The Correlation Between Financial Profitability And Stock Market Performance Of Companies Listed On The Bucharest Stock Exchange

PREDA BUZGURESCU Olimpia Livia[1], NEGRU BONESCU Elena[2]

[1] University of Craiova (ROMANIA)
[2] University of Craiova (ROMANIA)
E-mails: livia.preda@gmail.com, elena.bonescu@gmail.com

Abstract

This paper highlights the correlation between financial profitability and the performance of the stock market of the companies listed on the Bucharest Stock Exchange.

The sample consists of 30 Romanian companies from different fields of activity to compare the profitability with the financial structure to highlight the change in the market value of the shares.

For highlighting the profitability of the companies, we used the economic rate of return on assets, the rate of financial return and the rate of return on sales, and measuring the stock market performance the market capitalization and the price earning ratio. This subject is very important for all investors in the capital market, regardless of the area of activity of the companies, because the financial profitability and the performance of the stock market are relevant indicators for financial investments.

Keywords: performance, Romanian companies, Bucharest Stock Exchange, linear regression, net income, ROA, ROE, ROS, PER, market capitalization

1. Introduction

The presented article highlights the interdependence relationship between financial profitability and the stock market performance of the companies listed on the Bucharest Stock Exchange. The financial analysis was performed for the period between 2015-2018 and the indicators selected for the calculation of the linear regression for the 30 companies from different fields of activity are: the rate of return on assets (ROA), the rate of return on sales (ROS), the rate of return on equity (ROE), stock market capitalization (MC) and price earning ratio (PER).

Thus, using the econometric modeling, we will be able to answer the questions of the type: Is the stock exchange influenced by profitability? Which sector of activity is most strongly influenced by the evolution of the stock exchange rate?

This paper is composed of four parts, which contain definitions regarding the concepts and terms used to perform the correlation between the level of financial indicators and the evolution of the stock exchange rate, a review of the specialized literature, the research methodology used, the case study performed on the sample of companies selected and not least the findings obtained based on the econometric modeling of the presented correlation.

To establish the hypotheses we started from the premise that the evolution of the stock exchange rate is influenced both by profitability, viewed as a rational factor as well as by external factors specific to the environment in which the companies operate.

The hypotheses considered in the present case study for the 30 companies listed on the Bucharest Stock Exchange are the following:

- H_1: There is a direct and strong correlation between the profitability indicators and market capitalization.
- H_2: There is a direct and significant link between the profitability indicators and price earning ratio.
- In the realized study, all the hypotheses listed above will be analyzed and verified.

2. The current state of knowledge

To demonstrate the relationship of interdependence between the financial profitability of a company and the stock market performance at the end of the year, we must start by defining the concepts of financial profitability and performance.

[1] At the level of a company, the concept of financial performance is reflected in profitability. Thus, the management of the companies must consider reducing the potential negative effects on the financial results to increase the interest of the investors.

[2][3] This is directly related to the concepts of efficiency and effectiveness. Efficiency is the ratio between the effort of a company and the result of this effort or rather how the values of assets and equity are used, taking into account the fundamentals of the economy.

Another definition of efficiency is stated by the author [4]: "some authors consider that an activity is efficient when it achieves its desired goal with minimal effort".

[5] Accordingly, the word "performance" can be defined as a "suitcase word," according to Bourguignon, "in which each one makes available the concepts that correspond to it, allowing the context to take care of the definition." Thus, performance has an interdisciplinary character and many definitions depending on the context; ambiguities may appear instead of generating added value for the investors involved.

Another pertinent point of view is that rates of return influence several variables, as they are an essential criterion for survival, growth, market capitalization, and other variables.

[6] The economic rate of return on assets indicator (ROA) measures the efficiency of the company in the use of assets, so the higher the value of the ROA indicator, the better the company performs.

[7] Another representative indicator for evaluating the efficiency of a company in generating profit in a certain time frame is the rate of financial return (ROE).

Also, the profitability of a company is one of the reasons why investors are attracted to invest in a company [8]. Therefore, it is important to know how the ROE indicator affects stock price performance.

[9] Investors use the price earning ratio indicator (PER) to calculate how many times the value of the gain is found in the price of a share.

According to several authors, stock market prices are influenced by changes in profitability rates and dividends [10][11][12][13][14].

Regarding the market capitalization (MC), the degree of size and its growth rate has a major impact on the growth and development of the economy [15]. Thus, this is an important indicator of the value of the shares and implicitly of the company in general [16].

