

The Correlation between the Return on Assets and the Measures of Financial Balance for Romanian Companies

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Abstract—The paper studies the statistical correlation between the return on assets and some measures of financial balance. The research relies on the assumptions that the financial balance influences most of the indicators of performances of a company. Therefore, we chose the return on assets as dependent variable, as it represents the final result of the company's business. As independent variables, meaning measures that point out the financial balance, we selected 24 indicators. All these indicators were calculated for 40 Romanian companies listed on Bucharest Stock Exchange and included a period of 4 years between 2007 and 2010. The data required to calculate these indicators were extracted from the annual financial statements of these companies. The study includes two years of economic growth for Romania (2007 and 2008) and two of downturn (2009 and 2010). It is thus expected that most indicators analyzed to worsen in the past two years. We concluded, at the end of research, that the profitability of the Romanian firms declined as a result of the economic crisis. Before crisis (2007) it was significantly influenced by the financial structure and the financial balance. After the crisis, the importance of indicators emphasizing the business administration (as profit margin and rates of turnover) increased, but also the importance of the random external factors, uncontrollable by the management.

Keywords—return on assets, financial balance, economic crisis, Pearson coefficient, regression model.

I. INTRODUCTION

THE company managers are particularly concerned nowadays with the efficiency of the asset utilization in an effort to improve the performance of the business. The rising pressure exercised by shareholders and the limited funds make the firms to search the ways to increase the efficiency of the assets, in order to maintain the competitiveness. To achieve

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this goal, the companies need to properly assess the return on assets.

The ratios of return are considered among the most important indicators used by the management of a business. Whatever the form of expression (return on assets, return on equity, return on sales), they are found among the set of indicators published by most companies.

The importance of return on assets as a measure of the firm performance is recognized in the specialized literature. Thus, David Lindo believes that "Return on Assets (ROA) is the general purpose financial ratio used to measure the relationship of profit earned to the investment in assets required to earn that profit [...] The ROA percent is a baseline that can be used to measure the profit contribution required from new investments. As such it identifies the rate of return needed to at least maintain current performance and can be used to establish a hurdle rates all new investments must meet for approval." [9]

A comprehensive analysis of the return on assets was also made by George W. Gallinger. He developed a model that comprised, as variables, indicators such as the return on sales, the financial leverage, the interest expenses, the return on equity. This allows analyzing a company's asset management and the opportunity to redeploy the assets in the future. [6]

The return of a firm is influenced by many factors. Knowing these factors is important primarily for the company management, to adopt appropriate measures of growth, and to perform short or long term forecasts. Also, knowing the relationship of dependence between the return and the factors of influence is important for investors, creditors and for other categories of stakeholders who have different interests about the firm.

M. T. Bosch-Badia performed a study that determined "a functional relationship between ROOA (return on operating assets) and the main productivity indicators at a company level: total factor productivity (TFP) and labour productivity. Both productivity indicators, together with price change of outputs and inputs, are the drivers that determine the value of ROOA, as the functional relationship we obtain proves. This relationship can be regarded as an extension of the Dupont method that expresses ROOA as the product of operating margin per asset turnover." [1] The author created a model that ROOA, as the dependent variable, can be expressed as a

function between productivity and price change as independent variables.

Patricia Fairfield and Teri Lombardi Yohn have made a study of the return on assets in the context of making predictions. They demonstrated that "disaggregating return on assets into asset turnover and profit margin does not provide incremental information for forecasting the change in return on assets one year ahead, but that disaggregating the change in return on assets into the change in asset turnover and the change in profit margin is useful in forecasting the change in return on assets one year ahead". [5]

From the above, it is noted in the literature the interest shown to analyze the return on assets. In this article, it was conducted a statistical survey of the relationship between the return on assets, as dependent variable, and a set of economic and financial indicators, as independent variables. The study covered 40 Romanian companies listed on Bucharest Stock Exchange (BSE) and included a period of 4 years between 2007 and 2010. The data required to calculate these indicators were extracted from the annual financial statements of these companies. Note that the study includes two years of economic growth for Romania (2007 and 2008) and two of severe economic crises (2009 and 2010). It is thus expected that most indicators analyzed to worsen in the past two years.

