally distributed. [21]

#### **Durbin-Watson test (autocorrelation test)**

Autocorrelation represents a series of dependencies of random variables or residuals. Autocorrelation is a series of dependencies of random variables or residuals. The Durbin-Watson (DW) test is the most common first-order autocorrelation test in regression analysis. It can be used with a larger sample that has a normal distribution. However, this test has some limitations, such as:

- The critical value depends on the matrix, which can lead to an "indeterminate result".
- Only valid for first order autocorrelation.
- Not suitable for dynamic model. [1]

The value of the test statistic should range from 0 to 4. If the test statistic is less than 2, we can speak of positive serial autocorrelation. If the test statistic shows values greater than 2, then we speak of negative serial autocorrelation.

#### Multiple regression analysis

Multiple regression analysis was used because we were examining the impact of several independent variables (leverage, liquidity, firm size, firm age, credit risk and cost of capital) on one dependent variable, which was the financial performance of the company represented by EVA. The following multiple regression analysis equation was used for the calculation: [13]

$$Yit = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \varepsilon it$$

# 4 Results

The authors used IBM SPSS Statistics 26 software to analyse the data collected for the period 2010-2021. In the following section, the tables present the results they obtained along with their interpretation.

	Minimum	Maximum	Mean	Std. Deviation
DER	0.053975	3.762281	1.759133	1.269690
CR	0.182782	33.405597	5.53998	9.134576
FS	19.477110	20.027345	19.759682	0.210525
FA	18.000000	29.000000	23.500000	3.606000
CRisk	0.088183	0.822037	0.583257	0.290613
CC	1.990572	22.349178	8.881818	6.638212
FP	-6 276 470 789	0.000000	-1 983 142 695	2 141 741 794

 Table 2. Descriptive statistics Company A

According to the results of descriptive statistics of Company A, the authors found that the main dependent variable Financial Performance (FP) showed negative values as the maximum value of the variable was 0. The values of the independent variables were in positive numbers during the reference period as their minimum values were greater than 0.

-	Minimum	Maximum	Mean	Std. Deviation
DER	-11.421704	13.058406	2.1722041	7.473035
CR	0.304721	1.703682	0.981393	0.439209
FS	17.553561	19.156576	18.311431	0.529915
FA	18.000000	28.000000	23.000000	3.317000
CRisk	0.879358	1.398585	1.088082	0.205253
CC	-9.982173	2.590988	-1.976061	4.591369
FP	-88 116 247	38 773 799	69 668 316	179 884 518

**Table 3.** Descriptive statistics Company B

According to the results of the descriptive statistics of Company B, the authors state that the main, i.e., the dependent variable FP showed negative values in some years, since the minimum value of the variable was - 88 116 247 and the maximum value was 38 773 799. The values of the independent variables for the period under review were in the positive range in most cases, as their minimum values were greater than 0. In the case of financial leverage (DER) and cost of capital (CC), the values reached negative numbers DER - 11.421704 and CC - 9.982173.

	Minimum	Maximum	Mean	Std. Deviation
DER	0.000021	0.315492	0.131363	0.106057
CR	1.629110	6.167333	2.862865	1.465373
FS	17.233356	17.823413	17.532625	0.192717
FA	18.000000	28.000000	23.000000	3.317000
CRisk	0.104933	0.336381	0.235066	0.076586
CC	0.000000	19.901125	14.754992	5.454369
FP	-926 952 865	9 223.372037	-539 858 351	229 047 586

**Table 4.** Descriptive statistics Company C

According to the results of the descriptive statistics of Company C, the authors conclude that the dependent variable financial performance showed negative values in some years, since the minimum value of the indicator was - 926,952,865 and the maximum value was relatively low only 9,223.372037. The values of the independent variables ranged in the positive range during the period under study as their minimum values were greater than 0. In the case of CC and DER, it can be said that the values were equal to 0.

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	R	R Squared	Squared
Company A	0,995	0,990	0,927
Company B	1,000	0,999	0,996
Company C	0,982	0,982	0,875

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According to the above table, the correlation coefficient (R), which represents the correlation between the dependent and independent variables, is greater than 0, which means that the relationship between the selected variables is positive. Based on this fact, the authors hypothesized that all the selected factors should have a positive effect on financial performance. However, this fact could not ultimately be confirmed.