The theme of the correlation between financial profitability and stock market performance has been analyzed by other authors in various articles, such as:

In the article entitled **The Impact of Economic and Financial Performance on Stock Exchange Performance of Manufacturing Companies listed on The BVB**, [17] started from the premise that the economic and financial performance influences the market value. There were selected for analysis 15 important Romanian companies from the manufacturing industry for the period of time 2012-2016. For the analysis of the economic and financial performance were selected the turnover, the operating profit, the net profit, the economic rate of return of the assets, the rate of financial return and the rate of return on sales, while the stock market performance was measured by the number of shares issued on the capital market, the trading value of closing stock, the capitalized value, the value added by the market, the profit-to-earnings ratio (PER), the stock value index and the capitalization index. Thus, following the analysis, it was shown that there were significant correlations between capitalization and performance indicators, the level of the capitalized value of the company decreased with the economic and financial performance indicators.

Another study titled **Market Capitalization and Financial Variables: Evidence from Italian Listed Companies** [18] analyzed 307 companies listed on the Italian Stock Exchange over a period of 10 years (2008-2017). This study was conducted to evaluate the impact of financial indicators on stock market capitalization. Six indicators were analyzed: ROE, ROA, PER, Operating Income / Turnover per share, Earnings Yield and Working Capital per Share, these representing the independent variables, and the dependent variable was the market capitalization. The results of the research were: there was a positive relationship between stock market capitalization and PER, Operating income / Turnover per share and Working Capital per Share; a negative relationship between market capitalization and ROE, ROA, Earnings Yield was highlighted.

Another relevant article is **An Empirical Study on the Effect of Profitability Ratios & Market Value Ratios on Market Capitalization of Commercial Banks in Jordan** [19]. This paper investigated the impact of profitability rates and market value rates on stock market capitalization for commercial banks listed on the Jordan Stock Exchange for the period of time 2010-2016. The independent variables chosen to measure profitability were ROA, ROE, and the dependent variables were EPS, PER, Dividend Payout Ratio. It turned out that the ROE and dividend payment rate was influencing market capitalization.

In the article named **The Effect of Profitability Ratios on Market Capitalization in Jordanian Insurance Companies Listed in Amman Stock Exchange** [20] was analyzed the impact of the rates of return on the market capitalization for 25 insurance companies listed on the Amman Stock Exchange for the period of time 2010-2013. The results of the research are the following: there was an impact of the return on investment (ROI) on the market

capitalization for the companies operating in the insurance sector listed in the ESA; there was no relation of the ROE on the market capitalization for the companies operating in the insurance sector listed in the ESA; there was an impact of ROA on the market capitalization of the companies; there was an effect of the profitability measured by (ROA, ROI, ROE) combined in the market capitalization for the selected companies.

The study [21] was conducted to evaluate the impact of profitability rates and market value on stock market capitalization for 23 companies in India listed with the CNX infrastructure index. The results were as follows: there was a significant relationship between stock market capitalization and profitability rates; there was a direct relationship between ROCE, ROE, EPS, and stock market capitalization.

The article **The Impact of Financial Indicators towards Stock Returns of Finance Companies Listed on Bursa Malaysia** [22] analyzed the relationship between EPS growth, ROE, and DPS (Dividend per Share) and stock returns. The sample consists of 31 companies listed on the Malaysian Stock Exchange for the years 2011-2016. The result of the research was that: 5 companies showed a significant link between EPS growth and stock returns; another five companies showed a direct relationship between ROE growth and stock returns. The other six companies showed a significant relationship between DPS growth and stock returns.

In the article named **Effect of Financial Performance Indicators on Market Price of Shares in Commercial Banks of Kenya** [23], it was analyzed whether the financial performance indicators (total assets, net advances, total liabilities, deposits and profit before tax) exert an influence on the market price of shares in the case of listed banks in Kenya for the period 2004-2011. The study showed that a single financial indicator was not enough to affect the market price of the shares. Secondly, it was found that the key financial indicators had a significant influence on the market price of the shares.

The paper **Exploring the Relationship between Financial Ratios and Market Stock Returns** [24] analyzed the relationship between financial indicators and stock market profitability for 26 companies listed on the Qatar stock exchange for the period 2009-2015. Thus, it was found that earnings per share, earnings yield ratio, and dividend yield had a positive and significant relationship with stock market profitability, while market to book value ratio, return on assets, return on equity, price to earnings ratio, dividends earnings ratio and net profit margin did not influence stock market performance.

3. Methodology

In this paper, 30 companies listed on the Bucharest Stock Exchange with different fields of activity were selected in order to calculate the simple linear regression taking into account the following indicators:

- *Return on Assets (ROA) = Operating profit / Total Assets (1)*
- *Return on Equity (ROE) = Net Income / Shareholder Equity (2)*
- *Return on sales (ROS) = Operating profit / Turnover (3)*
- *Market Capitalization (MC) = Total Number of Oustanding Share x Current Market Price (4)*

- *Price Earning Ratio = Price per Share / Earnings per Share (5)*

The case study performed for the present research paper is based on both the retrospective analysis because the indicators were calculated over a well-defined time period, respectively, the interval between the years 2015-2018 and the quantitative type analysis due to the processing of the indicators.