II. CONCEPTS AND METHODOLOGY

The return on assets ROA (the dependent variable) was calculated as a ratio of the operating results and the employed (invested) capital. The set of independent variables includes the following 24 indicators:

- Fixed assets ratio (FAR) = Fixed assets / Total assets – measures the weight of fixed assets in total assets. This ratio is large for companies with large investments in equipments;
- Financial stability ratio (FSR) = Long term capital / Total capital – assesses the ability of the company to get long term financing (equity, long term loans and bonds);
- Self-financing ratio (SFR) = Equity / Total capital – expresses the share of own capital in total liabilities. The bigger this ratio, the stronger the financial position of the company;
- Financial leverage (FL) = Borrowed capital / Equity – compares the financial debts (loans and bonds) with the own capital;
- Capital employed ratio (CER) = Employed (invested) capital / Total capital – measures the weight of interest bearing capital in total liabilities;
- Current liquidity (CL) = Current assets / Short term debts – measures the capacity to pay the short term debts using the current assets;
- Quick ratio (QR) = (Current assets - Inventories) / Short term debts – measures the capacity to pay the short term debts using claims and cash;
- Overall solvency (OS) = Total assets / Total debts – evaluates the capacity to pay all the debts (short and long term) by selling all the assets (both fixed and current);
- Working capital (WC) = Long term capital - Fixed assets – a positive level is mandatory to achieve financial balance;
- The need for working capital (NWC) = Inventories + Receivables – Short term debts – measures the amount of money needed to finance the inventories and receivables which are not financed by short term debts;
- Treasury (T) = Working capital - The need for working capital – a positive level is usually favorable appreciated, while a negative value requires short term loans to finance the business ;
- Rate of financing the fixed assets (RFFA) = Long term capital / Fixed assets – this ratio should be bigger than 1 in order to get a positive working capital;
- Coverage of capital invested (CCI) = Long term capital/ (Fixed assets + Need for working capital) – when equals 1, the treasury is 0;
- Coverage of need for working capital (CNWC) = Working capital / Need for working capital – when equals 1, the treasury is 0;
- Rate of financing the turnover (RFT) = Working capital x 365 / Turnover - expresses the number of days the working capital is financed by turnover;
- Rate of need for working capital (RNWC) = Need for working capital x 365 / Turnover - this situation is favorable when the ratio decreases, which means an improvement in cash. Under normal conditions, this ratio should take values between 30 and 60 days;
- Average term for paying the suppliers (TS) = Average balance of commercial debts x 365 / Turnover - expresses the average number of days of commercial credit the company gets from its suppliers. The level of this ratio is influenced by firm market position, the relationships with suppliers, the specific of the business, the general economic conditions and the commercial credit policy in the industry;
- Average term for collecting the commercial receivables (TC) = Commercial receivables x 365 / Turnover - expresses the average number of days until the company cashes the value of products delivered to customers. It depends on the business strategy regarding the market, its market position relative to its competitors, the relationships with customers, the specific of the business, the commercial credit policy in the industry etc.;
- Average number of turnovers of current assets (NCA) = Turnover / Average balance of current assets – an increased level means growing the turnover of the current assets;
- Average duration in days for the turnover of current assets (DCA) = Average balance of current assets x 365 / Turnover - expresses the time the current assets need

to pass the operating cycle;

- Cash conversion cycle (CCC) = Operating cycle - Payment cycle – signifies the time required for all the expenses a company incurred to purchase inputs (raw materials and manpower) to be recovered, all in the form of cash from the sale of products made;
- Return on equity (ROE) = Net profit / Equity - expresses the efficacy of using the equity of the company;
- Return on operating expenses (ROEx) = Operating profit / Operating expenses – is a the profit margin ratios;
- Return on sales (ROS) = Operating profit / Turnover – is another profit margin ratio which expresses the profitability of the business.