The adjusted R-squared indicates that the independent variables describe the dependent variable in Company A at 92.7%, in Company B at 99.6% and in Company C the independent variables can only describe the dependent variable at 87.5%.

The following tables show the regression results of each factor on the financial performance of all companies. These results are based on the assumption that if one independent variable increases by one unit, the other independent variables remain constant.

	Coefficients	Std. Error	t Stat	P-value
FP	204 994 000 000	159 852 000 000	1.28239	0.25593
DER	1 662 949 639	843 867 104	1.97063	0.10583
CR	-146 889 680	48 653 411	-3.01910	0.02944
FS	-11 517 593 724	8 696 450 299	-1.32440	0.24267
FA	914 189 562	511 397 453	1.78763	0.13387
CRisk	-6 090 475 328	3 030 667 817	-2.00961	0.10069
CC	74 377 453	79 505 885	0.93549	0.39247

Table 6. Coefficient of Regression Company A

According to Company A's data, the authors used multiple regression to arrive at the following results:

- If the financial leverage variable increases by 1-unit, then financial performance increases by 1,662,949,639 units.
- If the liquidity variable increases by 1-unit, then financial performance decreases by -146,889,680 units.
- If the firm size variable increases by 1-unit, then financial performance will decrease by -11,517,593,724 units.
- If the firm age variable increases by 1-unit, then financial performance increases by 914,189,562 units.
- If the credit risk variable increases by 1-unit, financial performance decreases 6,090,475,328 units.
- If the cost of capital variable increases by 1-unit, then financial performance will increase by 74,377,453 units.

Table 7. Coefficien	t of	Re	egression	Company B	
0	cc.			C I F	

	Coefficients	Std. Error	t Stat	P-value
FP	6 260 600 212	9 155 753 488	0.68378	0.53166
DER	-3 027 123.103	8 111 199.431	-0.37320	0.72793
CR	-63 840 411.74	165 474 516.1	-0.38580	0.71928
FS	-284 367 243.2	412 363 937.6	-0.68960	0.52836
FA	-38 562 427.1	65 761 858.05	-0.58639	0.58910
CRisk	-70 432 957.66	129 455 396.1	-0.54407	0.61529
CC	-19 821 355.34	17 464 968.26	-1.13492	0.31980

According to the data on Company B, the authors use multiple regression to arrive at the following results:

- If the financial leverage variable increases by 1-unit, then financial performance decreases by 3,027,123 units.
- If the liquidity variable increases by 1-unit, then financial performance decreases by 63,840,411-units.
- If the firm size variable increases by 1-unit, then financial performance decreases by 284,367,243 units.
- If the firm age variable increases by 1-unit, then financial performance decreases by 38,562,427 units.
- If the credit risk variable increases by 1-unit, then financial performance will decrease by 70,432,957 units.
- If the variable cost of capital increases by 1-unit, then financial performance decreases by 19,821,355 units.

**Table 8.** Coefficient of Regression Company C

	Coefficients	Std. Error	t Stat	P-value
FP	51 227 653 270	14 863 545 521	3.4465	0.02613
DER	752 027 011.6	1 622 866 841	0.46339	0.66717
CR	11 838 404.58	31 341 811.98	0.37771	0.72482
FS	-2 830 314 215	790 117 817.8	-3.58214	0.02312
FA	-85 028 358.04	45 313 630.28	-1.87644	0.13383
CRisk	1 014 584.985	2 471 668 443	0.00041	0.99969
CC	-20 112 535.27	7 631 414.073	-2.63549	0.05785

According to Company C's data, the authors obtained the following results based on multiple regression:

- If the financial leverage variable increases by 1-unit, then financial performance increases by 752,027,011-units.
- If the liquidity variable increases by 1-unit, then financial performance increases by 11,838,404 units.
- If the firm size variable increases by 1-unit, then financial performance decreases by -2,830,314,215 units.
- If the firm age variable increases by 1-unit, then financial performance decreases by 85,028,358 units.
- If the credit risk variable increases by 1-unit, then financial performance increases by 1,014,584 units.
- If the variable cost of capital increases by 1-unit, then the financial performance decreases by 20,112,535 units, while the other independent variables remain constant.