Another method of comparison is benchmarking, which helps to make direct comparisons between companies that have different sectors of activity in order to identify the sources of competitive advantage. In this paper, one can identify the degree of comparison of performance by comparing one's own performance (financial and stock market performance) with that of direct competitors in the same field of activity.

The correlation between financial profitability and stock market performance applies to 30 companies that are part of eight important industries of the Romanian economy such as: aluminum metallurgy, oil extraction, aeronautical industry, oil industry, pharmaceutical industry, auto parts manufacturing industry, the energy industry, and food industry. At each company level, the following indicators were calculated: economic rate of return on assets (ROA), rate of return on equity (ROE), rate of return on sales (ROS) and the indicators of stock market capitalization and price earning ratio at the end of each year.

To calculate the indicators mentioned above, for the time period between 2015-2018, for all selected companies, the data were taken from the financial statements published on the website [25].

In order to analyze the correlation between financial profitability and the evolution of market capitalization, the SPSS program was used to calculate the Pearson correlation index based on which we performed a simple linear regression model.

The validation of the regression model was performed after the F-test and the ANOVA test generated by the output window of the SPSS program.

4. Case study

The objective of the present research paper is to track the degree of influence of the financial indicators on the performance of the stock market in the case of the companies selected for the analysis for the eight domains of activity during the years 2015-2018.

30 Romanian companies listed on the Bucharest Stock Exchange were taken into account for the present analysis, which is part of the following sectors of activity: aluminum metallurgy (TMK Artrom, Alro SA, Alum Tulcea, Alumil Rom Industry), oil extraction (Rompetrol Well Services, Dafora, Craiova Drilling Company, Videle Drilling Company), aeronautical industry (Romaero București, IAR SA Brașov, Aerostar SA, Turbomecanica), pharmaceutical industry (Zentiva SA, Biofarm SA, Sintofarm Buc, Antibiotice SA, Farmaceutica Remedia, Ropharma SA), auto parts manufacturing industry (Compa SA, Uamt SA, Altur SA, Autonova SA Satu Mare), oil industry (Rompetrol Refinery, Romgaz SA, Omv Petrom SA, Transgaz SA), energy industry (Transelectrica, Nuclearelectrica) and the food industry (Bucovina SA Scheia, Lactate Natura SA Targoviste).

First of all, the case study contains an analysis of the dynamics of the financial performance/stock market performance indicators, followed by the verification of the research hypotheses mentioned in the first part of the paper. Thus, after processing the data from the website www.bvb.ro, using the SPSS program, we analyzed the type of correlation between financial profitability and stock market performance by market capitalization and the corresponding coefficient.

In the first analyzed year (2015), the company in the aluminum metallurgy industry that had the highest net profit was Alum Tulcea. The smallest profit was registered in 2015 by Alro (-24.03 million lei). Regarding the year 2016, the Alro SA company had the highest net profit in the amount of 67.22 million lei, and in 2017 it registered a profit of 317.68 million lei, in this case noting a great evolution, while maintaining a considerable difference compared to other competitors due to the efficiency of using both financial resources and capital invested. In 2018, we could say that Alro SA consolidated its position, having for the third consecutive year the highest net profit in the related activity sector (225.95 million lei). Regarding the company Alum Tulcea, in 2016 the net profit decreased dramatically, from 6.37 million lei to -16.63 million lei, a fact also reflected in the rates of economic, financial and resources consumed, showing thus the inefficiency of the use of the invested capital and the increase of the debt in relation to the own financial resources. In the coming years, there was a noticeable increase in net profit. Thus, in 2017 the profit was 13.42 million lei, and in 2018 it was 54.13 million lei, observing the decrease of the degree of indebtedness and the good management of the company that applied correct policies at its level.

Another company in the field of aluminum metallurgy that registered a big increase in the net profit during the four years analyzed was TMK Artrom, which in 2018 reached a net profit of 56.56 million from 2.49 million lei in the year 2015, which means good management of assets and capital invested.

In this sector, in the last two years analyzed, the company Alumil Rom Industry recorded the lowest net profit. Thus, in 2017 it had a profit of 12.64 million lei, reaching in 2018 to 535 thousand lei, observing an enormous decrease due to the high degree of investments and implicitly the debt ratio. Regarding the stock exchange performance, we could state that the investors had expressed their interest in the Alro SA company.

