



An Analysis of Determinants of Corporate Financial Performance: Evidence from the Bucharest Stock Exchange Listed Companies

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ABSTRACT

The purpose of this paper is to investigate potential factors of influence on corporate financial performance. The analysis was conducted on Romania's case and included a sample of 46 companies listed on the Bucharest Stock Exchange, within 2009-2013 period. In the first part of the analysis the companies have been classified using factor analysis and further, based on it, we have performed a cluster analysis using SAS program. Subsequently, selected variables were tested using multivariate regression models for unbalanced panel data. The results are contradictory regarding the impact of company size. Based on the accounting approach we obtained a positive impact determined by the number of employees, while based on the market approach, performance is negatively correlated with total assets. In terms of indebtedness a negative relationship was revealed. At the same time, the relationship regarding transparency and disclosure in reporting was not statistically validated.

Keywords: Financial Performance, Panel Data, Transparency

JEL Classifications: C10, G32, L25

1. INTRODUCTION

Performance is a key concept in today's economic environment, shaped by rapid changes, fierce competition and globalization. Organisational performance is a multi-faceted phenomenon that involves all categories of stakeholders and represents an essential initiative to control and implement long-term strategies.

Despite being a highly debated topic in the literature, however, financial performance presents numerous shortcomings to clearly define the factors involved. Previous studies performed on the Romanian market focused on issues such as: The impact of company size on performance analysis (Vintilă and Duca, 2013), capital structure analysis (Stănculescu and Brezeanu, 2010), bankruptcy risk prediction models (Vintilă and Toroapă, 2012). The results seem to be mixed. It has been also reported the absence of an appropriate database, making difficult any empirical approach. Therefore, we believe that

this study makes a significant contribution on the topic being studied, with relevance both for the academic and the Romanian business environment. A similar study was conducted by Pantea et al. (2014) on a database collected for the 1999-2012 period. Thus we intend extending the previously examined factors and testing them during the economic depression period that marked the past years, within 2009-2013 period. These years have highlighted the spread of financial crisis and also the period following the adoption of the new Bucharest Stock Exchange Corporate Governance Code. The assumption was that this had significant impact on voluntary disclosure and reporting for listed companies.

The next section of this paper provides a presentation and analysis of the most used financial ratios in the literature for quantifying and testing the financial performance. We also followed the formerly investigated factors and the results that were obtained. In order to bring some additional information, we make references to meta-analyzes studies in this field. The third part of the study

shows a classification of companies using the factor analysis and base on it, the cluster analysis - Ward method. In the same time, in order to corroborate the results we have used the company size as criterion. Then we present and discuss the estimation result of econometric equations that were tested using multivariate regression with unbalanced panel data. The last part of the study presents the conclusions and traces the possible directions for extending this research.

2. LITERATURE REVIEW

Regarding performance evaluation, Lebas (1995) quoting the famous phrase “if is not measurable, does not exist,” considers defining for any performance analysis method to be measurable. Then, it must answer two questions: Why do we want to measure? And what do we want to measure? The answer for the first question is given differently by each category of stakeholders involved, internal or external. For the second question, the answer is more difficult and should be the itself definition of performance. The same author notes the absence of such definitions and criteria generally accepted for quantifying performance.

However, we notice that the main analysis direction was based on financial ratios obtained from accounting indicators. Despite the

numerous criticisms, financial ratios are an important tool both for managers, investors, creditors, analysts and researchers. Ross et al. (2003) consider that the main advantages of financial ratios are:

- Evaluate the company’s position compared to its main competitors
- Provides a predictions basis for actual and potential investors
- Highlights management performance in order to provide rewards
- Measure performance between departments in large companies
- Evaluate the performance of acquisitions
- Represents a base to create bankruptcy risk prediction models.

Financial ratios are generally grouped into four categories (Delen et al., 2013): Liquidity, solvency, profitability and asset utilization. In terms of performance it can be noticed three significant categories (Al-Kasar and Soileau, 2014): Profitability, management performance and liquidity. A summary of these indicators is presented in Table 1.

