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## The effects of merger and acquisitions processes on companies' performance

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### ABSTRACT

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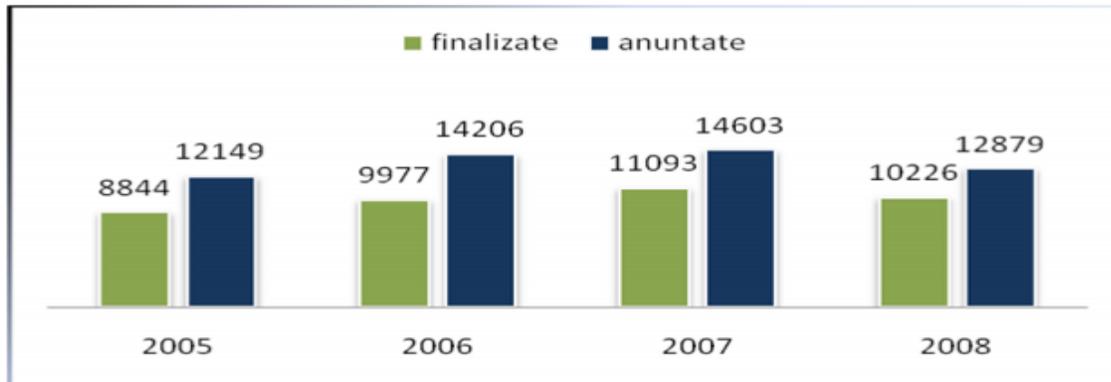
This paper examines the effects of mergers and acquisitions processes on companies' performance by taking into consideration M&A deals in 2007, for Central Europe and Romania's companies. This is performed by examining the M&A from 53 companies, five years before and five years after M&A. I have used Panel data for 53 companies, ROE and ROA as performance indicators (dependent variables for the model) and structure, indebtedness, risk and dividends indicators as independent variables. The study concludes that most of the indicators have importance for the evolution of dependent variables, but instead of financial indicators, we have to use qualitative ones if we want the model to be more complete

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## 1.Introduction

When managers from a company decide to increase the value of a firm they have to possibilities: choose either cross-border M&A or greenfield foreign direct investment (FDI). The recent studies have concluded that most of the firms chose M&A, even though these is the most risky one. If we look at the following chart, we observe that the number of M&A deals are increasing:

## Number of M&A deals in Europe



*Source:Thompson Reuters Database*

So, taking into consideration these big numbers, I engaged in such research in order to see which are the factors that have big influence in the after performance of a company involved in this type of deal.

In order to assess the financial performance of the companies (measured with ROE and ROA), I will analyze companies from Central Europe and Romania which have been involved in such deals in 2007. The analyze will consist in traditional accounting measures, even though market rations and qualitative measures would have been more relevant, but the little access to information determined me to use just quantitative measures.

I have chosen for the analyze the year 2007, because I've wanted to consider 5 years before the deal and 5 years after, so the last financial information available on Thompson Reuters for all the companies has been in 2012.

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## 2. Literature Review

Mergers and acquisition is one of the subject that receive considerable attention in all domains, so there are many studies related to such process. Starting with the question "*Why do firms prefer M&A when the success rate is so low?*" Lubatkin (1983) tried to find an answer to this question by taking into consideration two sentences: first one is that M&A do not give real benefits (behind these statement he found the managers that make mistakes because they want to maximize their profit, based on shareholders' money) and second: M&A give real benefits, but can not be observed all the time because there are a lot of administrative problems and so the benefits are cancelled, but they exist most of the time.

The recent studies also suggest that there are a lot of qualitative variables that influence the success or the failure of M&A, such as: the type of payment provided, the similarities between the companies involved, the experience of managers in such process, the geographical distance. So, King et al. (2004) in their study concluded that even though the variables listed above have a big influence on the process, however we can't find a significant correlation between them and the success of M&A.

Sorenson et al. (2001), in their study have concluded that the geographical proximity has also influence in this type of process, by demonstrating the ease of transmitting information between the companies, when they are more closely located. Also, Maurice Levi et al. (2013) have demonstrated that the presence of a female in the corporate board has a big influence in the success of M&A. So, if a woman is presented in the corporate board, the transaction will finish in a long time, but is more likely to succeed. Moreover, Tanure et al. (2009) have showed that the cultural differences influence this type of process in all its phases.

The success of a M&A is also given by the technology used by the companies involved. Thus, in their study Bena et al. (2012), they have showed that if the companies use different technologies, additional charges may occur and so this can lead to the failure of the process.