Based on the results shown in Tables 6, 7, and 8, the authors agreed that the key factors that should be more closely monitored in companies include cost factors and therefore credit risk along with the cost of capital due to the negative impact reporting. Other factors that the authors consider important are leverage and liquidity. These factors show higher values in all three companies among the factors studied.

Table 9. Coefficient	of Regression	Result
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	<b>F-statistics</b>	Prob. F-statistics
Company A	3.839356	0.080695
Company B	0.931951	0.553998
Company C	5.313840	0.063939

According to the above F-statistic data, (Company A) 3.839356; (Company B) 0.931951 and (Company C) 5.313840, the authors conclude that the value is higher than the tabulated F-statistic value of 3.2172 in two out of three cases. Based on this, it is proved that there is an effect of leverage, liquidity, firm size, firm age, credit risk and cost of capital on financial performance when they are compared simultaneously. This is supported by the fact that the probability values of the F-statistic are higher than the alpha significance level of 0.05.

# 5 Conclusion

As shown in the introduction, financial performance should be one of the most important indicators that companies should focus on. Not only does financial health help to meet stated objectives, but such companies appear more attractive for investment opportunities to new investors, who in turn can increase their economic strength. In this study, we investigated the factors that affect the financial performance of companies listed on the Slovak stock exchange. Based on the results of the analysis conducted by the authors using data of companies listed on the Slovak Stock Exchange for the period 2010-2021, we have reached the following conclusions:

	Company A	Company B	Company C
DER	0.637	-0.503	-0.253
CR	-0.732	0.119	-0.370
FS	0.599	-0.179	-0.712
FA	0.683	0.025	0.527
CRisk	0.721	0.801	-0.299
CC	-0.763	-0.829	-0.429

Table 10. Coefficients of Correlation

In the analysis of the first independent variable, Leverage, there is a significant negative impact on financial performance. A strong negative correlation was shown for companies B and C (company B -0.503; company C -0.253).

Moreover, liquidity shows a negative impact on financial performance as demonstrated for companies A and C (Company A -0.732; Company C -0.370). Company B (0.119) shows a moderate positive correlation.

The independent variable firm size affects financial performance in both ways, which may be due to the large differences in the amount of assets of the companies, specifically Company A (0.599) shows a strong positive correlation due to the many times larger assets of the firm compared to Companies B and C.

Firm age shows a clear positive correlation, the longer a firm has been in the market, the more experience it has, which translates into an improvement in financial performance.

The independent variable Credit Risk can have a positive or negative impact on financial performance, and the authors hypothesize that the impact of this variable on financial performance may depend on other financial factors that vary from company to company.

Finally, Cost of Capital clearly shows a strong negative correlation with financial performance for each company A (-0.763), B (-0.829), C (-0.429).

In conclusion, the study has shown a significant effect of all the selected variables on the financial performance of the sample companies. However, the authors' assumption based on Table 5 that all factors would have a positive impact was not confirmed. The results showed that only Firm Age has a clear positive impact, which proves that companies operating in the market longer have more experience and information, which is reflected in the financial performance. Cost of Capital showed a clear negative impact, which was expected since costs generally negatively affect financial performance. Leverage, Liquidity, Firm Size and Credit Risk do not show a clear positive or negative impact on financial performance. This ambiguous effect for the factors may be due to size differences among the companies studied.

In conclusion, the authors confirm their statement that the key factors influencing the financial performance of companies include, credit risk, cost of capital, leverage and liquidity.

# 6 Limitations and recommendation

The authors are aware that the study they have conducted has its limitations. The sample they use is limited by the number of companies listed on the Slovak stock exchange. They use only six independent variables that have an impact on the financial performance of the firm. In the study, they analyse a short period that does not reflect the overall condition of the selected companies, namely the period 2010-2021 and there is a difference in size between the companies studied.

These limitations can serve as a basis to extend the issue under study to a larger market, a larger number of independent variables, which affect financial performance, and consider a longer time period to provide a more comprehensive view of the state of the companies studied.

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