III. RESULTS AND DISCUSSIONS

The economical and financial indicators were calculated for the period 2007-2010 for all the 40 companies surveyed. The aim was to analyze the statistical correlation between the return on assets and the 24 indicators and the influence factors that best explain the return on assets. Thus, for each of the four years analysed, it was found a statistical model linking the return on assets as the dependent variable and several independent variables considered as relevant. To create these models, it was used the statistical software SPSS (Statistical Package for the Social Sciences).

The annual average level of financial ratios included in the study, for the 40 companies analyzed, is shown in Table 1. The average was not calculated for the indicators expressed in absolute terms, as the average is not relevant in this case.

Table 1

Indicators	2007	2008	2009	2010
Return on assets	11.77%	11.05%	6.58%	4.24%
Fixed assets ratio	60.86%	61.32%	62.67%	62.03%
Financial stability ratio	71.62%	70.49%	72.66%	72.98%
Self-financing ratio	60.89%	61.83%	62.75%	62.80%
Financial leverage	0.24	0.26	0.24	0.21
Capital employed ratio	72.66%	75.21%	75.84%	74.65%
Current liquidity	171.15%	201.37%	234.16%	261.26%
Quick ratio	115.05%	130.81%	157.20%	186.33%
Overall solvency	414.20%	471.10%	515.61%	528.65%
Rate of financing the fixed assets	127.15%	129.66%	131.13%	139.69%
Coverage of capital invested	103.86%	104.21%	106.00%	110.44%
Coverage of the need for working capital	69.41%	-19.12%	137.44	48.25
Rate of financing the turnover	48.25	98.74	84.23	64.23
Rate of need for working capital	69.73	71.99	66.30	57.19
Average term for paying the suppliers	*	36.90	40.64	37.70
Average term for collecting the commercial receivables	*	53.30	66.42	62.47

Indicators	2007	2008	2009	2010
Average number of turnovers of the current assets	*	2.58	2.31	2.32
Average duration in days for the turnover of current assets	*	196.42	234.73	226.00
Return on equity	7.72%	5.89%	2.74%	-0.47%
Return on operating expenses	10.51%	10.92%	6.87%	5.50%
Return on sales	9.38%	9.16%	4.85%	4.98%

The return on assets had a relatively high level in the first two years, unaffected by the economic crisis (reaching 11.77% in 2007 and 11.05% in 2008). However, it collapsed in 2009 (6.58%), a situation also found in 2010 (4.24%). Considering the economic crisis the Romanian economy encountered in this period, this finding is not surprising.

A series of four financial ratios (fixed assets ratio, financial stability ratio, self-financing ratio, capital employed ratio) had a stable evolution in the analysed period, as expected, because these ratios are not generally influenced by the economic crisis. The fixed assets ratio is a structure ratio so it is not influenced by the economy downturn of the national economy.

The financial stability could be influenced indirectly by the crisis in some circumstances. Thus, the long term capital remains usually at the same level, since it comprises equity and long term financial debts. But the short capital could decrease as the bank withdraw their financing, either because of the financial difficulties of the debtor, either due to its own distress. So, the total liabilities could shrink and this would lead to an increase of the financial stability ratio. In our case, this ratio slightly grows, from 71.62% in 2007 to 72.98% in 2010, but it is probably due to regular changes in capital structure.

Self-financing ratio grows from 60.89% in 2007 to 62.80% in 2010. The level is above the minimum limit of 30-40% and even above the normal limit, of 50%. These companies have a strong financial structure which is unaffected by the downturn of the economy.

The financial leverage, reflecting a company's indebtedness, increased slightly in 2008 (from 0.24 to 0.26), then declined in subsequent years to 0.24 (in 2009) and to 0.21 (in 2010). The decrease in the last two years reflects a reduction of indebtedness for the 40 companies listed on Bucharest Stock Exchange.

