THE CORRELATION BETWEEN FINANCIAL PERFORMANCE AND THE RISKS ASSUMED BY COMPANIES

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Abstract

The present study is based on an empirical research conducted for 17 Romanian companies listed on the Bucharest Stock Exchange in different fields of activity for the period between 2015-2017 in order to verify the existing relationships between the economic and financial performance and the risks at the level of selected companies. Companies have been selected from several sectors of activity, including oil extraction, the aeronautics industry, aluminum metallurgy and oil industry to observe the impact of risk indicators on performance in different areas.

The theme of the influence of risks on the economic and financial performances recorded in the companies has always been a highly debated subject in the literature, especially from the perspective of management and current and potential investors who base their decisions on capital and future financial investments depending on the financial performance and the high level of risk.

Keywords: *financial performance, risks, linear regression model, Bucharest Stock Exchange, ROA, ROE, ROS, financial leverage*

1. INTRODUCTION

The progress and sustainable development of a company has connotations in terms of ensuring a strong financial performance from the management of the companies as well as from the assumed risks, there is an inversely proportional relationship, so the efficiency and effectiveness is higher as the effects of risks are lower and vice versa. So ensuring and strengthening the position held on the company market is the main objective at the management level.

The analysis of the risks in relation to the performance registered by the companies has become a necessity to highlight the correct image of their good financial management, concretized by fulfilling the proposed objectives and knowing the competitive environment so that the company performs in a sustainable market economy

The analysis of a company over the years and the way this can perform in a competitive environment has become a constant problem of a company, so greater attention is needed to analyze performance and risks as a component needed for management. In this way, stakeholders find the answer to the question: “Does the performance achieved compensate for the risks assumed?”.

Thus, this article aims to identify the correlations between the financial performance indicators and the risk indicators, which are applied to the 17 selected companies listed on the Bucharest Stock Exchange during the period 2015-2017. The correlations were calculated on the basis of econometric modeling and the indicators chosen for analysis are: turnover, turnover index, operating result, net result, return on assets, return on sales and return on equity, earnings per share.

Therefore, the assumptions on which this research is based arise from the existing relationships between rentability and risk indicators for selected firms within the article.

H_1: There is a direct and significant correlation between the operating leverage and the economic and financial performance indicators (return on assets, return on sales, return on equity, turnover, turnover index).

H_2: There is a direct and strong link between the financial leverage and economic and financial performance indicators (return on equity, net result, earnings per share.

The hypotheses outlined above are verified and analyzed on the basis of a survey of 17 companies listed on the Bucharest Stock Exchange.

1.1. Materials

The term performance is difficult to define because of its multidimensional character, being an objective of major importance for the management of companies worldwide, and this can sometimes be viewed from the subjective or objective perspective of the people involved. In other words, performance can be analyzed according to the target group: company management is interested in their overall performance, investors assess performance based on investments, banking institutions pay more attention to liquidity issues, and last but not least employees who rank a firm as being performed on the basis of job security. So, the performance concept is based on the positive result of an action.

A definition in this sense is highlighted by Colasse, according to which performance can be assessed by the following terms: profitability, productivity, yield, competitiveness (Colasse, 2008, p. 23).

On the one hand, the performance level can be measured on the basis of efficiency and effectiveness terms that are analyzed using financial indicators. At the same time, companies are investigating the present risks or any disturbing factor that influences negatively the activity and can affect the financial result.

On the other hand, the concept of performance is defined according to the relationships established between the company and the parties involved. According to the authors M. Achim and S. Borlea, a company is performing when it is capable of creating added value for shareholders, satisfying consumer requirements and the needs of the staff employed and also protecting the environment (Achim, MV, Borlea, SN, 2012).