In the oil extraction industry, in 2015, the Dafora firm recorded the highest loss (-100.65 million lei), in comparison to Craiova Drilling Company, which had the highest profit of 8.66 million, these data is found in the rates of return. In 2016, the biggest profit was registered by the company Videle Drilling company of 8.32 million lei, and in the last place was Dafora company with a loss of -107.21 million lei. The following year, the Dafora company registered a sudden increase of the profit in the amount of 253.95 million lei, due to the efficient use of the invested capital and the application of coherent policies at the management level. In 2018, it had a negative profit of -6.29 million lei, probably due to the massive investments, and the highest profit was registered by Rompetrol Well Services of 16.88 million lei. This company had an increasing evolution from a negative profit of -29.62 million lei in 2015 to a positive one in 2018, due to the decrease of the indebtedness degree for investments. The Craiova and Videle Drilling Companies had a profit in 2018 of around 9 million lei.

Dafora company had the lowest market value in this area during the analyzed period, and the best-listed companies were Rompetrol Well Services and Craiova Drilling Company.

Regarding the situation of financial indicators in the aeronautical industry, we could declare that the most profitable company in the period of time 2015-2018 was Aerostar, having in 2015 a profit of 52.26 million lei and reaching a profit of 79.92 million lei in 2018. In this case, one can observe the gradual increase in profit due to good management at the company level. On the other hand, Romaero company recorded the lowest profit in all the analyzed time period, having in 2018 a loss of -35.30 million lei due to bad management. A positive and increasing evolution of the net profit is also noted in the companies IAR SA Brasov (2018 - 31.18 million lei) and Turbomecanica (2018 - 24.84 million lei).

In conjunction with the financial indicators, the stock market indicators place the company Aerostar SA as the most valuable company in the related sector in all the years analyzed. The Turbomecanica company is less attractive to investors.

In the pharmaceutical industry, in 2015, the Zentiva firm had the highest profit amounting to 46.20 million lei. The following places were classified Biofarm firm (27. 22 million lei) and Antibiotice SA (27.17 million lei), noting a very small difference between the two companies in terms of profit. The smallest profit was recorded by the Sintofarm company in 2015. In the following years, the Zentiva company maintained its position of leader in the group and increased its profit until 2018 almost 6 times, being worth 262.62 million lei. This shows the efficient use of financial resources. Also, the Sintofarm firm had a downward evolution of the net profit, and in 2017 and 2018 presented losses in the value of -538 thousand lei in 2017, respectively -1.36 million lei, due to the investments made in the modernization of the technical equipment. In 2018, Biofarm company had a profit of 38.42 million lei and Antibiotice company registered a profit of 34.30 million lei. In the case of these two companies, the evolutionary trend recorded during the analyzed period is highlighted.

In the period of time 2015-2018, Zentiva company had been noted as the most attractive for investors, and in the last year, its market share reached 21.671. The worst market share was recorded by Sintofarm in four years.

Regarding the auto parts manufacturing industry, the company that was the most profitable in all the years analyzed was Compa SA. In 2015, it registered a net profit of 27.13 million lei, and in 2018 it was 35, 42 million lei. Other companies less profitable from the point of view of shareholders were Uamt SA, which had a profit of 1.97 million lei in 2018 and Auonova SA, with a registered profit of 1.58 million lei. Altur company had the biggest loss as follows: in 2015, it was -2.89 million lei, and in 2018 it was -830 thousand lei, which means good management of the resources in investments and gradually the indebtedness decrease of the company. Compa SA was the most attractive for investors, while Autonova SA Satu Mare had the lowest interest for them.

Another area of activity selected as relevant for our case study is the oil industry. In the period of time 2015-2016, the state company Romgaz SA was the most profitable, having in the first year analyzed a profit of 1.19 billion lei, and in the following year, it decreased slightly (1.02 billion lei). Unlike Romgaz, OMV Petrom has had a positive evolution in terms of net profit. Due to the investments made, in 2015 it registered a loss of -630 million lei, following

which it is possible to notice a big growth reaching in the years 2017-2018 the most profitable company for investors due to the coherent policies regarding the prices and the use of the capital employed by stakeholders, having a profit of 3.87 billion lei in 2018. The biggest loss in 2018 was registered by Rompetrol Refinery, which was -230 million lei. This company had a drastic involution between the years 2017-2018, the profit in 2017 is 418 million lei, fact justified either by major investments in equipment or by adopting incorrect policies at the management level. The Transgaz company has maintained a net profit of around 500 million lei in the four years.

In all the years analyzed, OMV Petrom had the highest market share. In this sector, we can notice market shares of over 21. Rompetrol Refinery had a lower share than the other companies (in 2018 – 21.469).