Current liquidity grew from 171.15% in 2007 to 261.26% in 2010. Usually, the minimum level of this ratio is 100%, which provides a positive working capital. As well, the quick ratio had good results (the minimum level is 115.05% in 2007 and the maximum one is 186.33% in 2010). The quick ratio should be above 80%, which is exceeded in each year analysed. Overall, we appreciate that current liquidity and quick ratio increased pretty much in the period analysed, which is surprising, considering the economic crisis. In practice, it was found, however, that companies in distress tend to improve their liquidity in order to get the financial resources needed to pay the creditors. If we look at the previous ratios, we find that most of them are not affected by crisis, so we can assume that this evolution is generated by other factors. However, the

average level of these ratios is quite high in 2010, which is considered as an extraordinary fact, even in ordinary situations.

The overall solvency evolves similarly as the liquidity ratios, increasing a lot in 2010 compared to 2007 (with more than 100%). Also, the annual average values are quite high, which decrease the chances to get bankrupt for these companies.

Rate of financing the fixed assets has values greater than 100% and increasing each year, which means that, overall, the companies studied had a positive working capital. Also the coverage of capital invested was higher than 100% and increased each year, reflecting the fact that the long term capital is sufficient to cover not only the fixed assets, but the need for working capital as well. This involves small amount of current financial debts to finance business. Obviously, these considerations are valid for the whole of 40 companies analyzed, but it is possible that some of them to face some gaps or difficulties.

The average term for paying the suppliers was only calculated for the last three years, as it requires two consecutive years to be computed. It is favorable situation when this ratio increases as a result of negotiating large payment periods with the suppliers. But it can also grow if the company deliberately doesn't pay the suppliers due to lack of money. In our case, this ratio reached 36.90 days in 2008, then increased to 40.64 days in 2009 and dropped to 37.70 days in 2010. The fluctuation of this ratio was not large and was not influenced by the economic crisis in this period. A similar situation is observed for the average term for collecting the commercial receivables, which had a similar oscillation. For this ratio, instead, a reduction of the level would mean a favorable situation. By comparing the two ratios, we see that in each year the term for collecting the claims is higher than the term for paying the suppliers, which has negative consequences on the cash flow of these firms.

Average number of turnovers of the current assets was 2.58 in 2008, 2.31 in 2009 and 2.32 in 2010. We notice a slightly diminish in 2009, while in 2010 it is almost at the same level as in 2009. The turnover of current assets does not drop sharply in the period analysed to be able to set a correlation with the economic downturn.

The return on equity decreased continuously in the four years analyzed, until it became negative in 2010. In 2007, it was 7.72%, which is not satisfactory for the shareholders. Yet, this is the maximum level the return on equity reached in the period analysed. The trend of decreasing, even started before the crisis, can be considered to be influenced by the economic downturn of the national economy.

The return on operating expenses was relatively stable in the first two years (10.51%, respectively 10.92%), then it dropped sharply in 2009 (6.87%). As expected, a similar dynamics is encountered for the return on sales, which dropped from 9.38% in 2007 to 4.85% in 2009, then in grew to 4.98% in 2010. These two ratios evolved differently in the last year

only, as the first ratio decreased, while the second increased slightly.

We can state that the ratios of return were significantly influenced by the economic crisis, through the profit these companies posted in the period analysed.

The analysis of correlation between the return on assets and the indicators of financial balance can be done separately, using the coefficient of correlation (between the dependent variable and an independent variable), or can be done globally, in the linear regression.

After analysing the correlation between the return on assets and the indicators of financial balance, the following data was obtained using SPSS:

Table 2

Correlations

Independent variable	Pearson Correlation				Sig. (1-tailed)			
	2007	2008	2009	2010	2007	2008	2009	2010
FAR	-0.057	-0.266	-0.257	-0.061	0.364	0.049	0.055	0.353
FSR	-0.398	-0.438	-0.517	-0.115	0.006	0.002	0.000	0.240
SFR	-0.560	-0.579	-0.438	0.182	0.000	0.000	0.002	0.130
FL	-0.405	-0.331	-0.191	-0.073	0.005	0.019	0.119	0.327
CER	-0.602	-0.672	-0.597	0.187	0.000	0.000	0.000	0.123
CL	-0.088	0.037	-0.104	0.015	0.295	0.411	0.262	0.464
QR	-0.013	0.103	-0.060	0.087	0.469	0.264	0.358	0.297
OS	-0.128	-0.067	-0.099	0.142	0.215	0.341	0.271	0.191
CCI	-0.290	-0.211	0.199	0.258	0.035	0.096	0.109	0.054
NCA	-	-0.033	0.250	0.183	-	0.419	0.060	0.129
ROEx	-0.240	-0.058	0.330	0.485	0.068	0.361	0.019	0.001
ROS	-0.342	-0.232	0.339	0.484	0.015	0.074	0.016	0.001