In conclusion, performance over time has been measured against several criteria. Thus, for the first time, the performance was evaluated on the basis of the company's turnover, then the analysis was based on the profit after the decrease of the expenses. Later, the performance was based on the level of liquidity and the way the company manages to create value for shareholders. And nowadays, an increasing importance is given to the concept of corporate responsibility and sustainable development by assessing the company's relationship with the employees, protecting the environment and meeting the needs of the local community.

Another common term in the literature that is closely related to financial performance is the risk. The risk is of interest both to the management of companies and to investors being evaluated in terms of recorded performance. On the one hand, according to Cârciumaru (2013), the exploitation risk can be "any event adversely affecting the operational activity, no matter where it occurred, the quantity and type of damage ". On the other hand, the financial risk refers to "the variability of the equity efficiency ratio due to the degree of indebtedness" (P. Brezeanu, 2003).

The topic debated in this article, which refers to the existing relationships between financial performance and risks and how it is influenced by the risk factors present at the level of the companies, has been discussed extensively in the literature. Thus, in the following, we recall some articles by various authors, such as:

In the article titled The Correlation between the Return on Assets and the Measures of Financial Balance for Romanian Companies, the authors M. Siminica & all have verified the degree of correlation between asset returns and financial equilibrium measures. In this case, the article hypothesis was how performance indicators are influenced by financial indicators. The study was conducted for 40 Romanian companies listed on the Bucharest Stock Exchange for the period of 2007-2010. This timeframe has been selected because in 2007-2008 Romania registered economic growth and then in the years 2009-2010 emerged the effects of the global economic crisis. The analysis of the study revealed that the economic crisis influenced the decline in company profitability. At the same time, financial indicators such as profit margins, profitability rates have been affected by the economic crisis, but liquidity and solvability rates have not been affected.

Another article addressing the issue of the correlation between financial performance and company-related risks is "The relationship between financial leverage and financial performance: Evidence from the fuel and energy sector in Pakistan" for a sample of 20 companies with limited liability listed on the Stock Exchange from Karachi (KSE). The outcome of the analysis highlighted a positive relationship between financial performance, which was also dependent on financial leverage, the independent variable (Akhtar et al., 2012).

In the paper entitled "Effect of Financial Leverage on Corporate Performance for Selected Companies in Nigeria", the influence of financial leverage on selected corporate performance indicators was investigated. Thus, it has been demonstrated that financial leverage significantly influences corporate performance in Nigeria. It was also analyzed the impact of the leverage on net assets per share and earnings per share for the sample chosen. The results showed that the ratio of debt to equity has a significant impact on the performance of the company, especially when net assets per share are considered as a measure of corporate performance measurement (Akinmulegun Sunday Ojo, 2012).

Also, another study on the relationship between financial leverage and its influence on financial performance has been conducted for 20 chemical companies listed on the Pakistan Stock Exchange for the period 2006-2013. The result of the analysis revealed a relationship of dependence between financial performance and financial leverage (Ali et al., 2014).

The authors Mule and Mukras (2015) analyzed the correlations between the financial leverage and the financial performance of Kenya listed companies for the time period between 2007-2011. They have shown that financial leverage significantly and negatively affects the financial performance of listed companies.

1.2. Methods

In this paper an empirical research on the relationship between financial performance and risks for a sample of 17 companies listed on the Bucharest Stock Exchange for the time interval between 2015-2017 is carried out.

1.2.1. Indicators of economic and financial performance

In order to calculate the economic and financial performance of the companies listed on the Bucharest Stock Exchange, the following indicators were selected:

The turnover expresses the total revenue earned by a firm as a result of the business within a set period of time.

Turnover Index $I_{CA} = \frac{CA_1}{CA_0} x100$*(1)*

The turnover index shows the increase or decrease of turnover in the current year compared to a previous time interval.

*Return on Assets (ROA) = Operating profit / Total Assets *100 (2)*

The return on assets is one of the main indicators of profitability and measures asset efficiency in terms of profit.

