

## **A STUDY REGARDING THE RETURN ON EQUITY OF ROMANIAN COMPANIES**

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**Abstract:** In this article, we conducted a case study with which we highlighted the statistical correlation between the rate of return on equity (ROE) as the dependent variable and a set of 24 indicators, which represent the independent variables. The analyzed period extends over four years from 2007 to 2010, 2010 included. The study included 40 companies, listed on the Bucharest Stock Exchange, which belong to different fields. To stress the influence of the indicators taken into account concerning the rate of return on equity we used the statistical software SPSS. Following the results we noticed that there is a certain correlation between the independent variables retained and the rate of return on equity, creating in this sense four correlation models, one for each year analyzed.

From the case study one can see the significant influence that the financial crisis has had starting with the second half of 2008, and also the extent to which various financial rates have been affected. For instance, the rate of return on equity, indicator that we intended to analyze in this article, suffered one of the largest declines in the analyzed period.

The reason why we stopped at a thorough analysis of a rate of return is the fact that, in general, the rates of return best express the degree of efficiency of the activity of a company and the rate of return on equity, in particular, is of great importance for any investor wishing to invest in a company without assuming unjustified risks.

**JEL classification: G30, G32**

**Key words: return on equity, efficiency, financial leverage, financial crisis**

### **1. INTRODUCTION**

Both the management theory and practice have revealed the fact that the objective behind any economic activity is the increase of efficiency. Therefore, in order to analyze the efficiency of an economic unit, we should calculate, compare and interpret a series of rates of return, such as: return on assets, return on equity, return on sales. Of these, the rate of return on equity is practically the profitability of capital, is particularly important to the shareholders because it measures the effectiveness of their investments. Basically, the

financial profitability reflects the final purpose of the shareholders of a company, profitability which is expressed by the capital investment ratio made by them in purchasing its shares, or the total or partial reinvestment rate of return which is rightfully theirs.

The reason we chose to analyze a rate of return is the fact that it provides a clear image on the efficiency of a company. From the rates of profitability we have chosen to focus mainly on the return on equity. Although both the return on equity and the return on assets express the performance of a company, they are different. The difference between them is the financial leverage or the debts. Thus, if a company is not indebted then ROA (Return On Assets) and ROE (Return On Equity) will have the same value because the total of assets would be the same with the capital owned by the shareholders. But if the company access financial loans then the financial profitability will be higher than the economic profitability. Through indebtedness, the company increases its assets due to the obtained liquidities. Taking into account the fact that the total of assets is equal with the sum between the equities and the borrowed capital, the debts will increase the return on equity as opposed to the return on assets. In conclusion, the two rates have to be analyzed together because they offer a clear image of the efficiency of the management. If ROA is solid and the levels of the debt are reasonable, then a strong ROE is a solid signal that the managers are doing a good job generating profitability for the shareholders. ROE is definitely a “clue” that the management gives the shareholders more for their money. On the other hand, if ROA is low or the company has a lot of debts, a return on equity (Return On Equity) can provide investors with a false impression about the fate of the company.

The return on equity represents a classic way in which the profitability of a company can be measured. Warren Buffet considers the return on equity to be one of the most important factors which influence the success of an investment; ROE measures the efficiency of a company, its capacity to generate profit for the capital holders. It also offers a useful signal in connection with the financial success because it can indicate if a company manages to increase profit without any additional capital in the business. A company which succeeds in generating a rate of return superior is likely to be able to also generate liquidities.

The structure of the capital and its impact upon the financial performances of a company has always been a serious topic of research for all researchers worldwide. Scientists struggle to understand the impact of the structure of the capital on the financial performances of the company. How much of the total capital must be represented by the debts and how much by the equity, who holds the capital of the company and how these things effect the performance of the company, are subject-matters investigated by the researches over the years. In a modern organization the focus is on separating the management of the company from the shareholders (capital holders); in practice, the interests of those who are part of the management structure of the company can differ from those of the capital holders.

The return on equity is a relevant indicator in assessing the company's market position. An increase in the pay rate of the invested capital provides:

- easy access to financial resources due to the confidence of the current owners to reinvest in the company and due to potential investors - financial resources holders available for investments;
- ability to develop.

