

**M&A: DIVIDED WE STAND,  
UNITED WE FALL? CASE OF  
EMERGING EUROPEAN  
ECONOMIES**

by

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**Date** \_\_\_\_\_

Kyiv School of Economics

Abstract

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In this thesis the treatment effect of M&A activity on a bank's performance is studied. We have found that target banks are usually less profitable, have higher cost-income ratio and operate on a significantly higher profit margin than their peers, while acquiring banks are bigger, have larger share of deposits to total assets and maintain better asset quality. This supports the assumption of a strong selection effect taking place in the appointment of M&A treatment. Following methodology of the most recent empirical literature, a matching technique was exercised to solve selection problem. However, this research looks at a wider range of factors (both bank-specific and external) that could impact both the decision of participation in M&A and post-merger performance of a bank, and is the first to apply this technique to study M&A deals in Emerging European Economies. As a result, a negative effect of M&A on bank's performance is concluded.

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## GLOSSARY<sup>1</sup>

### Asset Quality Ratios

**Loan Loss Reserves /Gross Loans** - reserve for losses expressed as percentage of total loans, indicates how much of the total portfolio has been provided for but not charged off. Given a similar charge-off policy the higher the ratio the poorer the quality of loan portfolio will be.

**Loan Loss Provisions / Net Interest Revenue** - relationship between provisions in the profit and loss account and the interest income over the same period. Ideally this ratio should be as low as possible and in a well run bank if the lending book has higher risk this should be reflected by higher interest margins. If the ratio deteriorates, this means that risk is not being properly remunerated by margins.

**Loan Loss Reserves /Non Performing Loans** - relates loan loss reserves to nonperforming or impaired loans. The higher this ratio is the better provided the bank is and the more comfortable we will feel about the assets quality.

**Non Performing Loans / Gross Loans** - a measure of the amount of total loans which are doubtful. The lower this figure is the better the asset's quality.

**Net Charge Off / Average Gross Loans** - amount written-off from loan loss reserves less recoveries measured at a percentage of the gross loans. It indicates what percentage of today's loans have been finally been written

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<sup>1</sup> All definitions of the ratios have been taken from Bureau Van Dijk Bankscope Dataset and <http://www.investopedia.com/terms/>

off the books. The lower this figure the better as long as the write off policy is consistent across comparable banks.

Net Charge Off /Net Income before Loan Loss Provisions- measures charge offs against income generated in the year. The lower this figure the better, other things being equal.

### Capital

Tier 1 Ratio - shareholder funds plus perpetual non cumulative preference shares as a percentage of risk weighter assets and off balance sheet risks measured under the Basle rules. This figure should be at least 4%.

Capital Adequacy Ratio - measures Tier 1 + Tier 2 capital which includes subordinated debt, hybrid capital, loan loss reserves and the valuation reserves as a percentage of risk weighted assets and off balance sheet risks. This ratio should be at least 8%.

Equity / Total Assets - measures the amount of protection afforded to the bank by the Equity they invested in it. The higher this figure the more protection there is.

Equity /Net Loans - measures the Equity cushion available to absorb losses on the loan book.

Equity /Cust & ST Funding - measures the amount of permanent funding relative to short term potentially volatile funding. The higher this figure the better.

### Operations

Net Interest Margin (NIM) - net interest income expressed as a percentage of earning assets. The higher this figure the cheaper the funding or the higher the margin the bank is commanding. Higher margins and profitability are desirable as long as the asset quality is being maintained.

Net Interest Income / Average Assets - indicates the same but expressed as a percentage of the total balance sheet.

Other Operating Income / Average Assets - indicates to what extent fees and other income represent a greater percentage of earnings of the bank. As long as this is not volatile trading income it can be seen as a lower risk form of income. The higher this figure the better.

Pre-tax Operating Income / Average Assets - is a measure of the operating performance of the bank before tax and unusual items. This is a good measure of profitability unaffected by one off non trading activities.

Return on Assets (ROA) – ratio of company's net income to its total assets, indicates how efficient a company uses its assets to generate earnings.

Return on Average Assets (ROAA) - the most important single ratio in comparing the efficiency and operational performance of banks as it looks at the returns generated from the assets financed by the bank. Accounts for changes in total assets during a fiscal year.

Return on Equity (ROE) - net income returned as a share of shareholders equity, measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

**Return on Average Equity (ROAE)** - measure of the return on shareholder funds accounting for changes in shareholders' equity during a fiscal year. The higher the figure the better but one should be careful in putting too much weight on this ratio as it may be at the expense of an over leveraged balance sheet.

**Non Operation Items/Net Income** - denotes what percentage of total net income consists of unusual items.

**Cost to Income Ratio (CIR)** - measures the overheads or costs of running the bank, the major element of which is normally salaries, as percentage of income generated before provisions. It is a measure of efficiency although if the lending margins in a particular country are very high then the ratio will improve as a result (lower is better). It can be distorted by high net income from associates or volatile trading income.

### **Liquidity**

**Net Loans / Total Assets** - indicates what percentage of the assets of the bank are tied up in loans. The higher this ratio the less liquid the bank will be.

**Net Loans / Cust & ST Funding** - a measure of liquidity in as much as high figures denote lower liquidity.

**Net Loans / Total Deposits & borrowings** - similar ratio, but having as its denominator deposits and borrowings with the exception of capital instruments.

## *Chapter 1*

### INTRODUCTION

Companies usually go through one of the following two major growth strategies: organic growth or expansion through mergers and acquisitions. Due to increasing deregulation, globalization, financial innovations and competition M&A strategies are becoming global phenomena nowadays. Illustrating evidence to this fact is the growing frequency of M&A news reports, which reflect an ever-increasing number of M&A deals, as well as of their value.

There is a wide variety of factors motivating a company to pursue a merger and acquisition strategy, and this is extensively discussed in the literature references. Essentially, they can be divided into two broad categories: value-maximizing and non-value-maximizing (Berger et al. (1999), Vander Venet (1996)). Value maximization is achieved largely through economies of scale or an increase in efficiency, while non-value-maximizing objectives can be achieved through empire-building, defensive or state-promoted M&A's. Regrettably, the former has not always been successful in attaining these goals. Recent business activity indicates many examples of merger failures. In fact, according to Human Capital Institute (HCI, 2008), about 70% of M&A ultimately fail. Miller (HCI, 2008) noticed that the failure rate of M&A's was even gloomier than the divorce rate being around 50%. Why is it so? There are many possible reasons. M&A failures could be attributed to such factors as wrong choice of the target, bad timing, bad implementation, etc.

It is my objective through this research paper to assess the success rates of banking M&A deals taken place in Emerging Europe during 1996-2006 especially focusing on Ukrainian and Russian deals.

Through an analysis of the banking systems of the Emerging European economies, researchers (Fries and Taci, 2005; Grigorian and Manole, 2006, etc) showed the inefficiency and fragmentation of those banking systems in terms of profitability, financial innovation, risk and liquidity management. Particularly, the Ukrainian banking system, is often brought up as an illustration of the least-efficient and highest- cost banking system among transition economies (Fries and Taci, 2005; Grigorian and Manole, 2006) mainly due to the large number of undercapitalized small banks, management inefficiencies, and poor resource allocation (Kyj and Isik, 2008). Moreover, the data suggests that in addition to being significantly less cost-efficient, target banks of Emerging European countries have higher interest margins, giving ground to the hypothesis that M&A's could achieve value-maximizing goals by taking advantage of these differences. Supporting this idea, since 2000, large European banks expressed strong interest in acquisitions in Central and Eastern Europe, Latin America and other markets offering higher margins.

This research studies the effect of mergers and acquisitions on the performance of banks in Emerging European Economies and addresses a sample selection problem throughout propensity score matching technique. Despite following closely methodology of the most recent empirical papers, this research looks at a wider range of factors (both bank-specific and external) that could impact both the decision of participation in M&A and post-merger performance of a bank. Moreover, to our knowledge, it is the first to apply this technique to study M&A deals

in Emerging European Economies. Thus, throughout the research we identify the determinants of a bank to participate in a merger in the following year and compare profitability of the consolidated institution in the next year with performance of non-merging banks, which were in a similar position.

The rest of the study consists of four main parts. Chapter 2 gives insight into the M&A activities in Emerging Europe during 1996-2007. Chapter 3 discusses the empirical literature on the topic of the study. Chapter 4 describes the methodology used in the research. Chapter 5 presents the data. And finally, chapter 6 discusses the results obtained.

## *Chapter 2*

### **M&A ACTIVITY IN EMERGING EUROPE**

Over the past twenty years growing globalization, free trade, deregulation, and technological innovations have been reshaping the world banking system, as well as banking sectors of individual countries. Efficiency, range of services provided and global presence became a focus of financial institutions.

The consolidation trend in Western Europe transformed the European financial sector leading to a significant decline in the number of banks. Of the more than two thousands M&A's in 1995-1999, domestic deals were the majority. Since 2000 large European banks became interested in cross-border M&As and their number has been growing fast till 2007. Moreover, in these years the number of banks expanding into Latin America, South-East Asia and Central and Eastern Europe increased and at some point even exceeded number of deals targeting European Economic Area. Such strategy can be explained by targeting higher margins that those markets offered. The enlargement of the European Union in 2004 fostered the expansion of Western European banks into Central and Eastern Europe and was followed by an increase in the number of banking mergers and acquisitions.

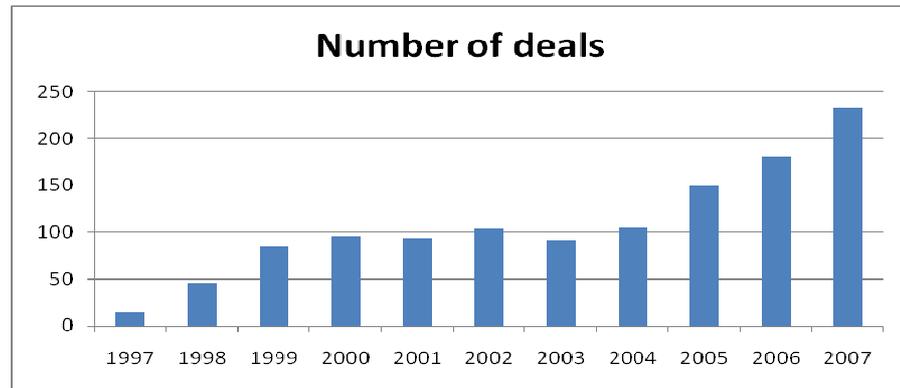


Figure 1. Number of deals with target in Emerging Europe during 1996-2007. *Source: Zephyr database*

The following table exhibits the number of M&A deals targeting banks in Developing European Economies during the period of 1996-1997.