Analyzing the previous studies we can see that besides accounting indicators, market sizes indicators and both methods combined are used as well. Those are some examples:

- Accounting-based indicators: Waddock and Graves (1997); Van der Laan et al. (2008); Ebaid (2009); Céspedes et al. (2010)

Table 1: List of financial accounting ratios

Profitability ratios	
Net profit margin	Gross profit/Sales
EBITDA margin	EBITDA/Sales
EBIT margin	EBIT/Sales
Net profit margin	Net income/Sales
ROE	Net income/Equity
ROA	Net income/Total assets
Liquidity ratios	
Current liquidity ratio	Current assets/Current liabilities
Quick liquidity ratio	(Current assets–inventory)/Current liabilities
Absolute liquidity ratio (cash ratio)	Cash and cash equivalents/Current liabilities (immediately chargeable)
Activity ratios	
Receivable turnover rate	Sales/Receivable
Inventory turnover rate	Cost of goods sold/Inventory
Net working capital turnover rate	Sales/(Current assets–current liabilities)
Asset turnover rate	Sales/Total assets
Equity turnover rate	Sales/Equity
Fixed asset turnover rate	Sales/Fixed assets
Current assets turnover rate	Sales/Current assets
Progress ratios	
Assets growth rate	$(\text{Total assets}_t - \text{Total assets}_{t-1}) / \text{Total assets}_{t-1}$
Net profit growth rate	$(\text{Net income}_t - \text{Net income}_{t-1}) / \text{Net income}_{t-1}$
Sales growth rate	$(\text{Sales}_t - \text{Sales}_{t-1}) / \text{Sales}_{t-1}$
Asset structure ratios	
Share of current assets to total assets	Current assets/Total assets
Share of inventories to current assets	Inventory/Current assets
Share of cash and cash equivalents to current assets	Cash and cash equivalents/Current assets
Share of fixed assets to total assets	Fixed asset/Total assets
Debt coverage ratio	
Current liabilities ratio	Current liabilities/Total liabilities
Interest coverage ratio	EBIT/Interest
Debt ratio	Total liabilities/Equity
Leverage	Total liabilities/Total assets

Source: Own processing based on references. EBITDA: Earnings before interest, tax, depreciation, and amortization, EBIT: Earnings before interest and taxes, ROE: Return on equity, ROA: Return on assets

- Market-based indicators: Zeitun and Tian (2007); Jermias (2008)
- Both type combined: McGuire et al. (1988).

The accountants indicators critics consider that these measures are highly influenced by the industrial sector characteristics, weakly influenced by the market characteristics and not at all influenced by the firm characteristics (Wernerfelt and Montgomery, 1988). A way to improve these deficiencies was the introduction of market-based indicators. Lindenberg and Ross (1981) consider that these indicators represent “a viewing window into the firm through the market’s valuation of the securities issued by the firm and the changes in these values over time.”

Tobin’s Q is by far the most widely used market size indicator. It was introduced by James Tobin (Tobin and Brainard, 1968) and was defined as the ratio between the market value and the replacement cost, respectively the current market value of the company and the book value of its assets. If $q > 1$, then the value of capital investment exceed their cost. Smirlock et al. (1984) states that in an efficient capital market, Tobin’s q minimizes the main shortcomings of accounting indicators (referring to issues arising from tax laws and accounting conventions). On the other hand, disadvantages may be given precisely by the market features. At some point speculation and rumors may affect the market. As well, this indicator can not capture the value of the company’s intangible assets, such as the so-called goodwill. If $q < 1$, it is considered that the capital market undervalues the company, which will increase the demand for its shares. As q becomes higher, the issuance of new shares automatically becomes more profitable than indebtedness. But this fact will generate the perception that the share price is going to fall, which ultimately will balance the market (q tends to unity). It is also important to mention its critics in terms of forecasting capacity during crises and capital market breakdowns (Wright, 2004).

Beside Tobin’s q , the share price is also used to measure corporate performance, in order to reflect the real value of a company (Lindenberg and Ross, 1981; Chakravarthy, 1986; Ahmad and Jusoh, 2014). Therefore, we will focus on this kind of market performance evaluation, since we have found no similar previous studies for the Romanian case.

Among the representative determinants of corporate financial performance in the previous studies we could identify the factors presented in Table 2.

3. METHODOLOGY

3.1. Data Collection

The sample used in this study was selected from companies listed on the Bucharest Stock Exchange. Banks, financial investment companies and firms for which could not be found all information investigated were excluded. In the end, 46 companies were retained for this analysis. They come from all branches of industry. Data was collected from The Bucharest Stock Exchange and companies’ websites, from the annual reports, Corporate Governance Code, The Comply or Explain Statement and published statements, for the 2009-2013 period.