The return on equity represents, in short, the efficiency in using the equity or the permanent capital, being an indicator carefully observed, especially by the shareholders. A high value of the return on equity makes the investors to contribute to the capital of the

company and when the contracting of financial loans is needed, they help the company to obtain them easily (due to its creditworthiness of financial activity).

## 2. LITERATURE REVIEW

Sierra J. Enlow and Ani L. Katchova realized a study that revealed the influence of the 2008 financial crisis and management factors on the profitability of agribusinesses as defined by their return on equity. They used a quantile regression and their results show the financial recession had less of an impact on the profitability of high-performing firms compared to low-performing firms. These results were useful for agribusiness firms seeking to improve their performance.

In 2001, Ellis Traub considers that there are three ways in which the return on equity can be used to assess the profitability and the quality of a company:

- can be considered as an absolute number;
- can be compared with that of other companies;
- the rising or falling trend can be analyzed.

She also considers that the interpretation of ROE is more plausible if the profit margins, asset rotation and financial leverage are also analyzed within a context.

Marimuthu and Kolandaisamy conducted in 2009 a case study in which they showed that the influence of the demographic diversity within the management team of a company on the return on assets and return on equity. The authors concluded that between the two variables, performance and demographic, there is no correlation.

In 1997, Frank K. Reilly conducted a case study on the return on equity (ROE) and also on its components for the companies listed on the United States of America Stock Exchange contained in the stock index Standard & Poors 400. The analyzed period of time was of 40 years (1956 - 1995). The case study showed that ROE was kept at similar levels but its components were changing, this being caused by the decline of the rotation of the total assets and of profit margins, but also of the significant increase in financial leverage which compensated for the problems with the asset rotation and with the profit margins.

## 3. METHODOLOGY

The return on equity, which was stated as a dependent variable, represented the relation between the net profit and the equity. The 24 indicators used as independent variables were calculated as follows:

- Fixed assets ratio = Fixed assets / Total assets;
- Financial stability ratio = Permanent capital / Total capital;
- Financial autonomy ratio = Equity / Total capital;
- Financial leverage = Borrowed capital / Equity;
- Invested capital ratio = Invested capital / Total capital;
- Current Liquidity = Current assets / Short term debts;
- Immediate liquidity = (Current assets – Supplies) / Short term debts;
- General solvency = Total assets / Total debts;
- Working capital = Permanent capital – Net fixed assets;
- Need for working capital = Supplies + Receivables – Short term debts;
- Treasury = Working capital - Need for working capital;
- Financing of fixed assets = Permanent capital / (Fixed assets + Need for working capital);
- Invested capital coverage ratio = Working capital / Need for working capital;
- Financing turnover ratio = Working capital x 365 / Turnover;

- Rate of need for working capital = Need for working capital x 365 / Turnover;
- Average accounts payable payment period = Average supplier balance x 365 / Turnover;
- Average accounts receivables collection period = Average client receivable balance x 365 / Turnover;
- Current asset turnover = Turnover / Average current asset balance;
- Daily average current assets turnover = Average current asset balance x 365 / Turnover;
- Cash conversion cycle = Operational cycle – Payment cycle = Supply conversion cycle + Receivables – clients conversion cycle – Payment cycle;
- Return on equity = Net profit / Equity;
- Spending return= Operational profit / Operational expenses;
- Return on sales = Operational profit / Turnover;

#### 4.RESULTS AND DISCUSSIONS

In order to analyze the correlation between the independent variable and the 24 dependent variables, the indicators included in the analyze were calculated for four years, from 2007 to 2010, for 40 companies, that operate in different fields of activity listed on the Bucharest Stock Exchange. The necessary information was extracted and processed from the financial reports of the companies included in the case study. For each year a model of correlation was identified with the help of the statistical software SPSS.