Table 1. Number of deals with target in Emerging Europe during 1996-2007. *Source: Zephyr database*

Country of a target	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Albania	0	0	0	2	0	0	2	0	1	0	0
Belarus	0	0	0	0	1	0	1	1	0	2	7
Bosnia And Herzegovina	0	0	0	4	2	1	1	1	3	3	4
Bulgaria	0	0	2	4	3	5	3	5	18	12	18
Croatia	0	2	2	6	4	8	0	1	11	5	5
Czech Republic	1	6	13	7	3	8	9	4	2	9	4
Estonia	0	7	7	13	1	7	1	0	6	2	6
Finland	0	0	0	0	0	0	0	0	0	1	0
Germany	0	0	0	1	0	0	0	0	0	0	0
Hungary	4	2	8	11	11	3	10	10	7	11	4
Kosovo	0	0	0	0	0	1	0	1	0	0	0
Latvia	3	1	9	1	2	1	3	3	3	12	5
Lithuania	0	2	3	6	4	5	3	2	1	2	4
Macedonia	0	1	5	4	0	1	0	0	2	1	1
Moldova	0	0	0	0	1	0	1	0	2	2	4
Poland	5	19	26	23	19	27	9	8	9	5	6
Romania	0	2	4	4	6	7	5	7	7	8	5
Russian	1	2	2	3	22	18	32	49	62	83	139

Federation												
Serbia And Montenegro	0	0	0	0	0	0	1	0	1	3	0	
Slovakia	0	0	1	2	10	4	4	3	2	0	2	
Slovenia	0	1	3	1	4	6	3	4	1	4	2	
Ukraine	0	0	0	4	0	1	1	6	12	16	18	
Yugoslavia	0	0	0	0	1	1	1	0	0	0	0	
Total	14	45	85	96	94	104	90	105	150	181	233	

As the Figure 2 suggests, the value of deals in Emerging Europe has also exhibited a growing trend and topped at almost \$1950 million in 2007.



Figure 2. Value of M&A deals (Mn, USD) with targets in Emerging Europe during 1996-2007. *Source: Zephyr database*

The next table shows a distribution of deals value across Emerging European countries.

Table2. Value of M&A deals (Mn, USD) with targets in Emerging Europe during 1996-2007. *Source: Zephyr database.*

Country of a target	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Albania	0	0	0	0	0	0	128	0	7	0	0
Belarus	0	0	0	0	0	0	31	5	0	0	25
Bosnia And Herzegovina	0	0	0	0	14	0	0	6	0	51	98
Bulgaria	0	0	38	552	18	85	367	27	261	491	493
Croatia	0	0	306	144	0	723	0	0	385	1291	244
Czech Republic	0	0	1647	507	1090	1542	297	645	11	533	50

Estonia	0	62	0	261	3	44	0	0	2113	0	0
Finland	0	0	0	0	0	0	0	0	0	0	0
Germany	0	0	0	0	0	0	0	0	0	0	0
Hungary	89	0	0	0	4	0	526	100	85	809	128
Kosovo	0	0	0	0	0	0	0	6	0	0	0
Latvia	13	38	25	0	0	0	4	10	47	185	5
Lithuania	0	28	0	189	77	42	9	0	7	0	38
Macedonia	0	0	28	62	0	0	0	0	0	0	12
Moldova	0	0	0	0	1	0	0	0	5	5	54
Poland	28	119	4079	845	1483	693	76	568	317	5563	240
Romania	0	401	466	0	127	28	289	148	409	4816	171
Russian Federation	0	0	0	153	28	388	489	659	2301	4108	4821
Serbia And Montenegro	0	0	0	0	0	0	13	0	4	11	0
Slovakia	0	0	0	43	693	60	33	112	160	0	0
Slovenia	0	0	0	0	129	1059	2	34	13	11	32
Ukraine	0	0	0	4	0	0	2	30	1073	1556	1650
Yugoslavia	0	0	0	0	0	0	0	0	0	0	0
Total	130	648	6589	2760	3667	4664	2266	2350	7198	19430	8061

This wave of banking M&A activities motivates this research to address their effectiveness and analyze whether those deals have been successful to help banks achieve increase in profitability.

## *Chapter 3*

### LITERATURE REVIEW

The M&A empirical literature is strongly focused on the US banking market. It is only recently that Western European banks have attracted more attention. And even though a significant increase in mergers and acquisitions in the emerging economies started in the early 1990s, -before the 1997-98 crisis,- so far there is only limited research pertaining to the M&A deals in the emerging economies.

The research literature devoted to different aspects of financial M&A activities is classified as follows (Berger et al. (1998)):

1. Studies examining the characteristics of the banks involved in M&As
2. Studies examining the premium paid determinants
3. Studies examining the impact of M&As on performance
4. Event studies of the merged banks' stock performances around the M&A announcement date
5. Studies that focus on the impacts of banks M&As on other firms.

This literature review of this study consists of three main parts. The first part is dedicated to the literature concentrating on the treatment effect of M&A on the operating performance of a bank and discusses possible problems of the empirical estimation of this effect. Furthermore, in order to choose explanatory variables for matching methodology used in this study it is essential to understand, which variables determine both engagement in M&A and post-merger performance of the bank.

Therefore, the second part of the literature review presents research findings on the determinants of a bank's participation in a merger and the third one is dedicated to a discussion of the factors affecting a bank's performance.

Literature concentrating on the treatment effect of M&A on the operating performance of a bank can be divided into two categories: using univariate t-tests approach and efficiency frontiers approach. The first category of studies compares cost (Cost/Income ratio, etc) and profitability (ROA, ROE) ratios pre- and post M&A deal is accomplished.

Rose (1987) used paired-comparison tests of post-merger and non-merging banks and concluded no profitability increase due to merger.

On the contrary, Cornett and Tehranian (1992) found improvements in ROE and operating cash flow owing to increase in employee productivity, asset growth, loans and deposits for US mergers between 1982 and 1987. The authors used the industry adjusted difference between post-merger and pre-merger performance accounting for economy-wide or industry-wide factors.

Diaz et al. (2004) used a panel dataset of EU financial institutions during 1992-2000. Having introduced a dummy for engagement in M&A in the dynamic regression for ROA, the authors have revealed a significant long-term profitability gain of the acquirer.

Ramaswamy (1997) and Altumbas and Marques Ibanez (2004) used the difference between post-merger returns and pre-merger weighted return on assets as a measure of merger effect and have found improvement of performance.

Although, this approach has been criticized by Koetter (2005, 2008) as not accounting for the market growth and thus not reliable. The author

uses average change in non-merged banks performance as a benchmark to evaluate the success of a particular merger and concludes that 50% of mergers are successful in increasing cost efficiency.

In their study on microeconomic determinants of cross-border acquisitions of CEE banks, Lanine and Vander Venet (2007) used ROA as the dependent variable and found a takeover dummy to be insignificant, which implies that targeted banks do not become more efficient after the acquisition.

However, recent studies (Behr and Heid (2008), Egger and Hahn (2006)) view merging banks as representing an underperforming sample and, for this reason merger success cannot be evaluated through a comparison with the non-merging sample and a solution for the endogeneity problem is required. This may be especially true when a bidder bank acquiring a relatively inefficient bank aims to benefit from efficiency improvements through the introduction of superior technologies and management.

Egger and Hahn (2006) addressed the endogeneity of bank mergers and assessed their impact on banking performance. In the paper the authors employ a matching technique and present evidence in favor of longer-lasting positive effects of mergers on the performance of Austrian banks, especially in terms of improved cost efficiency.

This result is consistent with the findings of Behr and Heid (2008), addressing a role of M&A in enhancing efficiency and profitability of German banks. Employing the matching technique, the authors conclude a neutral effect of M&A on profitability and a positive effect on cost efficiency.

Berger et al., (1999) noticed that it is hard to separate changes in market power from efficiency change when using ratios analysis. For this reason, researches of M&A's operating efficiency often employ frontier approaches and the data envelopment analysis. However, according to Behr and Heid (2008), such more advanced efficiency measures rely heavily on a specific production function, which makes efficiency estimates not very robust with respect to different assumptions.

In the review of M&A findings on US banks, Berger et al. (1999) pointed out that mergers result in some improvements of profit efficiency and almost no cost-efficiency improvement.

Huizinga et al. (2001) studied efficiency effects of bank mergers and acquisitions in Europe. The authors found large X-inefficiencies in European banking. It was shown that large banks performed a lower level, while small ones exhibited a higher level of profit efficiency than their peer group. Exercising dynamic merger analysis, a positive impact of a merger on cost efficiency of merging banks was found while the positive impact on profit efficiency was only marginal. Authors also discovered an increase of the deposit rates that followed a merger deal, which suggests an inability to make use of greater market power.

According to the estimation problems studied in the empirical literature discussed above, in this study, the post-merger performance of the bank may be estimated with an error if a sample selection is not taken into account. For this reason, a matching technique based on the propensity score evaluation will be employed in order to solve a possible endogeneity problem. The procedure of propensity scores evaluation used in this study involves computation of probability of the bank to participate in a merger as a bidder and as a target. In this respect, it is important to

review the existing literature discussing characteristics of banks involved in M&A activities.

Hannan and Rhoades (1987) analyzed a sample of American banks engaged in M&A in 1970-1982 and studied the relationship between acquisition probability and characteristics of the target bank and market features. Their results suggest that market share increases the probability, while capital/asset ratio decreases it. Market concentration was found to have no effect on the propensity of the bank to be acquired.

Amel and Rhoades (1989) examined the probability of acquisition in the US Banking industry and found that the Size and profitability of the bank negatively affect the probability of being acquired, while the market share of a bank and the per capita income increase its attractiveness to buyers.

In the study on the reasons of bank mergers Focarelli et al. (2002) obtained results which are generally in line with those of Amel and Rhoades (1989). However, they found additional evidence that a fraction of the loan portfolio in total assets has an impact on the probability of acquisition increasing this probability. At the same time, the quality of the loan portfolio has a negative impact on the acquisition.

Both of the above-mentioned studies employed the Multinomial Logit Estimator in the analysis of the likelihood of a bank being acquired.

Wheelock and Wilson (2000) estimated the probability of acquisition using the adapted partial-likelihood approach and presented findings mostly consistent with those of the studies discussed above: negative impact of capitalization, profitability efficiency measured by ROA, earnings and quality of loans on probability of becoming an acquisition target, in contrast to share of loan portfolio to total assets

having a positive impact. In contrast to the findings of Amel and Rhoades (1989), they captured a positive impact of the number of branches on the probability of acquisition. Moreover, the authors were able to show that rising cost efficiency increased the probability of acquisition.

The proportional-hazard duration model was used in the research of Hannan and Pilloff (2006) on acquisition targets and motives in the banking industry of the United States. The authors obtained results consonant with previous researches, yet their additional findings conclude that higher equity to assets ratio decreases the probability of acquisition, while the fraction of local deposits in total liabilities increased the likelihood of being acquired. The authors used the ratio of noninterest expenses and noninterest income as an inefficiency measure and found a positive effect, which is consistent with results of Wheelock and Wilson (2000).

Lanine and Vander Venet (2007) studied the motivations of cross-border mergers in CEEC comparing characteristics of the target banks and their peers and found support for market power hypothesis rather than cost-efficiency hypothesis. Moreover, GDP growth was found to impact the probability of being acquired negatively.

