# Merger and Acquisitions in the Czech Banking Sector-Impact of Bank Mergers on the Efficiency of Banks

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***Abstract*—This research paper investigates the impact of mergers on banks performance. It compares performance of the banks involved in before and after mergers by assessing the financial performance of Czech banks, over a period from 2000-2010. Performance is analyzed by using financial ratios by using accounting measures, namely profitability. Pre and post-mergers performance for a 3-year period is compared and also the overall impact of merger and acquisitions (M & As) on resulting banks. The independent sample t-test and panel data methodology are carried out to assess the effect (difference) in performance between pre and post bank M&A periods and for testing the statistical significance applied for the ratio analysis. The univariate analysis revealed mix profitability after the merger for banks with the t-test showing no significant difference in profitability before and after merger. The panel data methodology indicates that M&A positive effect on the profitability (ROE) of banks. The paper recommends that the banks should come up with more aggressive strategies that would improve their performance, financial efficiency, in order to gain the most from post M&A. Furthermore, our results indicate that firm size and growth have significantly positive relationship with firm profitability while debt capital decreases firm profitability.**

***Index Terms*—merger and acquisition, financial performance, profitability, Czech banks**

## I. Introduction

In the globalized economy, the main objective of every firm is to make profits and enhance shareholders wealth. Especially, mergers and acquisitions (M&A) activities have gained importance caused by liberalization, globalization, competition and integration of national and international markets. Companies adopt M&A as growth strategy for different reasons and motives.

There are two main theories describe reasons for M&A: value creation and redistribution theories. Value creation means to obtain the synergy through M&A; the value of the merged companies is greater than the sum of the target and bidder alone. Redistribution theories of M&A include the hubris and the agency theories. The hubris hypothesis proposes that acquisitions are the result of managers' mistakes (inflated ego, overconfident of their skills and abilities) in evaluating target firms and that the synergy gain is zero [1]. The agency theory assumes that managers will not always try to maximize shareholder value, as managers have different interests then shareholders and act in their self-interest (pursue private benefits).

For the motives, we can divide them into four categories: strategic, economic, personal and market motives. Strategic motive can be considered with improving the strength of the firm's strategy, such as creating synergy, increasing market power, strengths and resources; establishing economics of scale is part of economic motive; the agency problem and management hubris are included in personal motives; market motive includes entering new markets in new countries by acquiring already established firms for adding additional capacity [2], [3].

One of the primary objectives for M&A is to reach growth at the strategic level in terms of size and customer base. With the power of M&A in the banking sector, the banks can achieve strategic benefits, growth in operations and minimize their expenses to sizable extent. Therefore, more and more international and domestic banks all over the world are engaged in M&A activities. In recent years, number of academic studies in economics and corporate finance has measured the profitability of companies (banks) before and after M&A. The value of this approach is that it can be used to diagnose strengths and weaknesses of the company ́s performance, whether it is profitable or not. However, whether M&A lead to improved performance is a debatable issue. Some results indicated that M&A have synergistic effect; others have concluded negative effect; others showing mixed or insignificant results. No definite conclusion can be drawn thus there is a need to explore this area further.

In this paper, we will examine the post-performance of the Czech banks involved in merger activities by using accounting approach (ratios). The present work is motivated by the very shortage (none) of empirical evidence on the impact of M&A for performance in Czech banks. The current stream of literature dealing with the effects of M&As on Czech banks consists of small regional analyses - among other Eastern European countries [4], [5] or cross-border analyses [6], [7]. Nevertheless, the above mentioned studies do not

Manuscript received April 13, 2014; revised July 6, 2014.



doi: 10.12720/joams.3.2.86-92

explicitly focus on the impact of mergers on the accounting profitability of the Czech banking institutions. This paper therefore aims to fill in this gap.