*Return on equity (ROE) = Net profit / Equity *100 (3)*

The rate of return on equity is used to assess the performance of a firm; shareholders are directly interested in this rate as this indicator shows the degree of efficiency of using the invested capital and the profit they have obtained for the investments made. This indicator was influenced by the policies applied in companies, namely payment, commercial, financial, and financial investment strategies, and not least, corporate income tax.

*Return on sales (ROS) = Operating profit / Turnover * 100 (4)*

The rate of return on sales measures marketing efficiency based on marketing campaigns to attract new customers through the products offered and the pricing policy adopted by the company. Also, the field of activity, the economic and the competitive environment have an influence on this indicator.

Thus, the ROS indicator highlights how to manage production costs by reducing them without compromising product quality, sales structure based on studies conducted to investigate demand trends over the next period, and sales prices to cover production costs, but they have to take into account the prices on the market for the other competitors.

Net profit is one of the most important synthetic indicators to assess the efficiency of economic activity and is calculated as the difference between gross profit and tax on profit.

Operating profit is the profit or loss attributable to the carrying on of the production activity and is calculated as the difference between operating income and operating expenses. This indicator is used to measure the economic profitability of the firm and is not influenced by the financial policy pursued and the occurrence of some exceptional elements, being used to compare the performance of companies with different financial policies.

Earnings per Share express the earnings per share reported over a period of time that is paid partially or totally by company in the form of dividends or can be reinvested. This indicator is mostly used by investors to measure the performance of a business they want to invest or have already invested in, and is also used in benchmarking between companies belonging to the same industries over a selected range of time.

The earnings per share is calculated as the ratio of the total net profit to the average number of shares in circulation at that time.

1.2.2. Risk Measurement Indicators

$$\textit{Operating risk (CLE)} = \frac{\frac{\Delta Re}{Re}}{\frac{\Delta CA}{CA}} \quad (5)$$

where, Re – operating result;

ΔRe – the absolute variation of the operating result;

ΔCA – the absolute variation in turnover;

The operating risk (CLE), economic risk assessment indicator, is the degree of sensitivity of operating result to sales variations. This indicator can be calculated both on the physical volume of sales and on the turnover as the result of the operation results from the sale of the output.

$$\textit{Financial risk CLF} = \frac{\frac{\Delta Pn}{Pn0}}{\frac{\Delta Pe}{Pe0}} \quad (6)$$

Besides the economic risk, there is also the financial risk due to the loans made by the companies and which have an impact on the profitability of the company. Financial risk is the degree of sensitivity of the net result to changes in operating result and is calculated using the leverage ratio (CLF). This indicator is of particular importance to shareholders, employees and owners because the net result affects dividends per share and self-financing of the company.

1.2.3. Methodology

The present research study analyzes the correlations between the economic and financial performance indicators and the risk indicators of the 17 companies listed on the Bucharest Stock Exchange and belonging to the four fields of activity: aluminum metallurgy, oil extraction, aeronautics and petroleum industries for the period of 2015-2017.

Thus, it appears that there are two types of analyzes in this paper: retrospective and quantitative.

The indicators selected to evaluate financial performance and measure the economic and financial risks are as follows: turnover (CA), turnover index (Ica), operating profit (Pe), net profit (Pn), earnings per share (EPS), return on assets (ROA), return on equity (ROE), return on sales (ROS) and risk indicators: the operating leverage ratio for economic risk and the financial leverage ratio for financial risk.

From the bvb.ro site, we downloaded the balance sheet and the profit and loss account for the 17 companies, where we calculated the indicators mentioned above for the period 2015-2017.

To analyze the correlation between profitability and risk we used the Pearson correlation coefficient calculated with SPSS program, the analysis being continued with a simple linear regression model.

The regression model was validated only after it was tested using the F-test and the ANOVA test generated by the out-of-SPSS window.

2. RESULTS

This case study examines the hypotheses stated at the beginning of the article that underpin this research. Thus, after the data collection and processing phase, they were imported into the SPSS statistical program and with the correlation function we tracked the type of correlation between the performance indicators and the level of the operating and financial leverage coefficients.