To summarize, the bank-specific factors found in previous literature to increase the acquisition probability are: small size; small profitability; small market share; high fraction of loan portfolio in total assets; poor quality of loan portfolio; small equity to assets ratio; high fraction of local deposits in total liabilities; high cost efficiency; low levels of management ownership; number of branches. While market concentration and macroeconomic growth are discussed as main external determinants of acquisitions.

The next point of the literature review will be a discussion on factors determining bank performance.

Banking literature analyses both bank-specific and external (macroeconomic, industrial, institutional) determinants of the bank's performance.

Bourke (1989) in the study on determinants of bank profitability in Europe, North America and Australia, showed that capital ratios, liquidity ratios, interest rates and better-quality management are positively related to profitability, while the effect of credit risk is negative.

Following Bourke (1989), Molyneux and Thornton (1992) have found a negative relationship between profitability and liquidity (capital-assets ratio), while the impact of concentration and quality management on profitability was found to be positive.

Both Bourke (1989) and Molyneux and Thornton (1992) have found that ownership is insignificant in explaining profitability.

According to the study of Demirguc-Kunt and Huizinga (2000) on financial structure and bank profitability, the profit ratio to total assets is positively related to the lagged equity variable, and negatively related to the share of non-interest earnings to total assets.

In their recent study on determinants of bank profitability Athanasoglou et al. (2008) employed dynamic panel data models and found that capital and labor productivity growth, are important in increasing bank profitability, while exposure to credit risk and operating expenses reduce profits. The authors found an insignificant effect of Size and ownership on the status of the banks.

To summarize, internal determinants of bank profitability discussed in the literature include bank Size, capital, Size and structure of

credit portfolio, Size of deposit liabilities, labor productivity, level of risk exposure, interest rate policy, management quality, and ownership.

Summarizing the studies reviewed above, we can claim that there is a gap in literature with regard to M&A in emerging economies. Moreover, the availability of new econometric technique gives means to evaluate robust effect of M&A on bank's performance in general and the deals of the emerging economies in particular.

In this thesis, methodology exercised in the work of Behr and Heid (2008) will mainly be followed. However, we will also take into account such factors as GDP growth and bank's market share, as Lanine and Vander Vennet (2007) showed their significance in determining M&A participation of CEE banks.

## *Chapter 4*

### **METHODOLOGY**

The objective of the study is to estimate the treatment effect of M&A on the performance of a bank in Emerging Europe.

In order to evaluate the treatment effect of the merger for each bank in the sample, the outcomes both with and without treatment are needed. And the merger effect would be the difference between the two. It is obvious, however, that each bank in the sample could be either treated or not treated only. This is not a big concern when treatment is random, and difference-in-difference methodology is very effective in this case. It could be argued though, that the decisions to undergo a merger or an acquisition are not randomly made. According to Behr and Heid (2008) and others, merging banks often represent an under-performing sample and thus are systematically different from non-merging banks. Moreover, it is very likely that the factors that determine bank's engagement in a M&A activity also affect the post-merger performance of the consolidated bank. In such a case direct comparison of the sample of merging banks with non-merging ones may be misleading and will produce systematic bias due to sample selection.

Therefore, in this study a propensity score matching technique developed by Rubin (1974) and aimed to solve non-randomized treatment problem will be exercised. This technique is different from other selection models as it does not model the error term correlation between the

selection equation and the outcome equation but chooses the correct set of conditioning variables to eliminate this correlation.<sup>2</sup>

Propensity score matching algorithm:

1) For each bank in the sample propensity score (conditional probability) to become a bidder is estimated as a predicted probability from a probit model.

2) Based on the estimated propensity scores, for each bidder  $A$  a correspondent non-merging bank  $A_c$  is chosen as a control from its peer group by nearest neighbor matching.

3) For each bank in the sample propensity score (conditional probability) to become a target is estimated as a predicted probability from a probit regression.

4) Based on the estimated propensity scores, for each target  $T$  a correspondent non-merging bank  $T_c$  is chosen as a control from its peer group by nearest neighbor matching.

5) The average treatment effect is calculated:

$$Y_i = (ROA_i^m - ROA_i^{nm}) \quad (1)$$

where  $ROA_i^m$  - is profit efficiency of the bank  $i$  in post-merger period;

$ROA_i^{nm}$  - is profit efficiency of the control group calculated as follows:

$$ROA_i^{nm} = \frac{Net\_Income(A_c) + Net\_Income(T_c)}{Assets(A_c) + Assets(T_c)} \quad (3)$$

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<sup>2</sup>Xianghong Li, M.A.(2004) Three Applications of Propensity Score Matching in Microeconomics and Corporate Finance: US Internal Migration; Seasoned Equity Offerings: Attrition in a Randomized Experiment. Dissertation. Graduate School of The Ohio State University

Using this method controls for each bidder and target are chosen, which show how would a bidder and a target perform if it had not chosen to merge.

The matching conditioning vector of pre-treatment variables must be chosen carefully so that it affects both engagement in M&A and post-merger performance of the bank. Otherwise, exclusion of a variable influencing both M&A participation decision and *ROA* will lead to selection bias.

## *Chapter 5*

### DATA DESCRIPTION

In this study we are examining banks involved in M&A activities of the following countries: Bosnia and Herzegovina, Bulgaria, Czech Republic, Germany, Estonia, Croatia, Hungary, Lithuania, Latvia, Romania, Russian Federation, Slovenia, Slovakia and Ukraine. The list of M&A deals taken place from 1996 to 2007 was taken from Thomson Financial database and financial statements of banks of the abovementioned countries was taken from BankScope database. The sample of M&A deals was reduced to banks, for which there is information in the Bankscope dataset for three years: pre-merger, merger and post-merger years. Moreover, banks engaged in multiple mergers during these particular years were excluded. After that, data on 40 M&A deals was obtained. For each of 80 banks engaged in the deals, BankScope reports containing balance sheet, income statement and pre-calculated ratios of bank have been downloaded. Moreover, a BankScope peer group of each bank was also downloaded in order to be later used as a control group. This lets us operate with 3 years of financial data on 522 banks. The sample allows us to follow the approach of Behr and Heid (2008) to estimate acquisition probability basing on the pre-merger year data and draw conclusions on the short-term merger effect on profitability analyzing the bank's performance one year after the M&A has been conducted.

Figure 3 presents our sample of M&A deals in comparison to the population of M&A deals in Emerging European Economies.

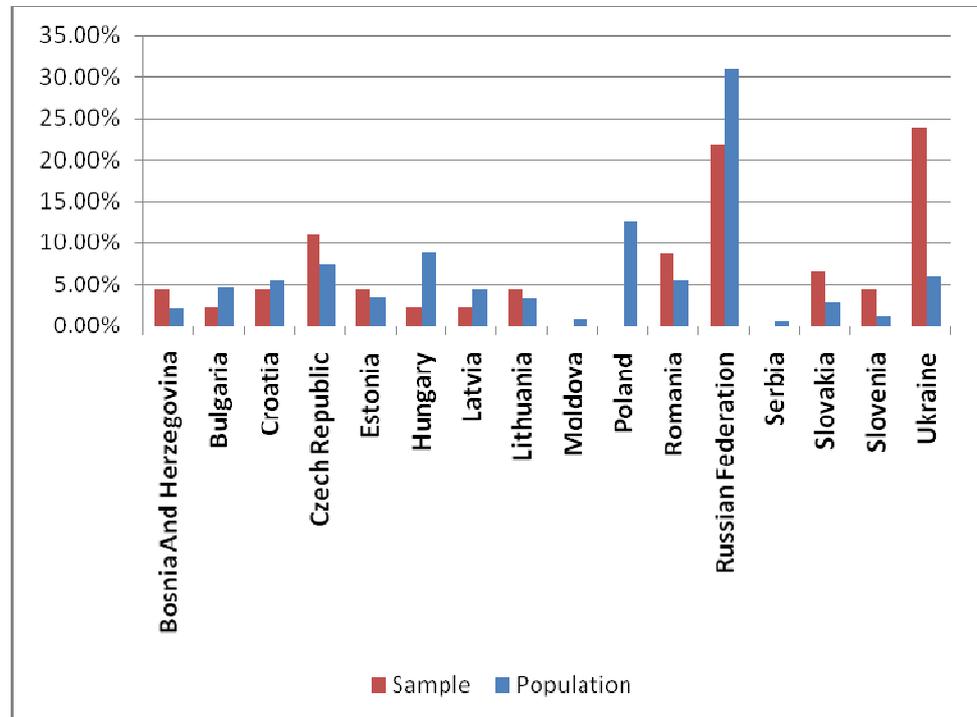


Figure 3. Distribution of sample of M&A deals across countries compared to a population of M&A deals in Emerging European Economies.

From this figure we can see that the sample over-represents the share of Ukrainian and Russian deals. The reason for that is our particular interest in these deals and also data availability.

Table 3. Descriptive statistics of bidder and target banks. Mean-comparison t-test.<sup>3</sup>

Variable	Measurement	Bidder banks (mean)	Target banks (mean)	t-value
Size=log(TA)		2.197	-0.872	7.074
Return on Avg Assets	%	1.288	0.455	1.795
Net Interest Margin	%	0.004	0.005	-2.029
Consumer Loans /Total Loans	%	102.366	105.845	-1.762
Cost/Income ratio	%	62.033	77.858	-2.725
Equity / Total Assets	%	9.086	14.432	-3.307
Interest Income/ Interest Expenditures	%	206.971	245.307	-2.094
Total Share Capital/ Equity	%	46.510	83.195	-2.432
GDP	%	4.360	5.362	-1.953
Market Share(Total Assets)	%	11.2359	3.0522	4.471
Market Share(Net Loans)	%	21.7371	4.2676	2.143
Market Share(Deposits)	%	26.9125	4.2953	2.005
MShare	%	0.3621	-0.1399	3.639
Observations		55	51	

Direct comparison between bidder and target banks may be difficult as the majority of bidder banks are those of the developed countries, while targets represent banks of Emerging European countries and thus they are operating in different macroeconomic and institutional environments. Although, the data suggests that bidders are significantly larger, more profitable (in terms of ROAA), more cost efficient (in terms of Cost/Income ratio), have lower equity ratios (Equity / Total Assets ) than targets, while targets have higher interest margins. The evidence of equity ratio of target banks being higher than the ones of the bidder banks could be explained by the target banks' inefficiency and their incentive to signal creditworthiness (Claeys and Vander Vennet, 2005). Higher interest margins, as well as lower cost-efficiency of the target banks gives ground

<sup>3</sup> This is a reduced form, full version can be found in Appendix 1.

to the hypothesis that M&A's could achieve value-maximizing goals by taking advantage of the difference in these factors.