For these companies was first collected the financial information that was considered relevant for the analysis. Then, the collected data have been entered in SAS and processed through standardization. Since we have started from a large number of indicators it was difficult to classify the companies, so we used factor analysis and then, on its basis, cluster analysis, the Ward method. This method involves prioritizing upward the objects, assessing the distance between the clusters in order to maximize homogeneity within clusters.

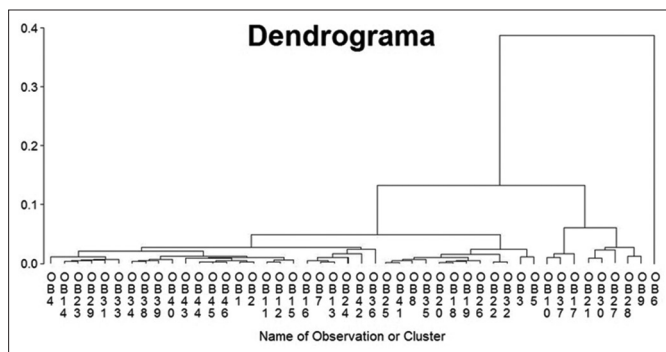
By this procedure, based on dendrogram (Figure 1), we can observed that the companies were grouped in three main clusters.

The first cluster comprises a single object (OB 6, represented by OMV Petrom SA). The second cluster comprises eight companies and the largest cluster comprises 37 companies. Based on this classification, in Figure 2 the financial profitability trend inside the clusters is graphically presented. It can be seen from Figure 2 that in the first cluster was included the company which registered the highest level of profitability in the sample, in the second cluster were included the companies with average level and in the third cluster, the largest one, the companies with the lower level of profitability can be found.

At the same time, using the approach employed by Margaritis and Psillaki (2010), we have used as criteria the number of employees in order to classify companies according to their size:

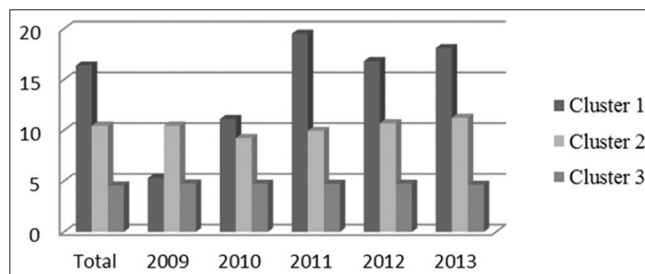
- Small companies: 5-50 employees
- Medium companies: 51-500 employees
- Large companies: >500 employees.

Figure 1: Cluster analysis graphical representation – dendrogram



Source: Own processing using SAS

Figure 2: Financial profitability inside clusters



Source: Own processing

Table 2: Brief review of the the analyzed factors

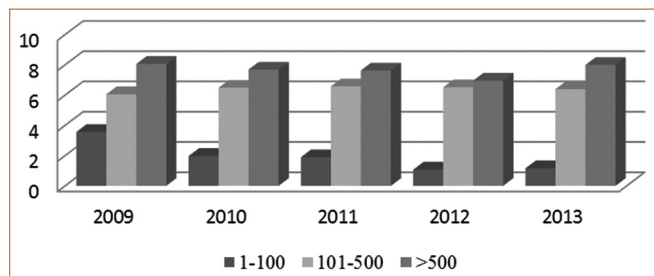
Impact factor	Authors	Measure	Results
Company size	Peng and Luo (2000)	Number of employees	Positive relationship
	Zeitun and Tian (2007)	Total assets	Positive relationship
Leverage	Symeou (2010)	Number of employees	The impact of the company size is negatively correlated with the economy size
	Pervan and Visic (2012)	Number of employees	Positive relationship
	Pantea et al. (2014)	Total assets	Positive relationship
	Margaritis and Psillaki (2010)	Sales	Positive relationship
	Sheikh and Wang (2011)	Leverage (total debt/total assets ratio), calculated at the same time and with a lag of 1-year	Positive relationship
	Vithessonthi and Tongurai (2015)	Short-term and long-term liabilities to total assets ratio	Negative relationship
Concentration degree and intensity of competition within the industry/ the market	Wernerfelt and Montgomery (1988)	Industry market share	Positive relationship
	Capon et al. (1990)	The share of marketing and R and D expenses on sales	Meta-analysis of 320 previous studies
Investments in R and D, advertising and marketing expenses	Kemper et al. (2013)	Growth in sales and total assets	Positive relationship
		Advertising and marketing expenses investments in R and D	
Growth in sales, diversification degree and distribution capacity	Yelih and Kaya (2013)	Economies of scale	No significant relationship
		Imports, exports, market size and market barriers to entry	
Market share, market size, industry and barriers to entry	Yelih and Kaya (2013)	Company's age	Positive relationship
		Intensity of competition	
Company's age	Yelih and Kaya (2013)	Marketing communication ability	No significant relationship
		Corporate social responsibility	
Type of economy where the company operates	Yelih and Kaya (2013)	Study based questionnaires regarding the market where the company is acting (the market culture), the degree of flexibility and de-bureaucratization (adhocracy)	No significant relationship
Institutional investors	Majumdar and Chhibber (1999)	The presence of foreign investors in the ownership structure	Positive relationship
		Analysis of previous studies, arguing that the presence of institutional investors positively influence performance, being correlated with factors such as reporting disclosure, minority shareholders protection degree, dividend policy	Positive relationship
	Gillan and Stark (2003)	The presence of institutional investors adversely affect performance and is positively correlated with leverage and market risk	Negative relationship
Corporate social responsibility	Van Beurden and Gössling (2008)	Three types of quantifying corporate social performance (measuring the level of transparency based on content analysis, specific programs such as philanthropic and social programs, reducing pollution and their results, researches conducted by using different ratings as KLD, CEP, Fortune, Moskowitz)	Meta-analysis of previous studies, most of them have shown a positive relationship
		Social responsibility was quantified based on the data available on KLD STATS Inc.	Negative relationship
	Lioui and Sharma (2012)	Index designed based on of 42 non-financial factors	Negative relationship
	Moscalu and Vintilă (2012)	grouping the following five issues: reporting transparency on CSR, environment, products and services, labor, society and human rights. On this basis was determined the social risk	Negative relationship