The intensity of correlation between the variables studied is assessed using the Pearson correlation coefficient, calculated with the formula:

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

where: x_i – the values of dependent variable (the return on assets);

y_i – the values of each independent variable (measures of financial balance);

n – number of firms analyzed.

The Pearson correlation coefficient takes values between -1 and 1, as the positive values indicate a direct correlation, while the negative ones an inverse correlation (one variable increases as the other decreases). This indicates a dependency between the data the better the more its value is closer to 1 or -1 (1 assumes a perfect correlation, which is obtained only when a data set is correlated with itself). Also, the significance threshold must be less than 0.05 (which means that out of 100 measures just under maximum 5% the results can be random, due to chance or hazard).

As seen in Table 1, in 2007, for the 40 companies analyzed, the closest value of -1 or +1 for Pearson's coefficient (-0.602) is encountered for the correlation between return on assets and

the capital employed ratio, which means an indirect correlation between the two variables. The significance threshold (Sig) has a very low level (0.000) which shows that the value obtained is significant.

The following variables that influence the return on assets, presented after the intensity of the dependence, are: self-financing ratio (-0.560), for which the threshold of significance (Sig) is 0.000, leverage (-0.405) with a value of 0.005 for the significance threshold and return on equity (-0.398) with a significance threshold of 0.006, less than 0.05. It is noted that these two variables are also in inverse correlation with return on assets. The other variables analyzed have low levels of Pearson correlation coefficient, and high values for the significance threshold Sig (above 0.05), which means they have a little influence on the return on assets.

In 2008 and 2009 the situation didn't changed too much. The capital employed ratio still has a strong inverse correlation with the return on assets, with a correlation coefficient of -0.672 and -0.597 respectively, and a significance threshold (Sig) of 0.000. This ratio is followed by self-financing ratio and financial stability ratio as regarding the intensity of correlation, while the influence of financial leverage decreases greatly.

In 2010, due to profitability problems caused by the economic crisis, the return on assets is no longer correlated with the indicators of financial balance. The most powerful connections are found with other two rates of profitability: return on operating expenses, with a correlation coefficient of 0.485 (Sig = 0.001), and return on sales, with a correlation coefficient of 0.484 (Sig = 0.001). We appreciate that the difficulties occurred in this year's return was not due to financial policy and to financial structure but rather to the decreased profit margin and return on expenses.

The linear regression: the link between return on assets and measures of financial balance

The linear regression means the calculation of the correlation coefficient for the group of variables, analyzing the correlation between a dependent variable and a series of independent variables. As in the case of correlation coefficient above applied, the calculated value should be closer to 1 in order to assume a strong correlation.

To emphasize the correlation between the return on assets (Y) on the one hand and the financial balance indicators (X1 ... Xn) on the other hand, we used a multiple linear regression model of the form:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \quad (2)$$

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

To identify the best combination of independent variables that explain the variation of the dependent variable, we used the Forward option in SPSS, by which the variables are introduced in the model one by one, in order of their importance, and at each step it is tested whether the regression coefficient is zero. The analysis was made for each year of the

period 2007 - 2010 highlighting the changes in the factors that influenced the return on assets of the companies listed on BSE before the economic crisis, and during it.

For 2007, of the 24 variables included in the analysis, we selected six variables that explain the variation of return on assets.