Table 4. Descriptive statistics of target banks, non-target banks and non-merging peers of target banks. Mean-comparison t-test.<sup>4</sup>

Variable	Measurement	Target banks (mean)	Non-target banks (mean)	t-value	Target banks' peers (mean)	t-value
Size (logTA)		-0.872	0.990	-4.726	-0.752	-0.399
Return on Avg Equity	%	22.059	12.194	2.401	9.259	2.173
Net Interest Margin	%	0.005	0.004	1.896	0.005	0.490
Consumer Loans/Total Loans	%	105.845	103.234	2.100	104.755	0.606
Total Deposits/ Total Assets	%	67.640	61.522	1.701	59.032	2.125
Cost/ Income ratio	%	77.858	62.511	3.015	67.337	1.451
Equity / Total Assets	%	14.432	11.456	1.801	14.852	-0.204
HR costs/Operation Expenses	%	36.080	44.041	-2.713	42.921	-1.731
Total Share Capital/ Equity	%	83.195	54.027	3.152	57.678	2.372
Loan Loss Provisions/ Net Interest Revenue	%	-2.872	21.208	-1.346	16.310	-2.041
GDP	%	5.362	4.144	2.782	4.469	1.720
Market Share(Total Assets)	%	3.0522	5.4467	-1.203	8.2953	-2.118
Market Share(Net Loans)	%	4.2676	11.5964	-0.853	18.0913	-1.228
Market Share(Deposits)	%	4.2953	9.4562	-0.941	14.948	-1.491
Scores for factor 1	%	-0.1399	0.0151	-1.099	0.1835	-1.793
Observations		51	471		268	

The table 4 shows that target banks are on average more profitable (in terms of ROAE) and have a higher share of deposits in total assets than their non-merging peers and non-target banks. On average, the target banks have a higher share of consumer loans in their loans portfolio and

<sup>4</sup> This is a reduced form, full version can be found in Appendix 2.

higher equity ratio (Equity / Total Assets ) than non-target banks. Asset quality (in terms of LLP/NIR) is higher in target banks than in their non-merging peers.

Table 5. Descriptive statistics of bidder banks, non-bidder banks and non-merging peers of bidder banks. Mean-comparison t-test.<sup>5</sup>

Variable	Measurement	Bidder banks (mean)	Non-bidder banks (mean)	t-value	Bidder banks' peers (mean)	t-value
Size=log(TA)		2.197	0.644	4.055	2.337	-0.367
Total Deposits/ Total Assets	%	68.047	61.421	1.907	62.209	1.699
HR costs/Operation Expenses	%	41.374	43.486	-0.739	45.798	-2.266
Loan Loss Provisions/ Net Interest Revenue	%	61.180	13.871	2.749	15.554	1.907
Equity / Total Assets	%	9.086	12.060	-1.861	8.831	0.204
Profit Margin	%	389.923	20.317	2.959	31.624	1.946
Market Share (Total Assets)	%	11.2359	4.5034	3.536	7.536	1.401
Market Share (Deposits)	%	26.9125	6.8367	3.834	11.8585	1.967
MShare	%	0.3621	-0.0426	2.989	0.1374	1.16
Observations		55	467		213	

Acquiring banks on average have higher share of deposits in total assets, higher profit margin (Profit Margin) and lower asset quality (in terms of LLP/NIR) than their non-merging peers, as well as non-bidder banks. Moreover they are larger than banks of non-bidding group and have lower equity ratio (Equity / Total Assets ).

Analysis of descriptive statistics leads us to a hypothesis that merger participants are in some respects different from their peers and thus the merger treatment is not random in the sample. These factors in which the banks differ probably influence the decision to participate in

<sup>5</sup> This is a reduced form, full version can be found in Appendix 3.

M&A activity. It is noteworthy that the theory suggests that these factors are also the ones that determine the bank's profitability, as discussed in the literature review. For this reason correlation between error terms in the performance outcome equation and the merger participation equation is expected, which could create a sample selection bias. Therefore, the matching technique is used as a solution to this problematic correlation.

## Chapter 6

### ESTIMATION RESULTS

This section discusses results of three main estimation steps: estimation of propensity scores to become a bidder bank in a merger, propensity scores for target banks and finally, the captured treatment effect of merger.

Firstly, having checked explanatory variables for multicollinearity, we have found strong correlation between variables representing market share of a bank in terms of total assets, net loans and deposits. For this reason, Principal Component Analysis was performed and factor MShare explaining 99.81% of cumulative variance was created.

Table 6 shows estimation results for probit model of a dummy indicating whether in a following year a bank will participate in a M&A activity as a bidder on the financial characteristics of a bank in the pre-merger year.

Table 6. Probit regression for bidder banks.<sup>6</sup>

Probability of becoming an acquirer		
	(a)	(b)
Size_2	0.000	0.037**
	(0.013)	(2.065)
Size	0.107*	-0.117
	(1.936)	(-1.379)
Return on Avg Assets	0.063	0.111
	(0.974)	(0.771)
Return on Avg Equity	0.000	0.003
	(0.050)	(0.228)

<sup>6</sup> This is a reduced form, full version can be found in Appendix 4.

Net Interest Margin	26.888	5.260
	(1.135)	(0.136)
HR costs/Operation Expenses	-0.011*	-0.034***
	(-1.951)	(-3.581)
Total Deposits/ Total Assets	0.008*	0.011**
	(1.789)	(2.095)
Cost/Income ratio	0.004	0.021**
	(1.016)	(2.525)
Equity / Total Assets	-0.003	0.010
	(-0.341)	(0.657)
Loan Loss Provisions/ Net Interest Revenue	0.001	-0.010*
	(0.278)	(-1.871)
Profit Margin	0.001	0.001**
	(0.356)	(2.101)
GDP	0.039	0.072*
	(1.441)	(1.737)
MShare	0.082	0.078
	(1.116)	(0.969)
N	522	268
t-statistics in parentheses * significant at 1%; ** significant at 5%; *** significant at 10%		

Regression (a) was run on a sample containing 55 bidder banks and 467 non-bidder banks (group of the non-merging peers of the bidder banks, as well as group of target banks and their peers). When running regression (b) we intended to follow Lanine and Vander Venet (2007), who compared bidder banks only with their peers. Thus, regression (b) was run on a sample containing 55 bidder banks and 213 bidder-banks' peers.

Regressions (c) and (d) were obtained from (a) and (b) respectively by adding country of bidder bank and pre-merger year dummies, as well as cross-terms of country and year dummies. Dummy for Russia and dummy for year 2005 were excluded from the regression as control group. The dummies are expected to control for some unobservable year and country characteristics (banking system concentration, level of capital market and institutional development, etc), while cross terms will integrate change in time of these particular features into the model. It is worth noting that despite the fact that many of those terms exhibited strong collinearity and were dropped out of the model, the rest helped to increase explanatory power of the model significantly.

Table 7. Probit regression for bidder banks.<sup>7</sup>

Probability of becoming an acquirer		
	(c)	(d)
Size_2	0.003	0.041
	(0.212)	(1.641)
Size	0.231***	-0.093
	(3.028)	(-0.662)
Return on Avg Assets	0.080	0.112
	(0.985)	(0.718)
Return on Avg Equity	-0.003	0.014
	(-0.302)	(1.013)
Net Interest Margin	-38.164	-14.975
	(-1.405)	(-0.321)
HR costs/Operation Expenses	-0.012*	-0.034***
	(-1.827)	(-3.110)
Total Deposits/ Total Assets	0.010**	0.020***
	(1.998)	(3.131)
Cost/Income ratio	0.003	0.022**
	(0.646)	(2.340)
Net Loans/ Total Assets	0.003	0.014*

<sup>7</sup> This is a reduced form, full version can be found in Appendix 5.

	(0.540)	(1.945)
Equity / Total Assets	0.009	0.020
	(0.834)	(1.155)
NPLshare	-0.071**	-0.026
	(-2.101)	(-0.873)
Loan Loss Provisions/ Net Interest Revenue	0.000	-0.016***
	(0.011)	(-2.953)
Profit Margin	0.000	0.002***
	(0.323)	(3.173)
GDP	0.083	0.124**
	(1.388)	(2.098)
MSh	-0.007	0.037
	(-0.105)	(0.428)
P	0	0.000
N	522	268
t-statistics in parentheses		
* significant at 1%; ** significant at 5%; *** significant at 10%		

The results show that the probability to become a bidder increases with Size, share of deposits. Moreover, favorable macroeconomic conditions stimulated acquisitions, which is consistent with findings of Mueller (1989). Furthermore, the share of HR costs in total operating expenses decreases the probability of acquiring a bank. Moreover, if compared to their peers, bidder banks have higher cost-income ratio and better asset quality in terms of ratio of loan loss provisions to net interest revenue.

These findings are consistent with study of Lanine and Vander Vennet (2007), considering cross-border M&A in CEE with the exception of the share of deposits to total assets, which they have found have a negative effect, though insignificant. We cannot directly compare magnitude and direction of each variable's impact to the results of Behr

and Heid (2008) work, as the authors used Generalized Additive Models allowing for nonlinear dependencies.

Both probit models (c) and (d) were checked for omitted variables. The results of the test showed correct specification of both models.

In order to compare these models and choose the best-performing one for matching procedure, comparison of correctly and incorrectly predicted outcomes was performed.

Table 8. Balancing test results for probit models.

	Model	
	(c)	(d)
Sensitivity	25.45%	40.00%
Specificity	98.93%	94.37%
Correctly classified	91.19%	83.21%

Sensitivity shows the ability of the model to detect a successful outcome, when it occurs, while specificity exhibits ability of the model to reject successful outcome when the true value of the dummy is indeed zero. Thus, the test shows that model (d) performs better in predicting successful outcomes, which is exactly what is important for matching. It is also important to note that the fact that the percent of predicted successful outcomes is not too close to 100% is good, as matching does no good in the case when the treatment is fully predictable. Consequently, model (d) has been chosen for the propensity score matching.

We also created a panel dataset and used probit model for it. Regrettably, it didn't increase the explanatory power of the model. These estimation results could be found in the Appendix 10.

As a result of matching, correspondent controls for all bidder banks were found. After that, a test of balancing properties was performed. Its

results suggest that the propensity score matching performed well. Even though some of the differences in means of treated and controlled matched groups are statistically significant at 10% level, they are on average equal to zero at 1% level.<sup>8</sup>

In the second part of the chapter we will discuss determinants of a bank to become an acquisition target.

Table 9. Probit regression for target banks.<sup>9</sup>

Probability of becoming a target		
	(a)	(b)
Size <sub>2</sub>	-0.054**	-0.065*
	(-2.287)	(-1.799)
Size	-0.136***	-0.074
	(-2.581)	(-0.988)
Return on Avg Assets	-0.148***	-0.150**
	(-2.670)	(-2.492)
Return on Avg Equity	0.012*	0.013*
	(1.896)	(1.761)
Net Interest Margin	51.192**	52.488*
	(2.010)	(1.771)
Cost/Income ratio	0.003	0.001
	(0.674)	(0.267)
Equity / Total Assets	0.006	0.007
	(0.575)	(0.640)
Loan Loss Provisions/ Net Interest Revenue	-0.007**	-0.006**
	(-2.358)	(-2.365)
GDP	0.047*	0.047
	(1.792)	(1.571)
MSh	0.150*	0.524
	(1.840)	(1.479)
_cons	-2.817*	-2.297*
	(-1.934)	(-1.653)

<sup>8</sup> Balancing properties test can be found in the Appendix 6.

<sup>9</sup> This is a reduced form, full version can be found in Appendix 7.