KLD: Kinder, Lydenberg, Domini, CEP: Council on economic priorities, Source: Own processing based on references

The Figure 3 shows there is a direct relationship between company size (measured by number of employees) and financial performance (measured by return on equity [ROE]).

Considering the previously mentioned aspects, the following factors have been established to be tested using econometric modeling (Table 3):

Figure 3: The trend of return on equity correlated with company size



Source: Own processing

Table 3: The variables used in econometric models

Variables	Symbol	Calculation method	
Dependent variables	Accounting-based measures		
	ROA	Net profit/total assets ratio	
	ROE	Net profit/equity ratio	
	Market-based measures		
	SHARE	The annual average closing share price	
	Independent variables	LEV	Total debt/total asset ratio
		LNANG	Natural logarithm of the employees number
		LNTA	Natural logarithm of total assets
		LICHID	Current assets/short-term debt ratio
		LPRO	Natural logarithm of net profit
INTENS		Fixed assets/total assets ratio	
SALCA		Payroll expenses/sales ratio	
RKP		Sales/equity ratio	
GROW		Growth in sales _{t,t-1}	
DEC		Dummy variable. It takes the value of 1 if in the company annual reports is disseminated the information on compliance/non-compliance with corporate governance principles implemented by BSE, 0 if it is not	
Control variables	AGE	Number of years elapsed from the date of listing on BSE	

Source: Own processing. ROE: Return on equity, ROA: Return on assets

The test of variables was performed by following multivariate regression models with unbalanced panel data:

$$Firm_performance_{i,t} = \alpha_0 + \alpha_1 * LNANG_{i,t} + \alpha_2 * LICHID_{i,t} + \alpha_3 * GROW_{i,t} + \alpha_4 * INTENS_{i,t} + \alpha_5 * RKP_{i,t} + \alpha_6 * LEV_{i,t} + \alpha_7 * SALCA_{i,t} + \alpha_8 * DEC_{i,t} + \epsilon_{i,t} \quad (1)$$

$$Firm_performance_{i,t} = \alpha_0 + \alpha_1 * LNTA_{i,t} + \alpha_2 * LEV_{i,t} + \alpha_3 * LPRO_{i,t} + \alpha_4 * GROW_{i,t} + \alpha_5 * DEC_{i,t} + \alpha_6 * AGE_{i,t} + \epsilon_{i,t} \quad (2)$$

Where: Firm_performance = ROA, ROE, SHARE;

α_0 = The constant;

$\alpha_1, \dots, \alpha_8$ = The slope parameters;

ϵ_j = Error term, quantifying the influence of factors with random action;

$t = 2009, 2010, 2011, 2012, 2013;$

$i = 1, 2, \dots, 46.$

3.2. Descriptive Statistics

Table 4 presents a summary of descriptive statistics of independent and dependent variables used in research. Statistics indicate the average, median, standard deviation, minimum, maximum, skewness and kurtosis. The positive skewness for financial performance variables indicates a right tail of the distribution which means a higher frequency of results below the average.