Table 3

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	CER		Forward (Criterion: Probability-of-F-to-enter <= ,050)
2	FL		Forward (Criterion: Probability-of-F-to-enter <= ,050)
3	SFR		Forward (Criterion: Probability-of-F-to-enter <= ,050)
4	QR		Forward (Criterion: Probability-of-F-to-enter <= ,050)
5	OS		Forward (Criterion: Probability-of-F-to-enter <= ,050)
6	CCI		Forward (Criterion: Probability-of-F-to-enter <= ,050)
a. Dependent Variable: ROA			

In our study, the first independent variable entered in the model is capital employed ratio, which, as we have seen, has a greater influence on the return on assets. The next steps consisted in introducing the other independent variables such as leverage, self-financing ratio, quick ratio, overall solvency, while the last variable entered was the coverage of capital invested. The other independent variables were not introduced in the model, as their influence on the return on assets is insignificant.

The following table presents for each regression model the correlation coefficient (R), the R Square and the standard error.

Table 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.602 ^a	0.362	0.345	20.46269
2	0.708 ^b	0.501	0.475	18.33085
3	0.859 ^c	0.738	0.716	13.46623
4	0.891 ^d	0.793	0.770	12.13055
5	0.913 ^e	0.833	0.809	11.05861
6	0.925 ^f	0.855	0.829	10.46754

a. Predictors: (Constant), CER

b. Predictors: (Constant), CER, FL

c. Predictors: (Constant), CER, FL, SFR

d. Predictors: (Constant), CER, FL, SFR, QR

e. Predictors: (Constant), CER, FL, SFR, QR, OS

f. Predictors: (Constant), CER, FL, SFR, QR, OS, CCI

g. Dependent Variable: ROA

The model 1 shows the dependence between the return on assets and the capital employed ratio, obtaining a correlation coefficient of 0.602 and an R Square of 0.362, which means a

pretty strong correlation between the two variables, while 36.2% of the variation of return on assets is explained by the change of capital employed ratio.

In model 2 was introduced the second independent variable (leverage), obtaining a correlation coefficient of 0.708 and an R Square of 0.501. This means that 50.1% of the variation of return on assets is explained by the variation of capital employed ratio, namely financial leverage. Furthermore, by introducing the second independent variable in the regression model, the standard error of estimation decreases from 20.463 to 18.331.

Model 3 introduces the third independent variable in the equation, self-financing ratio, leading to a correlation coefficient of 0.859 and an R Square of 0.738. In model 4 quick ratio is introduced into the equation, as the correlation coefficient increases to 0.891 and R Square to 0.793. The model accuracy is increased by the introduction of the fifth ratio, the overall solvency, which determines a level of the correlation coefficient of 0.913 and an R Square of 0.833. The last variable introduced in model 6 is coverage of capital invested, for which is obtained the highest value of the correlation coefficient (0.925) and of R Square (0.855). This model explained 85.5% of the change of return on assets.

The regression coefficients calculated for each of the six models are presented in Table 5.

Table 5
The regression coefficients for 2007

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error				Tolerance	VIF	
1	(Constant)	61.621	11.178	5.513	0.000			
	CER	-0.687	0.148	-0.602	-4.643	0.000	1.000	1.000
2	(Constant)	65.628	10.091	6.504	0.000			
	CER	-0.664	0.133	-0.582	-5.003	0.000	0.997	1.003
	FL	-23.290	7.238	-0.374	-3.218	0.003	0.997	1.003
3	(Constant)	49.718	7.920	6.278	0.000			
	CER	0.924	0.295	0.810	3.134	0.003	0.109	9.177
	FL	-55.870	7.802	-0.897	-7.161	0.000	0.463	2.159
	SFR	-1.503	0.263	-1.539	-5.706	0.000	0.100	10.000
4	(Constant)	47.681	7.165	6.654	0.000			
	CER	0.972	0.266	0.851	3.651	0.001	0.109	9.208
	FL	-54.201	7.049	-0.870	-7.689	0.000	0.460	2.172
	SFR	-1.668	0.243	-1.708	-6.855	0.000	0.095	10.516
	QR	0.070	0.023	0.277	3.060	0.004	0.722	1.386
5	(Constant)	48.431	6.537	7.408	0.000			
	CER	1.029	0.243	0.901	4.225	0.000	0.108	9.270
	FL	-53.121	6.438	-0.853	-8.252	0.000	0.459	2.180
	SFR	-1.862	0.232	-1.906	-8.024	0.000	0.087	11.501
	QR	0.063	0.021	0.248	2.989	0.005	0.711	1.406
	OS	0.018	0.006	0.268	2.849	0.007	0.552	1.812
6	(Constant)	71.749	12.173	5.894	0.000			
	CER	0.787	0.255	0.689	3.089	0.004	0.088	11.330
	FL	-50.284	6.226	-0.808	-8.077	0.000	0.440	2.275
	SFR	-1.569	0.256	-1.606	-6.129	0.000	0.064	15.627
	QR	0.104	0.027	0.409	3.829	0.001	0.384	2.601