P	0.000	0.013
N	522	254
t-statistics in parentheses * significant at 1%; ** significant at 5%; *** significant at 10%		

Regression (a) was run on a sample containing 51 target banks and 471 non-target banks (group of the non-merging peers of the target banks, as well as group of bidder banks and their peers). Running regression (b) we intended to follow Lanine and Vander Venet (2007), who compared target banks only with their peers. Thus, regression (b) was run on a sample containing 51 target banks and 268 target-banks' peers.

Applying the logic discussed in the part focused on the bidder banks, the country of bidder bank and pre-merger year dummies, as well as cross-terms of the country and year dummies were added to the models (a) and (b). Despite the fact that many of those terms exhibited strong collinearity and were dropped out of the model, the rest helped to increase explanatory power of models (c) and (d) significantly.

Table 10. Probit regression for target banks.<sup>10</sup>

Probability of becoming a target		
	(c)	(d)
Size <sub>2</sub>	-0.025	-0.053
	(-1.265)	(-1.298)
Size	-0.041	-0.009
	(-0.607)	(-0.097)
Return on Avg Assets	-0.159***	-0.163**
	(-2.728)	(-2.452)
Return on Avg Equity	0.018**	0.019**
	(2.238)	(2.297)
Net Interest Margin	22.135	33.969
	(0.912)	(1.031)
TL <sub>to</sub> _TD	-0.002*	-0.001
	(-1.773)	(-0.841)
Cost/Income ratio	0.007*	0.011
	(1.833)	(1.405)
Equity / Total Assets	0.013	0.012
	(1.057)	(0.933)

<sup>10</sup> This is a reduced form, full version can be found in Appendix 8.

Loan Loss Provisions/ Net Interest Revenue	-0.007** (-2.269)	-0.005 (-1.354)
Profit Margin	0.001** (2.205)	0.005 (1.146)
GDP	0.062* (1.905)	0.051 (1.623)
MShare	0.008 (0.042)	0.684* (1.792)
_cons	-4.036*** (-2.815)	-2.456 (-1.564)
P	.	0.000
N	522	254
t-statistics in parentheses * significant at 1%; ** significant at 5%; *** significant at 10%		

We found that target banks are less profitable in terms of return on average assets and have higher cost-income ratio, however they operate on a significantly higher profit margin and have a better assets quality compared to non-target banks. In contrast to the study of Lanine and Vander Venet (2007), our results do not show significant impact of size on the propensity of a bank to be acquired, though its market share has a significant positive impact on the likelihood, which is consistent with the results of previous studies. Moreover, we can conclude that banks are more likely to be acquired during economic booms.

In order to compare the models presented above and choose the best-performing one for the matching procedure, comparison of correctly and incorrectly predicted outcomes was performed.

Table 11. Balancing test results for probit models.

	Model	
	(c)	(d)
Sensitivity	31.37%	35.29%
Specificity	98.94%	94.09%
Correctly classified	92.34%	82.28%

Sensitivity shows the ability of the model to detect a successful outcome, when it occurs, while specificity exhibits ability of the model to reject successful outcome when the true value of the dummy is indeed zero. Thus, the test shows that model (d) performs better in predicting successful outcomes, which is exactly what is important for matching. It is also important to note that the fact that the percent of predicted successful outcomes is not too close to 100% is good, as matching does no good in the case when the treatment is fully predictable. Consequently, model (d) has been chosen for the propensity score matching.

We also created a panel dataset and used probit model for it. Regretfully, it didn't increase the explanatory power of the model. These estimation results could be found in the Appendix 11.

As a result of matching, correspondent controls for all target banks were found. After that, a test of balancing properties was performed. Its results imply that the propensity score matching performed well: differences in means of treated and controlled matched groups are on average equal to zero at 1% level.<sup>11</sup>

As a result of a performed analysis, the pure effect of mergers and acquisitions on bank's performance is estimated. The average change in return on assets attributed to merger was calculated:

$$\Delta ROA = -0.216$$

T-test suggests that the hypothesis of the average effect equal to zero is rejected in favor of an alternative stating that the average effect is less than zero.

Table 12. T-test. H0:  $\Delta ROA = 0$ .

Mean	Ha: mean < 0	Ha: mean != 0	Ha: mean > 0	t-value
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<sup>11</sup> Balancing properties test can be found in the Appendix 9

	$\Pr(T < t)$	$\Pr( T  >  t )$	$\Pr(T > t)$	
-0.216	0.003	0.006	0.996	-2.952

This result suggests that there is a significant negative effect of M&A activity in Emerging European Economies on banks return on assets. It means that bidder banks are not able to profit from higher interest margins. Moreover, increased market share and well as the concentration of the market as a whole is not leading to higher profits. This can be attributed to the fact that the sample of M&A deals under study consists of a large share of not concentrated banking systems, such as Russia, Ukraine, Bulgaria, Bosnia, Latvia. And thus, acquiring banks can not exercise price discrimination at least in a short term. Conclusion of the study is inline with empirical literature suggesting that profit efficiency doesn't improve much in the short term as a result of merger, in contrast to cost efficiency.

## *Chapter 7*

### CONCLUSIONS

In this work we studied the effect of M&A activity on post-merger profitability of banks in Emerging European Economies. Our results showed a significantly negative effect of M&A activity on banks return on assets. The study has proven that value-maximizing opportunities suggested by numerous pre-merger differences between the target and bidder banks, namely, the difference in interest margins, the return on average assets and cost-efficiency, as well as the higher market share of target banks compared to their peers, do not guarantee a successful outcome. It doesn't mean, however, that the M&A's considered have not achieved some non-value-maximizing goals (i.e., imperialistic, etc). The result suggests that if a bank's management pursues profit gains when considering a merger, it has to keep in mind that besides the high interest margins of a potential target and a gap in cost-efficiency between two banks, other factors should be critically considered (cultural differences between organizations, timing, etc).

In this research, the different characteristics of banks involved in acquisitions in Emerging European Economies were studied. We have found support for market motive of M&A, which is consistent with other studies on acquisitions in Emerging Europe. It was also found that target banks are usually less profitable, have higher cost-income ratio and operate on a significantly higher profit margin. The probability to become a bidder was found to increase with size, share of deposits, and better asset

quality. Moreover, we can conclude that banks are more likely to be acquired during economic booms.

This study has contributed to the M&A literature by presenting further evidence of a sample selection problem in studying treatment effect of mergers using matching methodology. Moreover, following the approach of the most recent empirical studies, this research looked at a wider range of factors (both bank-specific and external) that could impact both the decision of participation in M&A and post-merger performance of a bank, and is the first one applying this technique to study M&A deals in Emerging European Economies.

However, the question of the long term effect of M&A on a bank's performance is left for future research, as well as the various reasons that explain poor performance of mergers. Precisely, it could be tested whether it is bad timing, wrong target choice or other reasons that prevent mergers from being successful.

## BIBLIOGRAPHY

- Altumbas Y., Marques Ibanez D. 2004. *Mergers and acquisitions and bank performance in Europe*. The role of strategic similarities, in ECB Working paper series.
- Beitel, P., Schiereck, D., and Wahrenburg, M. 2004. *Explaining the M&A-success in European bank mergers and acquisitions*. European Financial Management, 10, 109–139.
- Berger, A. N.; Demsetz, R. S.; Strahan, P. E. 1999: *The consolidation of the financial services industry: Causes, consequences, and implications for the future*. Journal of Banking and Finance, 23 (2- 4) pp. 135-194.
- Berger, A.N., 1998. *The efficiency effects of bank mergers and acquisition: A preliminary look at the 1990s data*. In: Amihud, Y., Miller, G. (Eds.), *Bank Mergers and Acquisitions*, Kluwer Academic Publishers, Dordrecht, pp. 79-111.
- Berger, A. and DeYoung, R. 2001. *The effects of geographic expansion on bank efficiency*. Federal Reserve Board Finance and Economics Discussion Paper, no 2001-03.
- Behr A. and Heid F. 2008. *The success of bank mergers revisited – an assessment based on a matching strategy*. Discussion Paper Series 2: Banking and Financial Studies No 06/2008
- Boston Consulting Group (BCG). 2005. *Successful M&A: The Method in the Madness*. Report.
- Boston Consulting Group (BCG). 2008. *The Return of the Strategist: Creating Value with M&A in Downturns*. Report.

- Boston Consulting Group (BCG). 2003. *Winning Through Mergers in Lean Times: The Hidden Power of Mergers and Acquisitions in Periods of Below-Average Economic Growth*. Report.
- Chatterjee, S., Lubatkin, M., Schweiger, D. M., & Weber, Y. 1992. *Cultural differences and shareholder value in related mergers: linking equity and human capital*. Strategic Management Journal, 7, 119–139.
- Datta, D. K., Grant, J. H., and Rajagopalan, N. 1991. *Management incompatibility and post-acquisition autonomy: Effects on acquisition performance*. Advance in Strategic Management, 7, 157–182.
- Diaz B., Azofra, S. S., Olalla, M.G., 2002. *The effect of acquisitions on the performance of European credit entities during the 90s: panel data analysis*. Universidad de Cantabria Departamento de Administracion de Empresas.
- Egger P., Hahn F. 2006. *Endogenous Bank Mergers and Their Impact on Banking Performance*. WIFO Working Papers, No. 271.
- Fries, S., Taci, A. 2005. *Cost efficiency of banks in transition: Evidence from 289 banks in 15 post-communist countries*. Journal of Banking and Finance, 29, 55–81.
- Grigorian, D., Manole, V. 2006. *Determinants of commercial bank performance in transition: An application of data envelopment analysis*. Comparative Economic Studies, 48, 497–522.
- Harrison, J., Hitt, M., Hoskisson, R., and Ireland, R. 1991. *Synergies and postacquisition performance: Differences versus similarities in resource*

- allocations*. Journal of Management, 17: 173-190.
- Huizinga, H., Nelissen, J. and Vander Venet, R. 2001. *Efficiency effects of bank mergers and acquisitions in Europe*. Tinbergen Institute Discussion Paper.
- Human Capital Institute. 2008. *Key to M&A Success: Human Capital Due Diligence*. White Paper.
- Koetter, M. 2005. *Evaluating the German Bank Merger Wave, Tjalling C. Koopmanns* Discussion Paper No. 05-16. Available at SSRN: <http://ssrn.com/abstract=726408>.
- Koetter M. 2008. *An Assessment of Bank Merger Success in Germany*. German Economic Review, 9(2), 232 – 264.
- Kyj, L. and Isik, I. 2008. *Bank x-efficiency in Ukraine: An analysis of service characteristics and ownership*. Journal of Economics and Business.
- Fauver, L., Houston J., Naranjo, A. 2002. *Capital Market Development, Integration*. University of Miami.
- Nail, L., Megginson, W., Maqueira, C. 1998. *How Stock-Swap Mergers Affect Shareholder (And Bondholder) Wealth: More Evidence of the Value of Corporate "Focus"*. Journal of Applied Corporate Finance.
- Prahalad, C. K., & Bettis, R. A. 1986. *The dominant logic: A new linkage between diversity and performance*. Strategic Management Journal, 7, 485–501.
- Ramaswamy, K. 1997. *The performance impact of strategic similarity in horizontal mergers: evidence from the U.S. banking industry*. Academy of Management Journal, 40, 697–715.