In the energy industry, the Transelectrica firm had the highest profit and also the highest market share in the period 2015-2016, while in the period 2017-2018, the Nuclearelectrica company became the most profitable for shareholders, as evidenced in increasing the market share over 21. In 2018 the profit was 410 million lei.

In the food industry, both companies recorded losses in the period 2015-2017. In 2018, the Bucovina SA Scheia company registered a profit of 102 thousand lei, which means the decrease of the degree of indebtedness and good management. The Lactate Natura SA Targoviste company also lost in 2018 (-1.26 million lei) due to not properly using the financial resources.

Between the years 2015-2017, the Lactate Natura SA Targoviste firm was more attractive for investors having a market share around 15, and in 2018 the higher market share was registered at Bucovina SA Scheia (15.029).

Of all the activity areas analyzed during the period 2015-2018, the most profitable and attractive sector in terms of investment and its recovery for the people who want to invest in the companies listed on the stock exchange is the oil one.

The level of correlation between financial performance and stock market performance indicators was calculated for the entire period analyzed and for each year.

Table 1. The correlation between the indicators for the period of time 2015-2018
Bayes Factor Inference on Pairwise Correlations[a]

		PER	ROA	ROE	ROS	Market capitalization
PER	Pearson Correlation	1	-,001	,031	,017	,070
	Bayes Factor		13,842	13,062	13,607	10,403
	N	120	120	120	120	120
ROA	Pearson Correlation	-,001	1	-,776	,943	,359
	Bayes Factor	13,842		,000	,000	,004
	N	120	120	120	120	120
ROE	Pearson Correlation	,031	-,776	1	-,708	,075
	Bayes Factor	13,062	,000		,000	9,934
	N	120	120	120	120	120
ROS	Pearson Correlation	,017	,943	-,708	1	,397
	Bayes Factor	13,607	,000	,000		,001
	N	120	120	120	120	120
Market capitalization	Pearson Correlation	,070	,359	,075	,397	1
	Bayes Factor	10,403	,004	9,934	,001	
	N	120	120	120	120	120

a. Bayes factor: Null versus alternative hypothesis.
Source: Own authorship processing with SPSS

From the table presented above, the following can be noted: there is a rather strong negative correlation between the economic rate of return on assets and the rate of financial return (-0.776), a significant link between the rate of return on sales and the rate of economic return on assets (0.943). Also, a significantly negative correlation exists between the rate of return on sales and that of financial return (-0.708). On the positive side, we can observe a moderately significant relationship between the rate of return on sales and market capitalization (0.397). This is also demonstrated by the 0.001 value of the Bayes factor.

Table 2. The correlation between the indicators for the year 2015
Bayes Factor Inference on Pairwise Correlations[a]

		ROA	ROE	ROS	Market capitalization	PER
ROA	Pearson Correlation	1	,453	,818	,345	,116
	Bayes Factor		,309	,000	1,258	5,884
	N	30	30	30	30	30
ROE	Pearson Correlation	,453	1	,367	,050	,060
	Bayes Factor	,309		,983	6,846	6,745
	N	30	30	30	30	30
ROS	Pearson Correlation	,818	,367	1	,318	,130
	Bayes Factor	,000	,983		1,647	5,618
	N	30	30	30	30	30
Market capitalization	Pearson Correlation	,345	,050	,318	1	,031
	Bayes Factor	1,258	6,846	1,647		6,988
	N	30	30	30	30	30
PER	Pearson Correlation	,116	,060	,130	,031	1
	Bayes Factor	5,884	6,745	5,618	6,988	
	N	30	30	30	30	30

a. Bayes factor: Null versus alternative hypothesis.
Source: Own authorship processing with SPSS

In the year 2015, it can be observed that there are no concrete correlations between the selected indicators, namely the financial indicators (financial return, return on assets and return on sales) and those on the performance of the capital market (price earning ratio, market capitalization). But, it can be noticed a significant correlation between the financial performance indicators, the economic rate of return on assets, and the rate of return on sales (0.818).

Table 3. The correlation between the indicators for the year 2016
Bayes Factor Inference on Pairwise Correlations[a]

		ROA	ROE	ROS	Market capitalization	PER
ROA	Pearson Correlation	1	-,098	,910	,862	,052
	Bayes Factor		6,201	,000	,000	6,824
	N	30	30	30	30	30
ROE	Pearson Correlation	-,098	1	-,085	-,237	-,014
	Bayes Factor	6,201		6,410	3,224	7,062
	N	30	30	30	30	30
ROS	Pearson Correlation	,910	-,085	1	,804	,070
	Bayes Factor	,000	6,410		,000	6,624
	N	30	30	30	30	30
Market capitalization	Pearson Correlation	,862	-,237	,804	1	,109
	Bayes Factor	,000	3,224	,000		6,008

	N	30	30	30	30	30
PER	Pearson Correlation	,052	-,014	,070	,109	1
	Bayes Factor	6,824	7,062	6,624	6,008	
	N	30	30	30	30	30

a. Bayes factor: Null versus alternative hypothesis.