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error				Tolerance	VIF
QR	0.104	0.027	0.409	3.829	0.001	0.384	2.601
OS	0.016	0.006	0.237	2.622	0.013	0.538	1.857
CCI	-0.271	0.122	-0.271	-2.224	0.033	0.296	3.381

The T test and the value of Sig are used to test the regression coefficients, i.e. the assumption that between the dependent variable and independent variables there is no significant link. In our study, the t test for each variable takes high values while the values of Sig are very small (less than 0.05), which allows us to reject the hypothesis that there is no significant connection between the variables analyzed, leading to small errors that might occur due random measurements.

We note that the influence of the six variables selected on the return on assets is good because Sig<0.05. Based on calculated coefficients, which are found in column B of Table 4, the linear multiple regression model identified for the variables studied is as follows:

$$ROA = 71.749 + 0.787 \times CER + 50.284 \times LF - 1.569 \times SFR + 0.104 \times QR + 0.016 \times OS - 0.271 \times CCI \quad (3)$$

This allows estimating the return on assets based on the six indicators of financial equilibrium selected in the model.

For 2008, the linear regression model explaining the variation of the return on assets changes, but there are no significant changes compared with 2007. Thus, from the 24 independent variables analyzed, seven variables were selected: capital employed ratio, quick ratio, coverage of capital invested, return on operating expenses, financial leverage, number of turnovers of current assets and current liquidity. The regression coefficients for this model are listed below:

Table 6
The regression coefficients for 2008

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R Square	
	B	Std. Error						Beta
7	(Constant)	76.919	5.127	15.002	0.000			
	CER	-0.639	0.050	-0.949	-12.753	0.000	0.672 ^a	0.451
	QR	0.030	0.018	0.341	1.666	0.105	0.748 ^b	0.559
	CCI	-0.351	0.041	-0.781	-8.570	0.000	0.881 ^c	0.776
	ROEx	0.346	0.090	0.313	3.854	0.001	0.907 ^d	0.823
	FL	-7.111	2.672	-0.168	-2.662	0.012	0.920 ^e	0.847
	NCA	2.009	0.703	0.188	2.855	0.007	0.931 ^f	0.866

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R Square
	B	Std. Error	Beta				
CL	0.040	0.017	0.484	2.392	0.023	0.942 ^e	0.887

a. Dependent Variable: ROA

Based on calculated coefficients, the linear multiple regression model explaining the variation in the return on assets in 2008 is as follows:

$$ROA = 76919 - 0.639 \times CER + 0.030 \times QR - 0.351 \times CCI + 0.346 \times ROEx + 7.11 \times FL + 2.009 \times NCA + 0.040 \times CL \quad (4)$$

Compared with 2007, there were retained four variables in the model, while other two were eliminated (self-financing ratio and overall solvency). Instead, three other variables were introduced: return on operating expenses" number of turnovers of current assets and current liquidity.

The most important influence is still held by capital employed ratio for which the correlation coefficient was 0.672, explaining 45.1% of the variation of return on assets. By introducing into the model the second variable, quick ratio, the correlation coefficient increased to 0.748, and the two variables together explain 55.9% of the change in return on assets. As the other variables are introduced in the model, we find that the correlation coefficient increases, reaching 0.942, and all the seven variables explain 88.7% of the variation of return on assets.