- Sapienza P. 2002. *The Effects of Banking Mergers on Loan Contracts*. Journal of Finance, 57(1): 329-367.
- Singh, H., & Montgomery, C. A. 1987. *Corporate acquisition strategies and economic performance*. Strategic Management Journal, 8: 377-386.
- Spindt, P.A., Tarhan, V., 1992. *Are there synergies in bank mergers?* Working paper, Tulane University, New Orleans, LA.
- Vander Vennet, R., 1996. *The effect of mergers and acquisitions on the efficiency and profitability of EC credit institutions*. Journal of Banking and Finance 20, 1531-1558.
- Woo M., Reiter, J.P., Karr, A.K. , 2008. *Estimation of propensity scores using generalized additive models*. Statistics in Medicine 27, 3805 – 3816.

*Appendix 1*

**DESCRIPTIVE STATISTICS OF BIDDER AND TARGET BANKS.  
MEAN-COMPARISON T-TEST.**

Variable	Bidder banks	Target banks	t
Size	2.197	-0.872	7.074
Return on Avg Assets	1.288	0.455	1.795
Return on Avg Equity	16.182	22.059	-0.638
Net Interest Margin	0.004	0.005	-2.029
Consumer Loans/ Total Loans	102.366	105.845	-1.762
Total Loans/ Total Deposits	138.801	149.893	-0.442
Total Deposits/ Total Assets	68.047	67.640	0.097
Cost/Income	62.033	77.858	-2.725
Equity/Total Assets	9.086	14.432	-3.307
Net Loans/ Total Assets	55.041	52.464	0.828
Interest Income/ Interest Expenses	206.971	245.307	-2.094
HR cost/ Operation Expenses	41.374	36.080	0.822
Total Share Capital/ Equity	46.510	83.195	-2.432
Loan Loss Provision/ Net Interest Revenue	61.180	-2.872	1.271
Other Operation Income/ Total Assets	0.013	0.014	-0.177
GDP	4.360	5.362	-1.953
Profit Margin	389.923	14.548	0.992
Market share (Total Assets)	11.2359	3.0522	4.471
Market share (Net Loans)	21.7371	4.2676	2.143
Market share (Deposits)	26.9125	4.2953	2.005
Mshare	0.3621	-0.1399	3.639

*Appendix 2*

**DESCRIPTIVE STATISTICS OF TARGET BANKS, NON-TARGET BANKS AND NON-MERGING PEERS OF TARGET BANKS.  
MEAN-COMPARISON T-TEST.**

Variable	Target banks	Non-target banks	t-value	Target banks' peers	t-value
Size	-0.872	0.990	-4.726	-0.752	-0.399
Return on Avg Assets	0.455	1.137	-1.464	1.191	-1.119
Return on Avg Equity	22.059	12.194	2.401	9.259	2.173
Net Interest Margin	0.005	0.004	1.896	0.005	0.490
Consumer Loans/ Total Loans	105.845	103.234	2.100	104.755	0.606
Total Loans/ Total Deposits	149.893	412.039	-0.582	479.061	-0.678
Total Deposits/ Total Assets	67.640	61.522	1.701	59.032	2.125
Cost/Income	77.858	62.511	3.015	67.337	1.451
Equity/Total Assets	14.432	11.456	1.801	14.852	-0.204
Net Loans/ Total Assets	52.464	54.942	-0.882	54.326	-0.614
Interest Income/ Interest Expenses	245.307	249.734	-0.116	295.006	-1.048
HR cost/ Operation Expenses	36.080	44.041	-2.713	42.921	-1.731
Total Share Capital/ Equity	83.195	54.027	3.152	57.678	2.372
Loan Loss Provision/ Net Interest Revenue	-2.872	21.208	-1.346	16.310	-2.041
Other Operation Income/ Total Assets	0.014	0.016	-0.179	0.016	-0.245
GDP	5.362	4.144	2.782	4.469	1.720
Profit Margin	14.548	64.101	-0.381	9.902	0.210
Market share (Total Assets)	3.052	5.447	-1.203	8.295	-2.118
Market share (Net Loans)	4.268	11.596	-0.853	18.091	-1.228
Market share (Deposits)	4.295	9.456	-0.941	14.948	-1.491
Scores for factor 1	-0.140	0.015	-1.099	0.184	-1.793
Observations	51	471		268	

*Appendix 3*

**DESCRIPTIVE STATISTICS OF BIDDER BANKS, NON-BIDDER  
BANKS AND NON-MERGING PEERS OF BIDDER BANKS.  
MEAN-COMPARISON T-TEST.**

Variable	Bidder banks	Non-bidder banks	t-value	Bidder banks` peers	t-value
Size	2.197	0.644	4.055	2.337	-0.367
Return on Avg Assets	1.288	1.044	0.541	1.046	0.963
Return on Avg Equity	16.182	12.802	0.847	13.962	1.140
Net Interest Margin	0.004	0.004	-0.274	0.003	1.683
Consumer Loans/ Total Loans	102.366	103.621	-1.041	102.008	0.713
Total Loans/ Total Deposits	138.801	415.591	-0.636	418.719	-0.614
Total Deposits/ Total Assets	68.047	61.421	1.907	62.209	1.699
Cost/Income	62.033	64.243	-0.445	58.034	1.617
Equity/Total Assets	9.086	12.060	-1.861	8.831	0.204
Net Loans/ Total Assets	55.041	54.660	0.140	55.504	-0.162
Interest Income/ Interest Expenses	206.971	254.287	-1.288	217.629	-0.349
HR cost/ Operation Expenses	41.374	43.486	-0.739	45.798	-2.266
Total Share Capital/ Equity	46.510	58.097	-1.285	52.487	-0.697
Loan Loss Provision/ Net Interest Revenue	61.180	13.871	2.749	15.554	1.907
Other Operation Income/ Total Assets	0.013	0.016	-0.288	0.017	-0.278
GDP	4.360	4.250	0.254	3.779	1.491
Profit Margin	389.923	20.317	2.959	31.624	1.946
Market share (Total Assets)	11.2359	4.5034	3.536	7.536	1.401
Market share (Net Loans)	21.7371	9.6018	1.462	17.1499	0.377
Market share (Deposits)	26.9125	6.8367	3.834	11.8585	1.967
Mshare	0.3621	-0.0426	2.989	0.1374	1.16
Observations	55	467		213	

*Appendix 4*

**PROBIT REGRESSION FOR BIDDER BANKS.**

Probability of becoming an acquirer		
	(a)	(b)
Size_2	0.000	0.037**
	(0.013)	(2.065)
Size	0.107*	-0.117
	(1.936)	(-1.379)
Return on Avg Assets	0.063	0.111
	(0.974)	(0.771)
Return on Avg Equity	0.000	0.003
	(0.050)	(0.228)
Net Interest Margin	26.888	5.260
	(1.135)	(0.136)
HR cost/ Operation Expenses	-0.011*	-0.034***
	(-1.951)	(-3.581)
Interest Income/ Interest Expenses	-0.001	-0.001
	(-1.169)	(-0.750)
Consumer Loans/ Total Loans	-0.018	0.007
	(-0.796)	(0.209)
Total Loans/ Total Deposits	-0.000	-0.000
	(-0.633)	(-0.554)
Total Deposits/ Total Assets	0.008*	0.011**
	(1.789)	(2.095)
Cost/Income	0.004	0.021**
	(1.016)	(2.525)
Net Loans/ Total Assets	-0.002	0.006
	(-0.435)	(0.990)
Total Share Capital/ Equity	-0.003	-0.002
	(-1.482)	(-1.203)
Equity/Total Assets	-0.003	0.010
	(-0.341)	(0.657)
NPLshare	-0.035	-0.009
	(-1.479)	(-0.396)
Loan Loss Provision/ Net Interest Revenue	0.001	-0.010*
	(0.278)	(-1.871)
Other Operation Income/ Total Assets	0.808	-4.526
	(0.890)	(-1.338)
Profit Margin	0.001	0.001**
	(0.356)	(2.101)
GDP	0.039	0.072*
	(1.441)	(1.737)
MSh	0.082	0.078
	(1.116)	(0.969)
_cons	0.359	-2.649

	(0.160)	(-0.752)
<b>P</b>		
<b>N</b>	522	268
t-statistics in parentheses * significant at 1%; ** significant at 5%; *** significant at 10%		

*Appendix 5*

**PROBIT REGRESSION FOR BIDDER BANKS.**

Probability of becoming an acquirer		
	(c)	(d)
Size_2	0.003	0.041
	(0.212)	(1.641)
Size	0.231***	-0.093
	(3.028)	(-0.662)
Return on Avg Assets	0.080	0.112
	(0.985)	(0.718)
Return on Avg Equity	-0.003	0.014
	(-0.302)	(1.013)
Net Interest Margin	-38.164	-14.975
	(-1.405)	(-0.321)
HR cost/ Operation Expenses	-0.012*	-0.034***
	(-1.827)	(-3.110)
Interest Income/ Interest Expenses	0.000	-0.001
	(0.047)	(-1.147)
Consumer Loans/ Total Loans	-0.017	0.033
	(-0.630)	(0.734)
Total Loans/ Total Deposits	-0.000	-0.000
	(-1.269)	(-0.252)
Total Deposits/ Total Assets	0.010**	0.020***
	(1.998)	(3.131)
Cost/Income	0.003	0.022**
	(0.646)	(2.340)
Net Loans/ Total Assets	0.003	0.014*
	(0.540)	(1.945)
Total Share Capital/ Equity	-0.002	-0.000
	(-1.031)	(-0.203)
Equity/Total Assets	0.009	0.020
	(0.834)	(1.155)
Share of Non-Performing Loans	-0.071**	-0.026

	(-2.101)	(-0.873)
Loan Loss Provision/ Net Interest Revenue	0.000	-0.016***
	(0.011)	(-2.953)
Other Operating Income/ Total Assets	0.340	-3.106
	(0.329)	(-0.762)
Profit Margin	0.000	0.002***
	(0.323)	(3.173)
GDP	0.083	0.124**
	(1.388)	(2.098)
Market Share	-0.007	0.037
	(-0.105)	(0.428)
ctry_year3_32	-0.948	(-0.950)
	(-0.889)	
ctry_year5_38	0.525	
	-0.376	
ctry_year6_34	0.500	
	-0.615	
ctry_year6_48	1.916	
	-1.558	
ctry_year8_4	-0.709	
	(-0.636)	-0.51
ctry_year8_28	1.769*	(-0.807)
	-1.818	1.25
ctry_year9_4	-0.333	-1.286
	(-0.275)	-0.168
ctry_year10_4	-0.591	(-0.172)
	(-0.812)	1.168*
ctry_year10_17	1.190*	-1.751
	-1.744	0.467
ctry_year10_18	0.740	-0.505
	-0.649	1.426*
ctry_year10_32	1.597**	-1.728
	-2.492	1.076*
ctry_year10_41	1.294*	-1.905
	-1.667	0.418

ctry_year10_47	2.364***	-0.405
	-2.65	
ctry_year10_48	2.459***	
	(4.391)	
ctry_year10_57	0.239	
	-0.268	1.820*
ctry_year11_18	1.155	-1.676
	-1.226	1.166*
ctry_year11_19	2.304***	-1.921
	-2.813	
ctry_year11_36	2.135**	
	-2.065	1.663**
ctry_year11_48	2.340***	-2.397
	(4.289)	-0.292
ctry_year11_50	1.273	(-0.386)
	-1.199	0.626
y1	1.559	-1.15
	-1.592	
y2	1.782**	
	-2.524	
y3	3.007***	
	-3.544	-0.233
y4	0.150	(-0.731)
	-0.159	1.757***
y5	0.641	-3.488
	-1.244	1.290**
y6	0.605	-2.364
	(1.278)	
y7	0.092	
	-0.13	
y8	1.076	
	-1.497	1.708**
y9	0.369	-2.571
	-0.451	
y11	-0.316	