Another question that researchers have tried to answer was whether companies prefer foreign or domestic investor when involving into a M&A deal. Rui Albuquerque et al. (2012) concluded that the decision is given by the company status: thus, if the company is in financial difficulties, there are preferred foreign investors and domestic investors if the company's situation is a good one. The strategy adopted by the company is a fair one because it is known that foreign companies are willing to invest in company with a not very good situation because they can pay a lower price when acquiring and in most of the cases they can transform them in profitable companies.

Larry D. Qiu et al. (2007) studied a model that showed the moment when companies begin to consider a process of M&A as being successful. Through this study, they concluded:

- The companies begin to merger only when the market size is below a critical threshold. Therefore, mergers occur most often when there is a negative demand shock
  - Heterogeneity of firms is important in the fusion process, namely: companies with identical marginal cost will not merge if they have identical and constant marginal costs
  - Mergers waves occur only when there are a small number of  $n$  companies in the market
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### 3. EMPIRICAL REVIEW

The companies involve into M&A deals in order to increase their performance, strengthen their market position and increase market share. The easiest way to measure the impact of mergers and acquisition is to measure the performance, which can be easily achieved, since the available accounting information. Thus, Papadakis et al.(2010) in their study, “*The Use of Accounting-Based Measures in Measuring M&A Performance: A Review of Five Decades of Research*”, they have compared the results obtained before and after the M&A, in order to measure the performance obtained. They have used ROA (for measuring the performance), the most common indicator used in the literature, but they have failed to establish if ROA is the best indicator that can be used to measure the performance of a M&A.

The performance after a M&A was studied by Wu Changqi in “*Determinants of Cross-Border Merger & Acquisition Performance of Chinese Enterprises*”. In this study, the author took into consideration Chinese listed companies that have been involved into a M&A deal, between 2000 and 2006. He used a total of 91 companies involved into 165 transactions.

In his study, he consider 4 hypothesis:

1. **Hypothesis 1:** Pre-acquisition performance of Chinese company (the acquirer) and its cross-border acquisition performance are positively related.
2. **Hypothesis 2:** Pre-acquisition free cash flow Chinese company (the acquirer) and its acquisition performance are negatively related.
3. **Hypothesis 3:** Proportion of the state shares in Chinese company and post cross border acquisition performance are negatively related.
4. **Hypothesis 4:** Organizational age of acquiring firm and performance of the cross-border mergers and acquisitions are positively related.<sup>1</sup>

In this study, he have used as **dependent variable**: increase rate of ROA, calculated as difference of ROA two years after M & A minus ROA in the year before M & A took place, and then divided by ROA in the year before<sup>2</sup>:  $ROA = \frac{ROA_2 - ROA_1}{ROA_1}$ . As **independent variables** he used: Pre-acquisition performance (calculated as  $\ln(RNetIncome_1/Net Profit_2)$ ), Free cash flow, Proportion of the state owned shares, Organizational age, Industry dummy (for all firms into manufactory industry (1) and non manufacturing industry (0)).

The results showed that :the pre-acquisitions performance of Chinese acquiring company is statistically positively related to the cross border acquisitions performance, coefficient of variable cash/capital, an indicator for the pre-acquisition free cash flow, is positive, but statistically insignificant and so **Hypothesis 2** has been rejected, also the empirical result shows proportion of the stat shares in the listed companies is positively related to overseas acquisition performance,

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<sup>1</sup> Wu Changqi (2007) *Determinants of Cross-Border Merger & Acquisition Performance of Chinese Enterprises*

<sup>2</sup> Idem

and so the **Hypothesis 3** has been also infirmed. Finally, organizational age is in slightly positive relation to overseas acquisition performance of Chinese firms, which is consistent with the previous hypothesis, that is, organization learning enables firms to improve and develop new technologies and knowledge, promoting the creation of intangible assets, which is the basis of continuing competitiveness.<sup>3</sup>

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## 4. DATA AND METHODOLOGY

To analyze the effects of M&A processes on companies performance , I have considered 53 listed companies from Central Europe and Romania (excluding financial institutions), that suffered a M&A process in 2007. Also, I have considered 5 years before the process and 5 years after. Financial data for these companies have been extracted from Thompson Reuters Database.

I began my study by showing the descriptive statistic of three financial indicators used to measure the financial performance of a firm, in the year of transaction (2007) and one year after (2008):

	ROE		ROA		Current Liquidity	
	Year 2007	Year 2008	Year 2007	Year 2008	Year 2007	Year 2008
<b>Average</b>	0.1310061	0.0962181	0.051092	0.037045	1.680143	1.390201
<b>Median</b>	0.137146607	0.0965653	0.053377	0.029249	1.428239	1.297145
<b>Standard Deviation</b>	0.09816854	0.115574	0.064793	0.070808	1.297245	0.734324
<b>Max</b>	0.301914614	0.3343115	0.248073	0.288184	8.164579	3.397447
<b>Min</b>	0.148552218	-0.1461039	-0.19609	-0.13965	0.002499	0.004293

*Source: Thompson Reuters Database*

As expecting, all these three indicators are recording a decrease in global terms in the first year after the transaction. Most of the studies, showed that the success or a failure of this kind of process can be seen just after minimum 3 years. For ROA and ROE the decrease has been caused not necessary by a decrease of the net profit, but by the increase of the capital (foe ROE) and asset (for ROA). The decrease of current liquidity is due to the coming of a new investor into the firm, with new ideas, with other methods of determining performance.