It is noted that among the variables introduced into the model, in 2008 we find a rate of return and a rate of turnover, which means a shift in the factors that influence the return on assets from the indicators of financial structure towards the indicators of business administration. The explanation of these changes can be found in the fact that following the economic crisis, the economic profitability of firms has become more fragile, being more sensitive to the current management of the business.

For 2009, the model explaining the variation of return on assets includes only four rates: employed capital ratio, return on sales, fixed assets ratio and number of turnovers of current assets. The regression coefficients for this model are listed below:

Table 7

The regression coefficients for 2009

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R Square
	B	Std. Error	Beta				
4 (Constant)	31.758	3.703		8.576	0.000		
CER	-0.281	0.035	-0.711	-8.033	0.000	0.597 ^a	0.356
ROS	0.438	0.068	0.576	6.440	0.000	0.805 ^b	0.647
FAR	-0.160	0.045	-0.313	-3.534	0.001	0.842 ^c	0.709

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R Square
	B	Std. Error	Beta				
NCA	1.860	0.719	0.226	2.586	0.014	0.869 ^d	0.756

a. Dependent Variable: ROA

The regression model explaining the variation in return on assets in 2009 is as follows:

$$ROA = 31.758 - 0.81 \times CER + 0.438 \times ROS - 0.160 \times FAR + 1.860 \times NCA \quad (5)$$

Among the variables included in the model of the year 2008, two rates were kept: capital employed ratio and the number of turnovers of current assets as the return on operating expenses was replaced with return on sales. However the rates of liquidity and the coverage of capital invested disappeared from the model.

Although the capital employed ratio continues to have the strongest influence on the return on assets, the influence decreased as the correlation coefficient is 0.597, which explains 35.6% of the return on assets. The second variable introduced in the model, return on sales, caused a growth of the correlation coefficient to 0.805, and the degree of explanation of variation to 64.7%, while the last two variables had a smaller influence, and the R Square increased to 0.756.

We note that in 2009, the share of the return on assets remained unexplained due to the change of the 24 variables increased, which means an increase of the influence of external random factors that can not be controlled by the company management.

The linear regression model for 2010 includes also four rates: return on operating expenses, financial stability ratio, capital employed ratio and coverage of invested capital. The regression coefficients for this model are listed below:

Table 8

The regression coefficients for 2010

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R Square
	B	Std. Error	Beta				
4 (Constant)	-4.671	14.189		-0.329	0.744		
ROEx	0.841	0.215	0.458	3.916	0.000	0.485 ^a	0.235
FSR	-1.527	0.234	-1.321	-6.539	0.000	0.571 ^b	0.326
CER	1.202	0.206	1.196	5.830	0.000	0.785 ^c	0.617
CCI	0.196	0.094	0.236	2.087	0.044	0.812 ^d	0.659

a. Dependent Variable: ROA

The linear regression model for 2010 is as follows:

$$ROA = -4.671 + 0.841 \times ROEx - 1.527 \times FSR + 1.202 \times CER + 0.196 \times CCI \quad (6)$$

We find that the importance of the return on operating expenses increased, as it is first selected within the model, but in only explains 23.5% of the variation of return on assets. The

capital employed ratio, found in the models developed for previous years, also remains in 2010, but its importance decreased, as it is the third ratio selected. Overall, the four selected variables were able to explain only 65.9% of the change of return on assets, while the rest up to 100% is generated by random external factors.

IV. CONCLUSION

We conclude that the profitability of the Romanian firms declined as a result of the economic crisis. Before crisis (2007) it was significantly influenced by the financial structure and the financial balance. After the crisis, the importance of business administration indicators (as profit margin and rates of turnover) increased, but also of the random external factors, uncontrollable by the management.

From the above, we can say that certain financial ratios were influenced by the economic crisis, while others have not had such an influence. Ratios of return are among the most exposed to economic crisis. Other financial ratios studied in this article were not significantly influenced by the economic crisis as they either grew (such as liquidity and solvency ratios) or stagnated. Note that this finding was based on annual average levels of financial ratios calculated for the 40 companies studied, not excluded that some companies present a worse situation of these variables.

Also, please note that this study mainly used the statistical methodology and its limitations may affect the findings and the assessments made.

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