	(-0.787)	0.15
cntr4	2.218***	-0.177
	-3.855	1.837**
cntr18	0.769	-1.979
	-0.932	
cntr29	1.558***	
	-3.061	
cntr38	2.415**	
	-2.273	
cntr50	1.421	
	-1.53	
cntr52	1.610***	
	-2.7	-7.395
cntr57	1.539**	(-1.575)
	(2.316)	0
cntr58	2.535***	268
	-3.565	
ctry_year4_18	0.289	
	-0.348	
cntr17	0.516	
	-0.818	
p	0.000	0.000
N	522.000	267.000
t-statistics in parentheses		
* significant at 1%; ** significant at 5%; *** significant at 10%		

*Appendix 6*

**BALANCING PROPERTIES TEST FOR BIDDER BANKS' MATCHING.**

Variable	Sample	Mean		t-test	
		Treated	Control	t	p>  t
Size_2	Unmatched	11.341	11.717	-0.19	0.85
	Matched	11.341	6.502	2.30	0.02
Size	Unmatched	2.1586	2.3372	-0.46	0.64
	Matched	2.1586	1.6414	1.16	0.25
Return on Avg Assets	Unmatched	1.2937	1.0459	0.98	0.33
	Matched	1.2937	1.8731	-1.86	0.07
Return on Avg Equity	Unmatched	16.259	13.962	1.17	0.24
	Matched	16.259	20.593	-1.63	0.11
Net Interest Margin	Unmatched	0.00402	0.00317	1.71	0.09
	Matched	0.00402	0.00509	-1.15	0.25
HR cost/ Operating Expenses	Unmatched	41.498	45.798	-2.18	0.03
	Matched	41.498	36.858	2.03	0.05
Interest Income/ Interest Expenses	Unmatched	206.62	217.63	-0.36	0.72
	Matched	206.62	226.21	-1.13	0.26
Consumer Loans/ Total Loans	Unmatched	102.41	102.01	0.79	0.43
	Matched	102.41	104.31	-1.97	0.05
Total Loans/ Total Deposits	Unmatched	138.52	418.72	-0.61	0.54
	Matched	138.52	174.55	-1.45	0.15
Total Deposits/ Total Assets	Unmatched	68.244	62.209	1.74	0.08
	Matched	68.244	66.664	0.36	0.72
Cost/ Income	Unmatched	62.59	58.034	1.84	0.07
	Matched	62.59	60.227	0.71	0.48
Net Loans/ Total Assets	Unmatched	54.412	55.504	-0.38	0.70
	Matched	54.412	50.183	1.29	0.20
Total Share Capital/ Equity	Unmatched	45.723	52.487	-0.78	0.43
	Matched	45.723	39.378	0.97	0.34
Equity/ Total Assets	Unmatched	9.1227	8.8314	0.23	0.82
	Matched	9.1227	12.036	-1.23	0.22
Share of Non-Performing Loans	Unmatched	3.8788	3.77	0.17	0.867
	Matched	3.8788	3.5725	0.59	0.56
Loan Loss Provision/ Net Interest Revenue	Unmatched	61.791	15.554	1.91	0.06
	Matched	61.791	16.713	0.94	0.35

<b>Other Operating Income/ Total Assets</b>	<b>Unmatched</b>	<b>0.01279</b>	<b>0.01713</b>	<b>-0.26</b>	<b>0.79</b>
	<b>Matched</b>	<b>0.01279</b>	<b>0.02521</b>	<b>-1.13</b>	<b>0.26</b>
<b>Profit Margin</b>	<b>Unmatched</b>	<b>396.62</b>	<b>31.623</b>	<b>1.96</b>	<b>0.05</b>
	<b>Matched</b>	<b>396.62</b>	<b>32.402</b>	<b>0.98</b>	<b>0.33</b>
<b>GDP</b>	<b>Unmatched</b>	<b>4.4289</b>	<b>3.7789</b>	<b>1.66</b>	<b>0.10</b>
	<b>Matched</b>	<b>4.4289</b>	<b>5.1574</b>	<b>-1.13</b>	<b>0.26</b>
<b>Market Share</b>	<b>Unmatched</b>	<b>0.32759</b>	<b>0.13742</b>	<b>0.98</b>	<b>0.33</b>
	<b>Matched</b>	<b>0.32759</b>	<b>0.07875</b>	<b>1.71</b>	<b>0.09</b>

*A p p e n d i x 7*

**PROBIT REGRESSION FOR TARGET BANKS.**

Probability of becoming a target		
	(a)	(b)
Size_2	-0.054**	-0.065*
	(-2.287)	(-1.799)
Size	-0.136***	-0.074
	(-2.581)	(-0.988)
Return on Avg Assets	-0.148***	-0.150**
	(-2.670)	(-2.492)
Return on Avg Equity	0.012*	0.013*
	(1.896)	(1.761)
Net Interest Margin	51.192**	52.488*
	(2.010)	(1.771)
HR cost/ Operating Expenses	0.003	0.005
	(0.436)	(0.804)
Interest Income/ Interest Expenses	-0.001	-0.001
	(-1.545)	(-1.611)
Consumer Loans/ Total Loans	0.013	0.011
	(1.126)	(1.063)
Total Loans/ Total Deposits	-0.001	-0.001
	(-1.338)	(-1.246)
Total Deposits/ Total Assets	0.001	0.004
	(0.264)	(0.591)
Cost/ Income	0.003	0.001
	(0.674)	(0.267)
Net Loans/ Total Assets	0.001	0.001
	(0.234)	(0.216)
Total Share Capital/ Equity	-0.000	0.001
	(-0.020)	(0.520)
Equity/ Total Assets	0.006	0.007
	(0.575)	(0.640)
Share of Non-Performing Loans	-0.003	-0.015
	(-0.280)	(-1.032)

<b>Loan Loss Provision/ Net Interest Revenue</b>	<b>-0.007**</b>	<b>-0.006**</b>
	<b>(-2.358)</b>	<b>(-2.365)</b>
<b>Other Operation Income/ Total Assets</b>	<b>-2.446</b>	<b>-0.583</b>
	<b>(-0.917)</b>	<b>(-0.223)</b>
<b>Profit Margin</b>	<b>-0.000</b>	<b>-0.000</b>
	<b>(-0.005)</b>	<b>(-0.026)</b>
<b>GDP</b>	<b>0.047*</b>	<b>0.047</b>
	<b>(1.792)</b>	<b>(1.571)</b>
<b>Market Share</b>	<b>0.150*</b>	<b>0.524</b>
	<b>(1.840)</b>	<b>(1.479)</b>
<b>_cons</b>	<b>-2.817*</b>	<b>-2.297*</b>
	<b>(-1.934)</b>	<b>(-1.653)</b>
<b>P</b>	<b>0.000</b>	<b>0.013</b>
<b>N</b>	<b>522</b>	<b>254</b>
t-statistics in parentheses * significant at 1%; ** significant at 5%; *** significant at 10%		

*Appendix 8*

**PROBIT REGRESSION FOR TARGET BANKS.**

Probability of becoming a target		
	(c)	(b)
Size <sub>2</sub>	-0.025	-0.053
	(-1.265)	(-1.298)
Size	-0.041	-0.009
	(-0.607)	(-0.097)
Return on Avg Assets	-0.159***	-0.163**
	(-2.728)	(-2.452)
Return on Avg Equity	0.018**	0.019**
	(2.238)	(2.297)
Net Interest Margin	22.135	33.969
	(0.912)	(1.031)
HR cost/ Operating Expenses	0.003	0.008
	(0.479)	(1.054)
Interest Income/ Interest Expenses	-0.000	-0.001
	(-1.175)	(-1.257)
Consumer Loans/ Total Loans	0.012	-0.002
	(1.094)	(-0.191)
Total Loans/ Total Deposits	-0.002*	-0.001
	(-1.773)	(-0.841)
Total Deposits/ Total Assets	-0.002	0.002
	(-0.314)	(0.290)
Cost/ Income	0.007*	0.011
	(1.833)	(1.405)
Net Loans/ Total Assets	0.001	-0.001
	(0.205)	(-0.122)
Total Share Capital/ Equity	-0.000	0.000
	(-0.083)	(0.171)
Equity/ Total Assets	0.013	0.012
	(1.057)	(0.933)
Share of Non-Performing Loans	-0.001	-0.006
	(-0.115)	(-0.372)

Loan Loss Provision/ Net Interest Revenue	-0.007**	-0.005
	(-2.269)	(-1.354)
Other Operation Income/ Total Assets	-2.257	0.693
	(-1.152)	(0.254)
Profit Margin	0.001**	0.005
	(2.205)	(1.146)
GDP	0.062*	0.051
	(1.905)	(1.623)
Market Share	0.008	0.684*
	(0.042)	(1.792)
ctry_year1_18	6.690***	1.176
	-7.427	-1.361
ctry_year3_37	5.469***	
	-4.639	
ctry_year5_38	1.086	
	-0.926	
ctry_year6_29	1.594	
	-1.578	
ctry_year6_52	2.817***	
	-3.046	
ctry_year7_53	1.721	
	-1.561	
ctry_year8_7	2.450**	
	-2.318	
ctry_year10_17	0.189	
	-0.211	
ctry_year10_47	2.098***	
	-3.428	
ctry_year10_48	1.203***	1.114*
	-2.754	-1.932
ctry_year11_48	0.970**	1.115***
	-2.184	-2.64
y1	-5.086	
	.	
y2	1.175	
	-1.625	

y3	-5.031	
	.	
y4	0.925	
	-1.509	
y5	0.173	
	-0.179	
y6	0.038	1.042**
	-0.065	-2.054
y7	0.277	
	-0.415	
y8	0.041	
	-0.065	
y9	-0.352	
	(-0.656)	
y11	0.26	-0.131
	-0.775	(-0.441)
cntr12	1.794**	
	-2.116	
cntr17	1.244*	0.851
	-1.736	-1.638
cntr18	0.261	
	-0.63	
cntr28	1.245**	
	-2.525	
cntr37	1.337*	
	-1.684	
cntr57	1.836***	1.797***
	-5.357	-4.796
ctry_year4_18	0.825	
	-1.165	
ctry_year6_12	-0.42	
	(-0.492)	
ctry_year8_17	-0.335	
	(-0.428)	
ctry_year10_28	1.042	
	-1.395	
ctry_year10_37	0.654	