Before testing the models we conducted the correlation matrix in order to examine the relationship between variables. As a rule, the correlation coefficients between 0 and 0.30 marks a weak correlation, from 0.30 to 0.70 a moderate correlation, and between 0.70-one an elevated correlation. As can be seen from the Table 5, elevated correlations are observed between ROE and return on assets (ROA), the share price and ROA, the share price and the number of employees and also between the number of employees and the total assets. These variables can not be used simultaneously in the models.

3.3. Econometric Results

In the first two models we tested the impact of the analyzed factors on financial performance, treated as dependent variables, using the accounting-based measure ROE and ROA. The regression results are presented in Table 6. We can see that the aspects mentioned in the first part of the study are confirmed, there is a link between company size and financial performance, the relationship has been statistically validated.

We also notice that performance is not sensitive to liquidity risk, only the indebtedness factor calculated by leverage has negative impact on performance. The change in sales is also negatively correlated with performance. The explanation may be given by the fact that some of the companies included in this sample have faced to sales decline during the analyzed period, therefore this indicator cannot capture the growth prospects and investment opportunities, as stated Margaritis and Psillaki (2010). A similar relationship has been observed as regards the proportion between fixed assets and total assets, the so-called “asset tangibility.” Romanian companies still have a low weight of assets that generate high degree of automation and hence the costs reduction. Therefore, they are rather cost generators and cause performance decrease. The equity turnover ratio significantly influence performance, so a 1% increase of this ratio will increase ROE to 4.55% and ROA to 1.40%. To test whether performance is affected by the increased volatility of personnel, which was remarked on the analyzed companies, and by the investments in employee training, we introduced in analysis a variable that quantifies the weight of employee cost on sales. The relationship has not been statistically validated. Similar results were obtained regarding the transparency factor analyzed through the dummy variable - Comply or Explain Statement. Since this analysis was conducted for 2009-2013 period, it captures exactly the years immediately following after the adoption of the new BSE

Table 4: Descriptive statistics

Variables	Mean	Median	Standard deviation	Kurt	Skew	Min	Max	N
ROE	8.08	5.65	9.52	15.05	3.04	0	76.56	206
ROA	5.04	3.24	5.4	3.16	1.7	0	28.34	206
SHARE	7.66	0.5	32.54	35.68	5.91	0.03	236.81	206
LEV	65.74	34.58	88.28	19.28	3.48	0.06	773.36	230
LNANG	1258.17	533	3305.87	38	6.07	13	25176	230
LNTA	1174048	165812	5099860	41.26	6.41	10773	40038000	230
LICHID	4.46	1.9	8.6	30.66	5.13	0.17	68.84	230
LPRO	8.45	8.27	2.01	1.82	0.52	2.39	15.38	205
INTENS	57.04	56.1	22.96	-1.06	-0.05	6.78	98.41	230
SALCA	21.34	18.37	13.28	1.01	1.05	0.68	68.92	230
RKP	1.3	0.99	1.25	7.72	2.52	0.06	7.68	230
GROW	101.33	98.09	28	4.71	1.12	17.03	233.47	230
AGE	9.59	11	5	-1.39	-0.22	1	18	221

Source: Own processing. ROE: Return on equity, ROA: Return on assets

Table 5: Correlation matrix

Variables	ROE	ROA	SHARE	LEV	LNANG	LNTA	LICHID	LPRO	INTENS	SALCA	RKP	GROW	AGE
ROE	1												
ROA	0.89	1											
SHARE	0.05	0.89	1										
LEV	0.18	0.18	-0.08	1									
LNANG	0.03	0.04	0.72	-0.04	1								
LNTA	0.03	0.05	0.80	-0.04	0.97	1							
LICHID	-0.06	-0.03	0.11	-0.21	-0.09	-0.07	1						
LPRO	0.31	0.35	0.34	0.23	0.34	0.33	0.06	1					
INTENS	0.05	0.03	0.17	-0.27	0.21	0.21	-0.06	-0.15	1				
SALCA	-0.09	-0.04	0.01	-0.22	-0.13	-0.16	0.11	-0.13	0.25	1			
RKP	0.04	0.07	-0.07	0.59	-0.04	-0.06	-0.14	0.12	-0.51	-0.32	1		
GROW	-0.03	-0.08	0.00	-0.03	-0.03	-0.02	0.15	-0.09	0.12	0.06	-0.22	1	
AGE	0.01	0.06	-0.21	0.15	-0.15	-0.18	-0.12	-0.12	-0.08	0.01	0.17	-0.03	1