Source: Own authorship processing with SPSS

In this case, we can state some significant interdependence relations between the following indicators, such as: the rate of return on assets (ROA) has an important influence on the stock market capitalization indicator, having a Pearson coefficient threshold of 0.862. Also, as in the previous year, there are relations of interdependence between the rate of economic return on assets and the rate of return on sales (0.910). An indicator of financial performance that influences stock market performance in a positive way, measured in this case by market capitalization, is the rate of return on sales. Thus, the Pearson coefficient has a value of 0.804. But between the other financial indicators and the PER indicator, there are no direct and significant relationships, the Pearson coefficient having the following values: 0.052 (ROA - PER), -0.014 (ROE - PER), 0.070 (ROS - PER).

Table 4. The correlation between the indicators for the year 2017
Bayes Factor Inference on Pairwise Correlations[a]

		ROA	ROE	ROS	Market capitalization	PER
ROA	Pearson Correlation	1	-,960	,977	-,060	-,126
	Bayes Factor		,000	,000	6,740	5,691
	N	30	30	30	30	30
ROE	Pearson Correlation	-,960	1	-,944	,208	,111
	Bayes Factor	,000		,000	3,867	5,982
	N	30	30	30	30	30
ROS	Pearson Correlation	,977	-,944	1	-,050	-,115
	Bayes Factor	,000	,000		6,844	5,910
	N	30	30	30	30	30
Market capitalization	Pearson Correlation	-,060	,208	-,050	1	,026
	Bayes Factor	6,740	3,867	6,844		7,016
	N	30	30	30	30	30
PER	Pearson Correlation	-,126	,111	-,115	,026	1
	Bayes Factor	5,691	5,982	5,910	7,016	
	N	30	30	30	30	30

a. Bayes factor: Null versus alternative hypothesis.

Source: Own authorship processing with SPSS

In this year, on the one hand, there are significant links between the financial performance indicators, ROA and ROS both positively, where the Pearson coefficient has the value 0.977, a value close to the significance threshold 1, and negatively for the ROS and ROE indicators (-0.944). On the other hand, we can distinguish the weakly significant correlations between financial performance and stock market indicators. Thus, between the financial return and the market capitalization, the Pearson coefficient is 0.208 and between ROE and PER, the Pearson coefficient is 0.111. Between the ROA and the stock market indicators, we can see weakly significant negative links: -0.060 (MC), -0.126 (PER).

In the case of the rate of return on sales, the Pearson coefficient for market capitalization is -0.050, and for PER it is -0.115. They denote the unsignificant links in a negative way.

Table 5. The correlation between the indicators for the year 2018
Bayes Factor Inference on Pairwise Correlations[a]

		ROA	ROE	ROS	Market capitalization	PER
ROA	Pearson Correlation	1	,848	,880	,500	,119
	Bayes Factor		,000	,000	,139	5,819
	N	30	30	30	30	30
ROE	Pearson Correlation	,848	1	,753	,376	,124
	Bayes Factor	,000		,000	,886	5,731
	N	30	30	30	30	30
ROS	Pearson Correlation	,880	,753	1	,575	,140
	Bayes Factor	,000	,000		,030	5,397
	N	30	30	30	30	30
Market capitalization	Pearson Correlation	,500	,376	,575	1	,027
	Bayes Factor	,139	,886	,030		7,008
	N	30	30	30	30	30
PER	Pearson Correlation	,119	,124	,140	,027	1
	Bayes Factor	5,819	5,731	5,397	7,008	
	N	30	30	30	30	30

a. Bayes factor: Null versus alternative hypothesis.

Source: Own authorship processing with SPSS

From the previous table, we can remark on the existence of strong correlations both between the financial indicator ROA with the financial profitability ROE (0.848) and with ROS (0.880). This assertion is also supported by the Bayes factor, which has a value of 0.000 for both cases. Also, the Pearson coefficient, which has a value of 0.753 and the Bayes factor of 0.000, shows a relatively strong relationship between ROE and ROS.

Regarding the influence of financial indicators on stock market performance, very weak correlations can be observed, which means that the evolution of the stock exchange rate is not influenced by the level of financial indicators. Thus, the values of the Pearson coefficient are the following: 0.119 for the tested correlation between PER and ROA, 0.124 for PER and ROE, and 0.140 for PER and ROS, with the high Bayes factor. Also, the values of the Pearson coefficient for the market capitalization are: 0.500 (ROA), 0.376 (ROE), 0.575 (ROS).