In the case study I included the average annual values of the indicators, values which are presented in the table below:

**Table no. 1 The average annual values of used variables**

Indicators	2007	2008	2009	2010
<b>Return On Equity</b>	<b>7,72%</b>	<b>5,89%</b>	<b>2,74%</b>	<b>-0,47%</b>
Fixed assets ratio	60,86%	61,32%	62,67%	62,03%
Financial stability ratio	71,62%	70,49%	72,66%	72,98%
Financial autonomy ratio	60,89%	61,83%	62,75%	62,80%
Financial leverage	0,24	0,26	0,24	0,21
Invested capital ratio	72,66%	75,21%	75,84%	74,65%
Current Liquidity	171,15%	201,37%	234,16%	261,26%
Immediate liquidity	115,05%	130,81%	157,20%	186,33%
General solvency	414,20%	471,10%	515,61%	528,65%
Financing of fixed assets	127,15%	129,66%	131,13%	139,69%
Invested capital coverage ratio	103,86%	104,21%	106,00%	110,44%
Working capital	69,41%	-19,12%	137,44	48,25
Financing turnover ratio	48,25	98,74	84,23	64,23
Need for working capital ratio	69,73	71,99	66,30	57,19
Average accounts payable payment period	*	36,90	40,64	37,70
Average accounts receivables collection period	*	53,30	66,42	62,47
Current assets turnover	*	2,58	2,31	2,32
Daily average current assets turnover	*	196,42	234,73	226,00
Return on assets	11,77%	11,05%	6,58%	4,24%
Return on expenses profitability	10,51%	10,92%	6,87%	5,50%
Return on sales	9,38%	9,16%	4,85%	4,98%

As shown, the return on equity had a downward trend during the period analyzed. If in the first two years of analysis the values were relatively high, at the end of 2010 the value of this rate is negative. In contrast, the fixed assets ratio, the financial stability ratio

and financial autonomy not only were they not affected by the financial crisis, but they also had a slight increase in the period analyzed. The degree of indebtedness, the level of which can be traced with the financial leverage, remained at relatively stable values, in 2010 having a slight decrease which represents the decrease of the degree of indebtedness in the last year of the analysis.

Regarding the liquidity indicators, both the current liquidity and the immediate liquidity have had an unusual increase taking into account the hard period that all the companies have had, not only those included in the analysis. The solvency indicator has recorded the same unusual values and an upward trend, which means that companies did not have difficulties in terms of debt repayment.

The evolution of the average period of time for the payment of suppliers and for collecting client receivables was somewhat similar, the only negative aspect is that the period of time for collecting receivables is much bigger than that for the payment of suppliers, which means that, overall, the companies do not have a superior commercial credit than that granted to their customers.

In order to study the intensity of the correlation between the return on equity and the 24 indicators included in the study case we have calculated, with the help of the SPSS software, the Pearson coefficient, whose values are given in the table below:

**Table no. 2 The Pearson coefficient results**

Independent variable	Pearson Correlation				Sig. (1-tailed)			
	2007	2008	2009	2010	2007	2008	2009	2010
Fixed assets ratio	0,082	0,118	-0,101	-0,018	0,308	0,234	0,267	0,456
Financial stability ratio	-0,164	0,025	-0,244	-0,038	0,156	0,440	0,064	0,407
Financial autonomy ratio	-0,290	-0,098	-0,161	0,250	0,035	0,274	0,161	0,060
Financial leverage	<b>-0,316</b>	-0,231	-0,424	-0,119	0,024	0,076	0,003	0,232
Invested capital ratio	-0,309	-0,69	-0,355	0,244	0,026	0,336	0,012	0,064
Current Liquidity	-0,009	0,033	-0,177	0,059	0,479	0,419	0,137	0,359
Immediate liquidity	0,136	0,089	-0,258	0,127	0,201	0,293	0,054	0,217
General solvency	0,024	-0,032	-0,200	0,208	0,441	0,423	0,108	0,099
Invested capital coverage ratio	0,195	<b>-0,448</b>	0,461	0,257	0,114	0,002	0,001	0,055
Current asset turnover	-	0,179	0,270	0,167	0,000	0,135	0,046	0,151
Return on expenses profitability	-0,002	-0,012	0,493	0,502	0,495	0,470	0,001	0,000
Return on sales	0,108	0,087	<b>0,499</b>	<b>0,505</b>	0,253	0,297	0,001	0,000

*Source: Own computations*

Pearson coefficient was calculated using the formula:

$$r_{xy} = \frac{\left( n \cdot \sum_{i=1}^n x_i \sum_{i=1}^n y_i \right) - \left( \sum_{i=1}^n x_i \right) \left( \sum_{i=1}^n y_i \right)}{\sqrt{\left[ \left( n \cdot \sum_{i=1}^n x_i^2 \right) - \left( \sum_{i=1}^n x_i \right)^2 \right] \left[ \left( n \cdot \sum_{i=1}^n y_i^2 \right) - \left( \sum_{i=1}^n y_i \right)^2 \right]}}$$

where:  $x_i$  - dependent variable values (return on assets);  
 $y_i$  - the values of each independent variable (financial balance indicators);  
 $n$  - number of companies analyzed.