To our knowledge, this is the first study to deal with post-merger profitability of target banks in Czech based on accounting information. Specifically, it focuses on M&A deals that took place in the period of 2000-2010. The present paper is organized as follows. Section 2 briefly describes the development of the Czech banking system. In section 3, we discuss the relevant literature dealing with post-M&A effects on banks performance. The sample, hypothesis and methodology are described in section 4, and the empirical results are presented in section 5. Section 6 introduces limitations and recommendation for further finding. Section 7 concludes. The main objective of this paper is to determine the effect of M&A on the performance of banks in the Czech Republic.

## II. Literature Review

According to [8] and [9] there is two main empirical methods measuring the level of success of bank M&A in terms of financial performance.

The first method analyzes the impact of M&As comparing pre and post M&A performance with financial/accounting approach based on accounting variables [10], [6], [11] and studies investigating the cost and profit X-efficiency [12]. Some studies combine the two approaches of accounting ratios with cost or profit efficiency [7], [13]. The second method investigating the performance of bank M&As by more comprehensive approach, market approach, and uses event study methodology (examination of the effects of any type of event on the direction and magnitude of stock price changes, such as the market reaction to M&A announcements through the analysis of changes in stock prices) [14], [15], [16]. Overall, the analyses on M&As provide mixed results. Some studies found improved performance; others reported no improvement, or deterioration in performance.

In the first category, [17] tested the impact of M&A in banking industry on efficiency and profitability for the domestic and cross border mergers. The result shows that mostly the domestic M&A improve the cost efficiency and little improvement of profit efficiency and little or no improvement in the profit or cost efficiency in the cross-border mergers. In the work of [8], they found that after M&A, Italian banks improved ROE, because of decrease in capital and improving lending policies by restructuring the loan portfolio of the acquired bank, which resulted in higher profits. [9] examining the impact of strategic similarities between bidders and targets on post M&A financial performance in EU, conclude that bank mergers resulted in improved return on equity, particularly in the case of cross border mergers. Reference [15] concluded that M&A resulted in significant improvement in the target banks ´performance, return on equity increased by an average of 7%, two years after transaction. Reference [18] claimed the bank consolidation which took place in Malaysia facilitated banks expansion which led to growth in their banking sector. Reference [19] conducted a study to examining the operating performance around commercial bank mergers. They find that industry-adjusted operating performance of merged banks increases significantly after the merger, large bank mergers produce greater performance gains than small bank mergers, activity focusing mergers produce greater performance gains than activity diversifying mergers, geographically focusing mergers produce greater performance gains than geographically diversifying mergers, and performance gains are larger after the implementation of nationwide banking in 1997. Reference [20] investigating long term effects on the target banks, found the improvements in performance and loan growth were significantly better in the post-merger phase. Reference [21] provides evidence on operating performance changes (pre and post M&A) for U.S. banks acquired by non-U.S. banking organization with sample of 83 commercial banks. They find that these cross-border acquisitions produce improved target performance. Cash flow profitability at the target increases, labor utilization improves, and loan losses do not rise.

Contrary to researches mentioned above, a numerous of studies found no evidence of any performance improvement after the M&As. Reference [22] found partial profit efficiency enhancement, but not with any tangible gains in terms of cost efficiency and return on assets for European target banks on the first year after an acquisition. Reference [6] concluded there was no positive performance effect in the first two years after cross-border acquisitions. He explained that profitability was affected by a decrease in the banks' net interest margin and by the lack of cost-efficiency gains. In the work of [16], there is no evidence of clear positive effects of M&A on profitability ratios such as ROE and ROA for US banks.

Some studies found out the deterioration of performance induced by the bank M&As. Findings by. In the study of [14] for the financial performance of US bank mergers, he found that after M&A, banks experienced profitability below the industry average. Reference [7] concluded that European M&A operations were faced with a slight deterioration in ROE. [11] have measured the performance of Egyptian banks after M&A by calculating return on equity, in order to determine the degree of success of banking reforms in strengthening and consolidating the Egyptian banking sector. The findings indicate that not all banks that have undergone deals of mergers or acquisitions have shown significant improvements in performance and ROE when compared to their performance before the deals.