Through descriptive statistics, I have tried to establish a trend of M&A process for companies from Romania and Central Europe in 2007. Even though, the real performance can not be seen one year after, in most of the cases the changes in the management attracts lots of improvements.

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<sup>3 3</sup> Wu Changqi (2007) *Determinants of Cross-Border Merger & Acquisition Performance of Chinese Enterprises*

In order to build the model I have considered the following explanatory variables:

- **The company size:** measured by total amount of asset or the value of turnover (for these series have been applied the logarithm in order to be comparable with the others)
- **Indebtedness indicators:**
  - **Overall indebtedness:**  $\frac{\text{Total DEBT}}{\text{Total ASSETS}}$
  - **Levier:**  $\frac{\text{Total DEBT}}{\text{Total ASSETS}}$
  - **Solvency:**  $\frac{\text{Total ASSETS}}{\text{Current liabilities}}$
- **Dividends: DPS** (dividends per share)
- **Structure of expenditure:**  $\frac{\text{Total Expenses}}{\text{Turnover}}$
- **Risk ratios: Current liquidity:**  $\frac{\text{Current Assets}}{\text{Current Liabilities}}$
- **Dummy variable:**  $\left\{ \begin{array}{l} 0, \text{ before the process of M\&A} \\ 1, \text{ after the process of M\&A} \end{array} \right.$

As for dependent variables I have used **ROE** and **ROA**.

The first step in building this model, was the Correlation Matrix for the independent variables used in the model. This showed us that: between Levier and the Overall Indebtness is a big correlation, and so for Current Liquidity and Solvency, Turnover and Total Assets, so these correlated variables can not be used both in the same model.

Taking into consideration the first dependent variable ROE, I have built nine models by combining the explicative variables, which can be seen in the following table:

ROE	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0000	0.0000	0.0000	0.9542	0.0000	0.0000	0.9851	0.0000	0.0000
Dummy		0.0012	0.0015	0.7455	0.0092	0.0099	0.7456	0.0092	0.0099
ln(assets)	0.3705	0.0000	0.0000						
ln(turnover)				0.7219	0.0000	0.0000	0.6906	0.0000	0.0000
Overall indebtedness	0.8598			0.976			0.9949		
Levier		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000
Solvency		0.1756		0.3469	0.4346			0.4346	
DPS(dividends per share)	0.206	0.014	0.0149	0.1819	0.0075	0.0076	0.1748	0.0075	0.0076
Expenditures/Turnover	0.8643	0.0377	0.0126	0.933	0.0000	0.0000	0.8987	0.0000	0.0000
Current Liquidity	0.3142						0.334		
R <sup>2</sup>	0.71%	66.85%	66.42%	0.58%	63.64%	63.49%	0.59%	63.64%	63.49%
Prob F Statistic	0.5422	0.0000	0.0000	0.7737	0.0000	0.0000	0.7673	0.0000	0.0000
Durbin Watson	2.1044	1.4870	1.4698	2.1049	1.4235	1.4175	2.1054	1.4235	1.4175

As I've mentioned above, these nine models have been raised by combining the explicative variables, by putting and remove them from the model taking into consideration the level of

significance. I have considered the model with the biggest  $R^2$  and with all the variables significant to be the most accurated. So, model 3, resultated to be the best. The form of the equation:

$$ROE = C(1) + C(2)*DUMMY + C(3)*LN(Assets) + C(4)*DPS + C(5)*Exp$$

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.952359	0.113962	-8.356807	0.0000
LN?	0.083580	0.008122	10.29078	0.0000
LEV?	-0.048412	0.001439	-33.64591	0.0000
DPS?	0.011086	0.004538	2.442961	0.0149
CH?	0.038221	0.015276	2.502050	0.0126
DUMMY?	-0.125829	0.039359	-3.196994	0.0015
R-squared	0.664166	Mean dependent var		0.080332
Adjusted R-squared	0.661256	S.D. dependent var		0.798850
S.E. of regression	0.464944	Akaike info criterion		1.316440
Sum squared resid	124.7320	Schwarz criterion		1.361396
Log likelihood	-377.7424	Hannan-Quinn criter.		1.333963
F-statistic	228.2227	Durbin-Watson stat		1.469819
Prob(F-statistic)	0.000000			