Source: Own processing. ROE: Return on equity, ROA: Return on assets

Table 6: Results of regression analysis with panel data, accounting-based measures as dependent variables

Independent variables	Dependent variable			
	ROE		ROA	
	Coefficient	P value	Coefficient	P value
C	17.9780	0.0000***	15.3552	0.0000***
LNANG	0.0004	0.0017***	0.0002	0.0016***
LICHID	-0.0535	0.6485	-0.0160	0.6550
GROW	-0.0809	0.0002***	-0.0531	0.0000***
INTENS	-0.0872	0.0022***	-0.0910	0.0000***
RKP	4.5558	0.0000***	1.4022	0.0001***
LEV	-0.0566	0.0000***	-0.0397	0.0000***
CHSAL	-0.0091	0.8308	0.0153	0.5452
DEC	0.2974	0.7853	0.0871	0.8926
R ²	0.45		0.40	
F-statistic	20.20360	0.0000	16.53754	0.0000
N	206		206	

Source: Own processing using Eviews P value ***<1%, **<5%, *<10%. ROE: Return on equity, ROA: Return on assets

Corporate Governance Code, with the nineteen OECD principles comprises in the statement (adopted in 2008, was applied beginning with the 2009 fiscal year). We can say that Romanian companies reporting and compliance with the new regulations of was not so fast. The process is still a theoretical one and therefore it cannot generate a significant influence on financial performance yet. However, in the past 2 years, on average, 30 companies have reported and published on its website this declaration, compared to 11 companies in 2009-2010 period.

In the third model performance was measured by stock market share price and the results are similar with the first two models as regards the indebtedness factor. We can say that the market will penalize higher risk and will remunerate positive results. So, we notice that a 1% increase in net profit will generate a 7.85% increase of the share price.

It is worth mentioning that the company size measured by total assets is negatively correlated with performance. Also the period elapsed since the company was listed negatively influences the share price. The explanation for these two issues may be given by the association with the maturity stage of companies with high values of assets. For these companies, the market anticipates a slower sales growth rates and a lower share price volatility. They also presents the risk of failing to notice the favorable market perspectives and delay the divestment of certain assets, which will erode the future results (Table 7).

4. CONCLUSIONS

The results of this study showed that corporate performance is adversely affected by indebtedness. They are consistent with other studies that focused on financial crisis (Vithessonthi and Tongurai, 2015).

The findings also showed that financial accounting performance is positively related with company size, quantified by employees

Table 7: Results of regression analysis with panel data, market-based measure as dependent variable

Independent variables	Dependent variable	
	SHARE	
	Coefficient	P value
C	-43.8124	0.0209**
LNTA	-1.1600	0.0241**
LEV	-0.0354	0.2697
LPRO	7.8576	0.0000***
GROW	0.0696	0.4888
AGE	-9.1725	0.0611*
DEC	-1.3466	0.0047***
R ²	0.19	
F-statistic	7.1436	0.0000
N	186	

Source: Own processing using Eviews P value ***<1%, **<5%, *<10%

number, but in market-based sizes we obtained a negative relation to total assets. It can be said that a large amount of corporate assets is no guarantee for increased development investments or for higher stability in times of crisis, in other words, no a guarantee for further evolution. The weight of employees expenditures in sales indicates that a company with increased resources will invest more in training its employees, which will lead to higher personnel stability and better return on labor. This fact, revealed in other studies (Symeou, 2010), is particularly important for the Romanian economy that has faced with a phenomenon difficult to manage. The transition from the communist economy to the open market and the privatization of state enterprises has led a large number of people which were strictly specialized on a particular activity unable to find another job. At the same time, large companies are facing high personnel fluctuation and a lack of suitably qualified people in the labor market.

The use of annual average stock price as the dependent variable in the last model was driven by the results according to which market-based indicators can not be manipulated through accounting practices, are not influenced by the company's management and do not take into account the characteristics of the industrial sector. We assumed that the share price reflects the company's market value.

The main restrictive issues of this study are caused by the small number of companies included in the sample. However, the results are consistent with other researches in this field and have involved a set of indicators that can be easily used and might represent a landmark in making decisions. For further analysis, we intend extending the factors examined, considering both non-financial indicators and macroeconomic factors.

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