## III. Data and Methodology

This paper analyses banking performance by calculating its profitability. Profitability offers understanding of a bank's ability to undertake risks and to expand its activity. The most common way of assessing profitability is by using the traditional accounting measures: return on equity (ROE) and return on assets

(ROA). It is important performance indicator by both investors and management. It is equal to a fiscal year's net income divided by total equity, expressed as a percentage. ROE shows how well a company uses investment funds to generate earnings growth. The most important advantages of ROE are [23].

- It proposes a direct assessment of the financial return of a shareholder's investment;
- It is easily available for analysts, only relying upon public information;
- It allows for comparison between different companies or different sectors of the economy.

The data set is obtained by combining three sources: Zephyr database provided by Bureau van Dijk for data on the M&A transactions; bank websites for balance sheet and profit and loss data of some of the banks involved in M&A operations and financial statements provided by Obchodni rejstrik a Sbirka listin, where data on bank websites were not available. In this paper we examine the profitability of Czech banks having taken part in mergers activities in a period between 2000 and 2010. The sample is limited to target banks located in the Czech Republic. The list of M&A transactions was taken from Zephyr database, was calculate with only completed transactions, included only mergers and where data (balance sheet, financial statements) were not available for 3 years pre and post-merger transactions. The final sample comprised 11 transactions, out of which five were mergers and six were acquisitions (including three bank privatizations), see Table I.

The observation of each case in the sample is considered as an independent variable. As many researchers (such as [17]) and bank analysts suggest investigating the post-merger performance of banks for a period of 3 years. The pre and post (-3, +3 years) M&A financial ratios are been computed and compared. For the purpose and objectives of the study (to examine the effect of mergers on performance of banks in the Czech Republic), the following hypothesis was tested using both the univariate approach and the panel data methodology.

H0 (Null Hypothesis): *There is no significant effect of mergers and acquisition on the performance of banks in the Czech Republic.*

H1 (Alternative Hypothesis): *There is significant effect of mergers and acquisition on the performance of banks in the Czech Republic.*

### *A. Univariate Approach*

To examine the difference in the pre and post-merger financial performance, the study derived descriptive statistics for the individual firms and the group before and after the merger (pre-merger and post-merger periods and coded as 0 and 1 respectively) from general model (univariate). Independent sample t-testing at 5% level of significance was used in comparing statistically the pre and post-merger.

### *B. Panel Data Approach*

Panel data methodology allows for the study of cross section data over several time periods. The combination of time series with cross-sections can enhance the quality and quantity of data in ways that would be impossible using only one of these two dimensions [24].

The basic model is known as

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it} \tag{1}$$

where Yit is the dependent variable (Return on Equity), α is the intercept, β is the slope whiles Xit is the independent variable (merger). The study also controlled for the effect of the following factors on the performance of companies; capital structure (leverage), size, growth. To determine the relationship between bank performance and merger of banks and the degree to which merger explains the changes were determined using regression model below:

$$ROE_{it} = \alpha_0 + \beta_1 MGR_{it} + \beta_2 TDA_{it} + \beta_3 Size_{it} + \beta_4 Growth_{it} + \varepsilon_{it} \tag{2}$$

The variables and expected sign are defined in Table IIfor the independent and control variables. In this study, the collected data were analyzed statistical package for social science (SPSS) which is an improvement on the ordinary student t-test, and STATA for the data analysis.