In this model, all the variable used have been statistically significant: Dummy variable, Ln (assets), DPS and Total Expenditure/Turnover, because the probabilities associated resulted to be less than 5%. Also, the model is a valid one, because probability associated to F statistic is less than 5%. The value of  $R^2$  shows that the used variables are capable to explain in proportion of 66.41% the evolution of ROE. It can be observed a small correlation between time series by looking at the Durbin Watson statistic, which has a value of 1.47. The intercept is significant also, which means that there are a lot of other variables not used in my model that can explain the evolution of ROE.

So, the results have been the expected ones. For example, as dummy variable resulted to be statistically significant, it means that ROE after the process is influenced by ROE before the process. Also, as the company size increase, ROE will increase also.

By applying the Jarque-Berra Test:

*H0: the series is normally distributed*

*H1: the series is not normally distributed*

It resulted that all time series are normally distributed, because the probabilities associated to this test are more than 5%. The asymmetry coefficient (skewness) is negative, but very close to 0. Regarding kurtotica, the series have the indicator values less than 3, which means a platykurtic distribution.

For this model it has been applied the regression with fixed effects (FE) and random effects (RE), and by using the Hausman Test it resulted a probability of 10.25%, which means that the regression with RE is more adequate to estimate our variables. It has been expected to be like that as fixed effects would require time-independent effects of exogenous variable and potentially correlated errors.

By taking into consideration ROA as dependent variable, I have obtained the following results:

ROA	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Intercept	0.0727	0.0700	0.6535	0.6990	0.8217	0.0618	0.0994	0.4312	0.2141	0.0618
Dummy	0.0006	0.0006	0.3340	0.1833		0.0021	0.0027		0.1467	0.2513
ln(assets)	0.0551	0.0506	0.0285			0.0021				0.0021
ln(turnover)				0.0000	0.0000			0.0007	0.0012	
Overall indebtedness	0.0007	0.0016		0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Levier			0.1350						0.1227	
Solvency				0.5227		0.2406				0.2406
DPS(dividends per share)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Expenditure/Turnover	0.1007	0.0769	0.0290	0.1550		0.0071	0.0090	0.3329		0.0071
Current liquidity	0.6081		0.5744						0.0045	
Rotation Speed						0.5408	0.4963		0.9198	0.5408
R <sup>2</sup>	10.32%	9.87%	9.80%	17.51%	16.90%	16.46%	16.04%	13.78%	12.78%	16.46%
Prob F Statistic	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin Watson	1.570543	1.559964	1.3863	1.499097	1.484897	1.48113	1.467534	1.381857	1.474693	1.48113

The models built for ROA, all have R<sup>2</sup> too small with the used exogenous variables and so I have tried to introduce a new variable: rotation speed in order to increase its value. I have not succeeded because the new variable has been statistically insignificant. So, the best model that can be obtained for ROA is model 5, which has R<sup>2</sup> 16.90% and all the dependent variables: ln(turnover), overall indebtedness, DPS, statistically significant.

## 5.CONCLUSIONS

Firms choose to merge for various reasons: to expand, strengthen or maintain market position, to escape from bankruptcy, in order to increase their performance. Although the M&A is so popular nowadays, empirical studies argue that only 30% of mergers and acquisitions succeed to improve corporate performance. There are several factors that cause the failure of M&A process such as: slow integration, failure to achieve synergies between the participating companies, cultural differences, differences in management.

So, the aim of this work was to investigate the factors that lead to the success or to the failure of M&A processes and to show the evolution of two indicators (ROE and ROA). Even though the correlation is not very strong, the result of the analysis showed that there are a lot of factors that should be analyzed when investigating this kind of process, from quantitative to qualitative ones.

However, my study has a lot of limits:

- Hard access to information: it has been preferred to use in my model qualitative factors, but unfortunately these are not available in databases where I have searched. The use of accounting measures is not sufficient because in most of the cases they hide the relevant information
- I have only studied publicly listed companies that account only a small number of firms, lots of mergers and acquisitions occur for no-listed companies, because of the easy access to the financial information (on Thompson Reuters database we can find financial information only for listed companies).

Until today, the researchers concluded that although the above variables have a large influence on M&A deals, however there has not been found any significant correlation between them and the success of a M&A process. So, many important questions still remain: Which are the qualitative factors that influence the performance of a company after a M&A process? Do all qualitative and quantitative factors have influence when analyzing the company performance after a M&A process? What is the influence of corporate governance of a success or a failure of o M&A process?

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Thompson Reuters and Zephyr Databases