The value that the Pearson coefficient can have lie between -1 and 1, the positive values indicating a direct connection between the variables analyzed, while the negative values indicating an indirect connection. A strong dependence between the variables is

when the value of the coefficient is closer to 1 or -1. Also, in order to test the reliability of the results, the significance threshold (shown in the table above) should have values lower than 0.05 (which, statistically, corresponds to the assumption that, from 100 measurements only in the case of maximum 5% of the results can be random due to chance or hazard).

As shown in the table above, in 2007 there was an indirect correlation between the financial leverage and the profitability, the Pearson coefficient being - 0.316. Due to the fact that the significance threshold is lower than 0.05 (0.024), the result obtained is significant. There is also a tight correlation between the return on equity and RAG, Rka and AKI, which significance threshold is lower than 0.05. About the other variables which have the significance threshold higher than 0.05 we can say that they did not have a significant influence on the return on equity.

Regarding the year 2008, the situation has changed, the investment capital indicator representing a significant influence, followed by the financial leverage and the average number of current asset rotations.

For the years 2009 and 2010, the situation is somewhat similar. This time, the rate of return – return on sales has a great influence, with the Pearson coefficient values of 0.499 and 0.505 and the significance values of 0.001 and 0.000. In this period of time the financial crisis is obvious due to the fact that the return on equity is no longer correlated with the balance indicators, but with other rates of profitability. In this context we conclude that the decrease in profitability was not due to the adopting of inadequate policy by the company, but rather to the significant decrease of the return on sales and the spending return.

**The straight-line regression** implies the calculation of the correlation coefficient for the group of variables, analyzing the correlation between a dependent variable and a number of independent variables. As in the case of the correlation coefficient applied above, the calculated value must be a value closer to 1 in order to state that there is a very strong correlation.

To capture the correlation between the return on equity (Y) on the one hand and the financial balance indicators (X1 ... Xn) on the other hand, we turned to a multiple straight-line regression model, which has the formula:

$$Y = \alpha + \beta_1 \cdot X_1 + \beta_2 \cdot X_2 + \dots + \beta_n \cdot X_n$$

where:  $\alpha, \beta_1 \dots \beta_n$  – are regression coefficients

In order to identify the best combination between the independent variables which explain the variation of the dependent variable, we used the *Forward* option from SPP where the independent variables are introduced into the model one by one, in the order of their importance, testing whether the corresponding regression coefficient is zero at every step. The analysis was made for each year of the time period 2007 – 2010, highlighting the changes occurred related to the factors that influenced the level of economic profitability of the companies listed on BSE before the economic crisis but also during it.

The *t* test and the *Sig.* value are used to test the regression coefficients, which is the hypothesis that between the dependent variable and independent variables there is no significant connection. In the conducted case study, the *t* test has high values for each variable, and *Sig* has very low values (below 0.05), which allows us to reject the hypothesis that between the variables analyzed there is no significant connection, stating some small errors that might occur due to random measurement.

For the year 2007, were kept only 2 of the 24 variables included in the analyses, the financial leverage and the financial autonomy ratio, which have a significant influence on the return on equity.

Tabel no. 3 The results for 2007

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R Square
		B	Std. Error	Beta				
2	(Constant)	27.603	6.446		4.282	0.000		
	Financial leverage (FI)	17.087	5.780	-0.437	2.956	0.005	0,316a	0,100
	Financial autonomy ratio (FAR)	-0.256	0.091	-0.418	2.823	0.008	0,509b	0,259
a. Dependent Variable: ROE								

Source: Own computations

It is noted that the values of the significance thread hold are lower than 0.05, which allows us to say that between those two kept variables and the return on equity there is a significant influence.