	-0.632	
cntr53	0.941	
	-1.598	
_cons	-4.036***	-2.456
	(-2.815)	(-1.564)
P	.	0
N	522	254
t-statistics in parentheses * significant at 1%; ** significant at 5%; *** significant at 10%		

*Appendix 9*

**BALANCING PROPERTIES TEST FOR TARGET BANKS'  
MATCHING.**

Variable	Sample	Mean		t-test	
		Treated	Control	t	p>  t
Size_2	Unmatched	3.755	4.363	-0.930	0.352
	Matched	3.755	3.769	-0.020	0.987
Size	Unmatched	-0.872	-0.773	-0.330	0.741
	Matched	-0.872	-1.205	1.020	0.309
ROAA	Unmatched	0.455	1.192	-1.120	0.265
	Matched	0.455	0.696	-0.370	0.711
ROAE	Unmatched	22.059	9.265	2.170	0.031
	Matched	22.059	12.235	1.000	0.320
Net Interest Margin	Unmatched	0.005	0.005	0.480	0.628
	Matched	0.005	0.005	0.600	0.553
HR cost/ Operating Expenses	Unmatched	36.080	42.879	-1.720	0.087
	Matched	36.080	41.738	-0.830	0.410
IntInc_to_InExp	Unmatched	245.310	295.450	-1.050	0.292
	Matched	245.310	221.710	0.980	0.328
Consumer Loans/ Total Loans	Unmatched	105.840	104.770	0.600	0.552
	Matched	105.840	104.750	0.480	0.632
Total Loans/ Total Deposits	Unmatched	149.890	480.940	-0.680	0.497
	Matched	149.890	159.070	-0.330	0.744
Total Deposits/ Total Assets	Unmatched	67.640	58.985	2.130	0.034
	Matched	67.640	69.461	-0.420	0.676
Cost/ Income	Unmatched	77.858	67.423	1.440	0.152
	Matched	77.858	80.921	-0.240	0.813
Net Loans/ Total Assets	Unmatched	52.464	54.258	-0.590	0.555
	Matched	52.464	52.794	-0.090	0.927
Total Share Capital/ Equity	Unmatched	83.195	57.964	2.340	0.020
	Matched	83.195	100.570	-0.920	0.358
Equity/ Total Assets	Unmatched	14.432	14.852	-0.200	0.838
	Matched	14.432	10.734	2.020	0.046
Share of Non-Performing Loans	Unmatched	8.370	8.614	-0.170	0.868
	Matched	8.370	7.953	0.270	0.791

<b>Loan Loss Provision/ Net Interest Revenue</b>	<b>Unmatched</b>	<b>-2.872</b>	<b>16.321</b>	<b>-2.040</b>	<b>0.043</b>
	<b>Matched</b>	<b>-2.872</b>	<b>25.973</b>	<b>-1.790</b>	<b>0.076</b>
<b>Other Operation Income/ Total Assets</b>	<b>Unmatched</b>	<b>0.014</b>	<b>0.016</b>	<b>-0.250</b>	<b>0.801</b>
	<b>Matched</b>	<b>0.014</b>	<b>0.011</b>	<b>0.470</b>	<b>0.640</b>
<b>Profit Margin</b>	<b>Unmatched</b>	<b>14.548</b>	<b>9.748</b>	<b>0.220</b>	<b>0.829</b>
	<b>Matched</b>	<b>14.548</b>	<b>-9.010</b>	<b>0.990</b>	<b>0.324</b>
<b>GDP</b>	<b>Unmatched</b>	<b>5.362</b>	<b>4.472</b>	<b>1.710</b>	<b>0.088</b>
	<b>Matched</b>	<b>5.362</b>	<b>6.047</b>	<b>-1.430</b>	<b>0.156</b>
<b>Market Share</b>	<b>Unmatched</b>	<b>-0.140</b>	<b>-0.207</b>	<b>1.490</b>	<b>0.136</b>
	<b>Matched</b>	<b>-0.140</b>	<b>-0.211</b>	<b>1.380</b>	<b>0.170</b>

*Appendix 10*

**PROBIT REGRESSION FOR BIDDER BANKS. PANEL DATA.**

Probability of becoming a bidder		
	(a)	(b)
<b>Size</b>	<b>0.179***</b>	<b>0.290***</b>
	(3.96)	(4.24)
<b>Return on Avg Assets</b>	<b>0.039</b>	<b>0.029</b>
	(0.62)	(0.27)
<b>Return on Avg Equity</b>	<b>-0.007</b>	<b>-0.016</b>
	(-0.99)	(-1.09)
<b>Net Interest Margin</b>	<b>37.846</b>	<b>7.540</b>
	(1.18)	(0.12)
<b>Consumer Loans/ Total Loans</b>	<b>-0.018</b>	<b>-0.003</b>
	(-0.70)	(-0.12)
<b>Total Loans/ Total Deposits</b>	<b>-0.000</b>	<b>-0.000</b>
	(-1.02)	(-0.08)
<b>Total Deposits/ Total Assets</b>	<b>0.008*</b>	<b>0.014**</b>
	(1.72)	(2.02)
<b>Cost/ Income ratio</b>	<b>0.001</b>	<b>-0.002</b>
	(0.13)	(-0.21)
<b>Equity/ Total Assets</b>	<b>-0.008</b>	<b>-0.007</b>
	(-0.71)	(-0.33)
<b>Net Loans/ Total Assets</b>	<b>-0.002</b>	<b>-0.005</b>
	(-0.45)	(-0.58)
<b>Interest Income/ Interest Expenses</b>	<b>0.016**</b>	<b>0.021**</b>
	(2.43)	(2.43)
<b>intinc_to_IntExp_2</b>	<b>-0.000**</b>	<b>-0.000**</b>
	(-2.31)	(-2.12)
<b>Hr Cost/ Operating Expenses</b>	<b>-0.008</b>	<b>-0.007</b>
	(-1.51)	(-0.90)
<b>tshcap_to_eq</b>	<b>-0.004**</b>	<b>-0.004</b>
	(-2.09)	(-1.28)
<b>Loan Loss Provisions/ Net Interest Revenue</b>	<b>-0.003</b>	<b>-0.007</b>

	(-0.87)	(-1.49)
othopinc_to_ta	2.517***	3.237*
	(3.38)	(1.83)
GDP	0.052*	0.114**
	(1.86)	(1.99)
Profit Margin	0.000	-0.001
	(0.70)	(-0.18)
ctry_year2_20		1.419
		(1.39)
ctry_year3_32		1.546*
		(1.72)
ctry_year3_37		1.905**
		(2.01)
ctry_year5_38		2.115**
		(2.16)
ctry_year6_4		0.133
		(0.06)
ctry_year6_34		1.286*
		(1.91)
ctry_year6_48		2.421***
		(2.72)
ctry_year6_52		2.540***
		(2.64)
ctry_year6_58		2.735***
		(2.95)
ctry_year7_4		1.833***
		(3.17)
ctry_year8_7		2.756***
		(2.68)
ctry_year8_28		2.681***
		(2.83)
ctry_year9_4		1.591
		(1.56)
ctry_year0_4		1.382***
		(2.59)
ctry_year0_17		0.344
		(0.45)

ctry_year0_18		1.150
		(1.46)
ctry_year0_29		1.157
		(1.35)
ctry_year0_32		1.063*
		(1.83)
ctry_year0_38		1.672
		(1.53)
ctry_year0_41		1.447**
		(2.12)
ctry_year0_47		1.902**
		(2.25)
ctry_year0_48		2.295***
		(4.04)
ctry_year0_50		11.699
		.
ctry_year0_57		1.862**
		(2.47)
ctry_year0_58		2.530**
		(2.24)
ctry_year11_4		1.840**
		(2.27)
ctry_year11_18		1.072**
		(2.12)
ctry_year11_19		2.113**
		(1.99)
ctry_year11_36		1.968*
		(1.76)
ctry_year11_48		1.410***
		(3.01)
ctry_year11_50		2.180***
		(2.75)
ctry_year11_57		1.308*
		(1.89)
_cons	-1.781	-5.237
	(-0.71)	(-1.51)

*Appendix 11*

**PROBABILITY SCORES FOR TARGET BANKS. PANEL DATA**

Probability of becoming a target		
	(a)	(b)
Size	-0.173***	-0.131
	(-4.15)	(-0.91)
Return on Avg Assets	-0.035	0.014
	(-0.93)	(0.05)
Return on Avg Equity	0.006**	0.036
	(1.99)	(0.74)
Net Interest Margin	31.041	-30.404
	(1.12)	(-0.35)
Consumer Loans/ Total Loans	0.014*	0.075
	(1.65)	(1.25)
Total Loans/ Total Deposits	0.000	0.001
	(0.55)	(0.63)
Total Deposits/ Total Assets	0.000	-0.033***
	(0.11)	(-2.62)
Cost/ Income ratio	-0.002	0.066***
	(-0.50)	(2.66)
Equity/ Total Assets	-0.012	-0.016
	(-1.25)	(-0.49)
Net Loans/ Total Assets	0.001	-0.003
	(0.10)	(-0.19)
intinc_to_inexp	0.002	0.008
	(0.75)	(0.94)
Interest Income/ Interest Expenses_2	-0.000	-0.000
	(-1.23)	(-1.34)
Hr Cost/ Operating Expenses	-0.004	0.007
	(-0.79)	(0.44)
tshcap_to_eq	-0.001	0.003
	(-0.90)	(0.41)

Loan Loss Provisions/ Net Interest Revenue	-0.006**	-0.005
	(-2.35)	(-0.43)
Other Operating Income/ Total Assets	-2.047	-12.642
	(-0.80)	(-1.49)
GDP	-0.006	-0.375*
	(-0.21)	(-1.65)
Profit Margin	-0.003***	0.004
	(-4.10)	(0.18)
ctry_year2_20		3.931
		(1.25)
ctry_year3_37		1.681
		(0.83)
ctry_year4_18		-1.127
		(-1.00)
ctry_year5_38		-0.113
		(-0.05)
ctry_year6_12		-3.195*
		(-1.80)
ctry_year6_29		0.855
		(0.52)
ctry_year6_52		1.503
		(1.11)
ctry_year7_53		0.630
		(0.36)
ctry_year8_7		0.507
		(0.28)
ctry_year8_17		-0.329
		(-0.20)
ctry_year8_28		1.631
		(0.76)
ctry_year0_17		1.564
		(0.92)
ctry_year0_28		-1.144
		(-0.66)
ctry_year0_47		1.211
		(0.86)

ctry_year0_48		-0.239
		(-0.14)
ctry_year0_57		1.206
		(1.06)
ctry_year11_18		-1.382
		(-1.17)
ctry_year11_48		-0.272
		(-0.15)
ctry_year11_57		1.908
		(1.10)
_cons	-2.524**	-10.266
	(-2.04)	(-1.53)