Also, from table no.6 presented below, it appears that the sig indicator is significant in the case of the relationships between ROA indicator and stock market capitalization (0.000), respectively, between ROS and stock market capitalization (0.003), having a value below the 0.05 threshold.

Table 6. The level of correlation between financial and stock market indicators

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	
Pair 1	ROA - Market capitalization	-12,8537849476	22,6945110771	2,0717159414	-16,9559894273	8,7515804680	-6,204	119	,000
Pair 2	ROE - Market capitalization	-24,7238706284	148,1239082005	13,5218009712	-51,4983870610	2,0506458041	-1,828	119	,070
Pair 3	ROS - Market capitalization	-11,2929354294	41,0865543219	3,7506721020	-18,7196407953	3,8662300635	-3,011	119	,003
Pair 4	ROA - PER	-6,6040242	43,8437414	4,0023677	-14,5291120	1,3210635	-1,650	119	,102
Pair 5	ROE - PER	-18,4741099	151,7117458	13,8493242	-45,8971551	8,9489353	-1,334	119	,185
Pair 6	ROS - PER	-5,0431747	55,5644816	5,0723200	-15,0868749	5,0005255	-,994	119	,322

Source: Own authorship processing with SPSS

For the validation of the regression is the ANOVA test, a test of special importance, which has in its component the variable F. An ANOVA test was calculated for each financial indicator, as the dependent variable and the other independent variables for the whole period.

The ANOVA tests in the cases of the financial indicators ROS and ROA show that there is an interdependence relation between them and the stock market performance indicators by the sig coefficient level, which has a value less than 0.05 (0.000) and the values of the F indicator are quite high.

Table 7. The ANOVA test between ROS and PER

ANOVA[a,b]

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	33365,652	2	16682,826	10,976	,000
Residual	177824,519	117	1519,868		
Total	211190,170	119			

a. Dependent Variable: ROS
b. Model: (Intercept), Valoare bursiera, PER
Source: Own authorship processing with SPSS

Table 8. The ANOVA test between ROA and PER

ANOVA[a,b]

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	8542,841	2	4271,420	8,694	,000
Residual	57479,646	117	491,279		
Total	66022,486	119			

a. Dependent Variable: ROA
b. Model: (Intercept), Valoare bursiera, PER
Source: Own authorship processing with SPSS

Instead, the sig indicator in the case of financial return has an insignificant threshold (0.689), which denotes a weakly significant relationship between the analyzed indicators.

Table 9. The ANOVA test between ROE and PER

ANOVA[a,b]

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	16605,907	2	8302,954	,374	,689
Residual	2600884,011	117	22229,778		
Total	2617489,919	119			

a. Dependent Variable: ROE
b. Model: (Intercept), Valoare bursiera, PER
Source: Own authorship processing with SPSS

5. Conclusions

In the present research paper, 30 Romanian companies listed on the Bucharest Stock Exchange were analyzed, belonging to several sectors of activity based on the selected financial and stock market indicators, among which are: return on assets (ROA), return on sales (ROS), return on equity (ROE), price earning ratio (PER) and market capitalization (MC). Thus, using the Pearson index and the sig indicator, the existence of significant relationships between the indicators listed above was verified. The linear regression model was validated based on ANOVA tests.

The analysis emphasized a direct and strong link between the economic rate of return on assets (ROA) and the rate of return on sales (ROS) and also between return on assets and the rate of return on equity (ROE). Also, there is a fairly strong correlation between return on equity (ROE) and return on sales (ROS).

On the one hand, a significant relationship is noted between the market capitalization (MC) and the rate of resources consumed (ROS) and that of the return on assets (ROA), which means that the change in market value is influenced by financial indicators.

On the other hand, it was found that the PER indicator is not influenced by the values of the financial indicators. Also, the evolution of stock market performance on the capital market is not changed by the rate of financial return.

Therefore, the hypothesis H_1 was validated, thus demonstrating a significant relationship between ROA, ROS, and market capitalization.

In opposition to H_1, the hypothesis H_2 was not validated, since significant relationships between PER and financial indicators exist in none of the cases.

Therefore, the hypotheses stated at the beginning of the case study were partially validated, demonstrating direct relationships only between a single indicator of stock market performance, market capitalization, and the level of financial performance indicators.

REFERENCES

1. Peloza, J. and Papania, L., 2008. The missing link between corporate social responsibility and financial performance: Stakeholder salience and identification. Corporate Reputation Review, 11(2), pp. 169-181

2. Thalassinos, E.P. (2014). Credit Default Swaps and Sovereign Debt in Eurozone. Chapter book in Risk Management: Strategies for Economic Development and Challenges in Correlation Analysis of the Indicators of Asset Management and Profitability 14.