The straight-line multiple regression model identified for the studied variables is as follows:

$$ROE = 27,603 + 17,087 \cdot FI - 0,256 \cdot FAR$$

In the year 2008 the situation changes, the financial leverage has a smaller influence on the return on equity. This time, the invested capital indicator followed by the immediate liquidity indicator have significant influence, both with the value of the significance thread hold of 0.000. The results of the year 2008 are presented in the table below:

Tabel no. 4 The results for 2008

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R Square
		B	Std. Error	Beta				
3	(Constant)	61.098	8.205		7.447	0.000		
	Invested capital coverage ratio (ICCR)	-0.630	0.087	-1.085	-0.237	0.000	0.448a	0.201
	Immediate liquidity (IL)	0.094	0.018	0.812	5.345	0.000	0.747b	0.559
	Financial leverage (FI)	-13.376	5.834	-0.245	2.293	0.028	0.784c	0.615
a. Dependent Variable: ROE								

Source: Own computations

The three variables explain 61,5% of the variation of the return on equity. The introduction of the second indicator, the immediate liquidity one, led to a significant increase in the correlation coefficient from 0.448 to 0.747. The straight-line multiple regression model for the year 2008 is the next one:

$$ROE = 61,098 - 0,630 \cdot ICCR + 0,094 \cdot IL - 13,376 \cdot FI$$

For the year 2009 one can see the significant influence of the rate of return – the return on sales but also the influence of the turnover ratio - current assets turnover. In this situation we can speak about a fragility of the return on equity, which was mainly due to the financial crisis.

This year only one of the variables from 2008 was kept, the variation model of the return on assets, which has four rates: return on sales, invested capital ratio, immediate liquidity and the current assets turnover:

Table no. 5 The results for 2009

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R Square
	B	Std. Error	Beta				
4 (Constant)	13.632	3.976		3.429	0.002		
Return on sales (RS)	0.492	0.087	0.572	5.686	0.000	0.499a	0.249
Invested capital ratio (ICR)	-0.292	0.046	-0.651	-6.394	0.000	0.726b	0.527
Immediate liquidity (IL)	0.024	0.006	0.415	4.048	0.000	0.796c	0.633
Current asset turnover (CAT)	2.424	0.912	0.261	2.657	0.012	0.833d	0.695
a. Dependent Variable: ROE							

Source: Own computations

The significance threshold for the variables is under 0.05 which means that their influence is significant. The four indicators have a big influence – 83.3% - the return on equity. The straight-line multiple regression model for this year is:

$$ROE = 13,632 + 0,492 \cdot RS - 0,292 \cdot ICR + 0,024 \cdot IL + 2,424 \cdot CAT$$

For the year 2010 only one variable resulted, which had a big influence on the return on equity – the return on sales.

Table no. 6 The results for 2010

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R Square
	B	Std. Error	Beta				
1 (Constant)	-9.531	5.809		-0.641	0.109		
Return on sales (RS)	1.124	0.312	0.505	3.602	0.001	0.505a	0.255
a. Dependent Variable: ROE							

Source: Own computations

The straight-line multiple regression model for the year 2010 is:

$$ROE = -9,531 + 1,124 \cdot RS$$

Like in 2009, the influence of the variable – rate of return on sales is kept at a very high correlation coefficient with the value of 0.505 and the significance threshold of 0.001. This variable explains 25,5% of the variation of the return on equity. Under these conditions, most of the variation of the return on equity is influenced by external factors, which are very hard to control by the management of the company.

## 5. CONCLUSIONS

Upon the case study, it can be seen that the financial crisis has had a significant influence starting with the second half of the year 2008 and the degree in which the different financial rates have been affected can also be seen. For example, the return on equity, indicator which we analyzed in this article, underwent the largest declines in the period analyzed. The other financial rates studied within this article were not significantly influenced by the economic crisis, proof in this respect being their evolution, that is growth (such as liquidity and solvency rates) or stagnation.

If, until 2007, the rate of return on equity was mostly influenced by the financial structure and by the level of financial balance insurance; during the financial crisis the situation has changed, the indicator of business management increasing their importance. The conducted case study highlighted the fact that the external factors have a significant



influence on the return on equity, external factors which cannot be easily controlled by the management of the companies.

As noted, the models chosen during the four years that were analyzed are not similar, which reveals the different environments in which the companies have activated. Also, please note that for this case study the statistical methodology was mainly used, its limitations may affect the observations and assessments made.

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