The level of correlation between indicators is reflected in the following table:

Correlations

		CLE	ROA	ROE	ROS	CA	Ica	Pe	Pn
Pearson Correlation	CLE	1.000	-.387	.088	-.518	.008	-.058	-.040	-.071
	ROA	-.387	1.000	-.762	.430	.020	.400	.152	.161
	ROE	.088	-.762	1.000	-.089	.061	-.219	-.007	-.020
	ROS	-.518	.430	-.089	1.000	.108	.351	.103	.106
	CA	.008	.020	.061	.108	1.000	-.004	.423	.481
	Ica	-.058	.400	-.219	.351	-.004	1.000	.131	.154
	Pe	-.040	.152	-.007	.103	.423	.131	1.000	.987
	Pn	-.071	.161	-.020	.106	.481	.154	.987	1.000
Sig. (1-tailed)	CLE	.	.003	.271	.000	.478	.343	.389	.311
	ROA	.003	.	.000	.001	.445	.002	.144	.129
	ROE	.271	.000	.	.267	.335	.061	.479	.446
	ROS	.000	.001	.267	.	.225	.006	.236	.229
	CA	.478	.445	.335	.225	.	.490	.001	.000
	Ica	.343	.002	.061	.006	.490	.	.179	.140
	Pe	.389	.144	.479	.236	.001	.179	.	.000
	Pn	.311	.129	.446	.229	.000	.140	.000	.
N	CLE	51	51	51	51	51	51	51	51
	ROA	51	51	51	51	51	51	51	51
	ROE	51	51	51	51	51	51	51	51
	ROS	51	51	51	51	51	51	51	51
	CA	51	51	51	51	51	51	51	51

	Ica	51	51	51	51	51	51	51	51
	Pe	51	51	51	51	51	51	51	51
	Pn	51	51	51	51	51	51	51	51

Table 1. Level of correlation between performance indicators and operating leverage ratio

Source: Own authorship processing with SPSS

Table no.1 shows a direct and significant correlation between the operating leverage coefficient, the operating risk measurement indicator and the performance indicators: the rate of return on assets, the rate of return on sales.

We have also developed a simple linear regression model having the operating leverage coefficient (CLE) as dependent variable and rate of return on assets (ROA), rate of return on equity (ROE), rate of return on sales (ROS), net result, operating result, turnover (CA) and turnover index (Ica) as independent variables.

In order for the regression model to be significant, we performed a series of tests, one of which was even the summary model, reflected in the following table:

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.670[a]	.449	.359	48.3690941	.449	4.998	7	43	.000	2.103

a. Predictors: (Constant), Pn, ROE, ROS, Ica, CA, ROA, Pe

b. Dependent Variable: CLE

Table 2. Summary Model

Source: Own authorship processing with SPSS

In the summary model, it can be observed that the significance level R reaches a satisfactory level, assuming that the regression equation model has an important significance. Thus, the closer R approaches the value 1, the more significant the correlation is.

To validate the regression we performed the ANOVA test, where the variable F has an important significance. The ANOVA test is reflected in the following table:

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	81850.234	7	11692.891	4.998	.000[a]
	Residual	100601.478	43	2339.569		
	Total	182451.713	50			

a. Predictors: (Constant), Pn, ROE, ROS, Ica, CA, ROA, Pe

b. Dependent Variable: CLE

Table 3. ANOVA Test

Source: Own authorship processing with SPSS

It can be seen from the previous table that there are direct and significant correlations between the indicators selected for analysis, the sig coefficient being a significant one.

Thus, it is found out that hypothesis H_1 is valid as it indicates the existence of a direct and significant link between the economic-financial performance indicators (rate of return on sales, rate of return on assets) and operating leverage coefficient.