3. Thalassinos, I.E., Stamatopoulos, D.T. & Thalassinos, E.P. (2015). The European Sovereign Debt Crisis and the Role of Credit Swaps. Chapter book in The WSPC Handbook of Futures Markets (eds) W. T. Ziemba and A.G. Malliaris, in memory of Late Milton Miller (Nobel 1990) World Scientific Handbook in Financial Economics Series 5(20);

4. Buşe L., (2005). Analiza economico-financiara, Publishing house Economica, p. 132;

5. Neely A.D., (2003). Business performance measurement: theory and practice, Cambridge University Press, p.67;

6. Rosikah DK., P.DA, M.Azis.MI and M, R.(2018), Effects of Return on Asset, Return on Equity, Earning per Share on Corporate Value. The International Journal of Engineering and Science (IJES) 7(3), pp.6-14;

7. Wong, P. H. & Ghafar, M. A. A (2015). The Impact of Accounting Earnings on Stock Returns: The Case of Malaysia's Plantation Industry. International Journal of Business and Management 10(4), pp.155-165;

8. Satryo, A. G., Rokhmania, N. A. and Diptyana, P. (2016). The influence of profitability ratio, market ratio, and solvency ratio on the share prices of companies listed on LQ 45 Index. The Indonesian Accounting Review 6(1), pp. 55 – 66;

9. Tandelilin, Eduardus. 2010. Portfolio and Investment Theory and Application. First edition. Yogyakarta: KANISIUS.

10. Block, F.E. (1964). A study of the price to book relationship. Financial Analysts Journal, 20(5), pp.108-117;

11. Shiller, R.J.(1981). Do stock prices move too much to be justified by subsequent changes in dividends?, American Economic Review 71, pp.421-436;

12. Bodie , Z., Kane, A., & Markus, A.J., (2005). Investment. Six edition, McGraw Hill Companies Inc., New York, USA;

13. Lo, W.C., Lin, K.J., (2005). A review of the effects of investor sentiment on financial markets: Implications for investors. International Journal of Management, 22(4), p.708;

14. Becchetti, L. & Di Giacomo, S. (2007). Deviations from Fundamentals in US and EU Stock Markets: A comparative Analysis. The European Journal of Finance,13(3), pp.195-226;

15. Ologunde, A., Elumilade, D., Saolu, T., 2006. Stock market capitalization and interest rate in Nigeria: A time series analysis, International Research Journal of Finance and Economics 4(4), pp.154-167;

16. Dias A., (2013), Market Capitalization and Value-at-Risk, Journal of Banking & Finance, 37(12), pp: 5248-5260;

17. Siminica, M., Circiumaru, D., Carstina, S., Sichigea, M. (2017). The Impact of Economic and Financial Performance on Stock Exchange Performance of Manufacturing Companies listed on The BVB. Journal" Economica", 2(100), pp.108-115;

18. Pietro Pavone (2019), Market Capitalization and Financial Variables: Evidence from Italian Listed Companies, International Journal of Academic Research in Business and Social Sciences 9(3) ,pp.1356-1371;

19. Mohammad Abdelkarim Yousef Almumani (2018), An Empirical Study on Effect of Profitability Ratios & Market Value Ratios on Market Capitalization of Commercial Banks in Jordan. International Journal of Business and Social Science 9(4), pp.39-45;

20. Munther Al-Nimer, M. & Nimer Alslihat, N. (2015). The Effect of Profitability Ratios on Market Capitalization in Jordanian Insurance Companies Listed in Amman Stock Exchange. Journal of Economics and Sustainable Development 6(6), pp.140-146;

21. Prasad, H., & Shrimal, K. (2015). An Empirical Study on Effect of Profitability and Market Value Ratios on Market Capitalization of Infrastructural Companies In India.GJRA-Global Journal for Research Analyses 4(5), pp.95-97;

22. De Kai, K. Bin Abd Rahman, I. (2018). The Impact of Financial Indicators towards Stock Returns of Finance Companies Listed on Bursa Malaysia, International Journal of Academic Research in Accounting, Finance and Management Sciences 8(3), pp.128-140;

23. Peter Irungu Macharia, Simon Kamau Gatuhi (2013). Effect of Financial Performance Indicators on Market Price of Shares in Commercial Banks of Kenya. International Journal of Management & Business Studies 3(3), pp.57-60;

24. Musallam S.R., (2018). Exploring the Relationship between Financial Ratios and Market Stock Returns, Eurasian Journal of Business and Economics 11(21), pp.101-116;

25. Bucharest Stock Exchange, Financial Statements of companies [Online] Available from: http://www.bvb.ro/ [Accessed: October 2018];