Correlations

		CLF	ROE	EPS	Pn
Pearson Correlation	CLF	1.000	-.016	.029	-.005
	ROE	-.016	1.000	-.068	-.020
	EPS	.029	-.068	1.000	.151
	Pn	-.005	-.020	.151	1.000
Sig. (1-tailed)	CLF	.	.454	.421	.487
	ROE	.454	.	.318	.446
	EPS	.421	.318	.	.146
	Pn	.487	.446	.146	.
N	CLF	51	51	51	51
	ROE	51	51	51	51
	EPS	51	51	51	51
	Pn	51	51	51	51

Table 4. The level of correlation between performance indicators and financial leverage

Source: Own authorship processing with SPSS

From Table no. 4, it can be noticed that the direct relationships between the financial leverage ratio and the selected financial performance indicators: return on equity (ROE), earnings per share (EPS) and net profit are weak significant.

Therefore, hypothesis H_2 does not validate at all, resulting in the correlation between the selected indicators being weak and insignificant.

3. CONCLUSIONS

In this research paper, we verified the relationships between risk and financial performance indicators basis on 17 companies listed on the Bucharest Stock Exchange belonging to different sectors of activity. Thus, using the Pearson index calculated with SPSS, we determined the correlation and its intensity between the selected indicators: turnover, the turnover index, the operating profit, the net profit, return on assets, return on equity, return on sales, earnings per share and risk coefficients.

A simple linear regression model was performed for the hypotheses consisting of CLE as dependent variable and financial performance indicators as independent variables. Another dependent variable was financial leverage and return on equity, net profit, earnings per share as independent variables.

Thus, the hypothesis H_1showed a strong and direct link between the financial performance indicators (rate of return on sales, rate of return on assets) and operating leverage coefficient.

The hypothesis H_2 is not validate because it is found out insignificant relationships between financial performance indicators (earnings per share, rate of return on equity, net profit) and financial leverage.

REFERENCES

1. Achim, M.V., Borlea, S.N. (2012), „Analiza financiară a entităţii economice", Cluj, *Risoprint*;
2. Colasse B.,(2008), „L'analyse financiere de l' enterprise", *La Decouverte*, Paris;
3. Akhtar, Shehla, Javed, Benish, Maryam, Atiya, & Sadia, Haleema. (2012), „Relationship between financial leverage and financial performance: Evidence from fuel & energy sector of Pakistan", *European Journal of Business and Management*, vol 4 no11, pp.7-17.
4. Ali, Mohammad. (2014) „Relationship between Financial Leverage and Financial Performance" (Evidence of Listed Chemical Companies of Pakistan).
5. Brezeanu, P., Boștinaru, A., Prăjișteanu, B. (2003), „Diagnostic financiar: instrumente de analiză financiară", București, *Editura Economică*, pp.413;
6. Bușe, L., Siminică, M., Cîrciumaru, D., Marcu, N. (2007), „Analiza economico-financiară a firmei", Craiova, *Editura Sitech*, pp. 108;
7. Cîrciumaru, D. (2013), „Analiza riscului firmei", Craiova, *Editura Universitaria*, pg.26;
8. Mule, Robert Kisavi, & Mukras, Mohamed Suleiman. (2015), "Financial leverage and performance of listed firms in a frontier market: Panel evidence from Kenya", *European Scientific Journal*, vol 11 no7.
9. Niculescu, M. (2003) „Diagnosticul global strategic", București, *Editura Economică*;
10. Ojo, A. S. (2012), „The Effect of Financial Leverage on Corporate Performance of Some Selected Companies in Nigeria/effet de levier financier sur les resultats de certaines entreprises collaborees, selectionnes au nigeria", *Canadian Social Science* vol 8 no1, pp.85-91.
11. Siminica, M., Cîrciumaru, D., Simion, D. (2012), " The Correlation between the Return on Assets and the Measures of Financial Balance for Romanian Companies", *International Journal of Mathematical Models and Methods in Applied Sciences*, vol.6, pp.249-256;