TABLE I. DESCRIPTIVE LIST OF MERGED FIRMS

| Banks | Transferor | Transferee | Resulting entity | Year Mgr |
|---|---|---|---|---|
| 1 | Živnostenská banka | HVB bank Czech Republic | UniCredit Czech Republic | 2006 |
| 2 | IC banka | Banco Popolare Societ áCooperativa | Banco Popolare | 2007 |
| 3 | HYPO stavebn í spořitelna | Raiffeisen stavebn í spořitelna | Raiffeisen stavebn í spořitelna | 2007 |
| 4 | eBank | Raiffeisenbank | Raiffeisenbank | 2008 |
| 5 | BAWAG Bank CZ | Landesbank Baden-W ürttemberg | LBBW Bank CZ | 2008 |

TABLE II. DEFINITION OF VARIABLES AND EXPECTED SIGNS

| Variable | Definition | Expected sign |
|---|---|---|
| ROE | Return on Equity (Dependent Variable) = Ratio of Net Profit afer tax to average Total Equity for firm i in time t | |
| ROA | Return on Asset= The ratio of Net Profit after tax to average total assets of firm i in time t | |
| NPM | Net profit margin= The ratio of Net Profit after tax to Total Assets of Firm i in time | |
| MGR | Independent Variable: Merger = Dummy variable. 1 for Post-merger otherwise 0 for Firm i in time t | Negative/ Positive |
| TDA | Control Variable: Leverage = The ratio of Total Debt to Total Assets for firm i in time t | Positive |
| SIZE | Control Variable: Firm Size = The log of Total Assets for firm i in time t | Positive |
| GROW | Control Variable: Growth= Year on Year change in Gross Earning for firm i in time t | Positive |
| E | The error term | |

Source: Researcher's Conceptualization (2014)

## IV. EMPIRICAL RESULTS

### A. Univariate Analysis

A Table III presents the averages of ROA, ROE and NPM of the individual banks pre and post-merger event with their standard deviations. The results showed that some banks involved in merger on the Czech Republic from 2000 to 2010 experienced improvement in profitability. The average returns on assets (ROA), return on equity (ROE) and net profit margin (NPM) of Banco Popolare, Raiffeisen stavebni sporitelna and LBBW Bank CZ increase, whereas UniCredit CZ and Raiffeisenbank obtaining a negative ROA, ROE and NPM after the merger event (operational loss). These results suggest that merger and acquisition has a mix effect to banks performance.

TABLE III. DESCRIPTIVE STATISTICS ON RATIOS

| COMPANY | Merger | Mean | | | Std. Deviation | | | N |
|---|---|---|---|---|---|---|---|---|
| | | ROA | ROE | NPM | ROA | ROE | NPM | |
| UniCredit Czech Republic | Pre-merger | .213333 | 1.866666 | 5.846666 | .332014 | 3.097375 | 15.869897 | 3 |
| | Post-merger | -.803333 | -8.853333 | -30.083333 | 1.495370 | 16.365085 | 55.812626 | 3 |
| Banco Popolare | Pre-merger | .566666 | 10.286666 | 11.266666 | .193476 | 2.973622 | 3.736794 | 3 |
| | Post-merger | 1.090000 | 14.736666 | 21.000000 | .078102 | 1.300012 | 1.720959 | 3 |
| Raiffeisen stavební spořitelna a.s. | Pre-merger | 1.043333 | 12.383333 | 31.873333 | .049328 | .941558 | 4.528910 | 3 |
| | Post-merger | 1.373333 | 14.780000 | 34.723333 | .395137 | 4.960272 | 9.088235 | 3 |
| Raiffeisenbank | Pre-merger | .236666 | .406666 | 5.653333 | .109696 | .205993 | 2.834754 | 3 |
| | Post-merger | -2.350000 | -8.396666 | -122.916666 | .381575 | 1.830883 | 60.251005 | 3 |
| LBBW Bank CZ | Pre-merger | .410000 | 12.556666 | 27.980000 | .030000 | 1.195003 | 3.240200 | 3 |
| | Post-merger | .940000 | 25.766666 | 48.243333 | .101488 | 5.485401 | 3.304093 | 3 |

Source: SPSS general model output

*Independent sample test results*

Table IV shows the computed (examined) independent t-test from the SPSS output of the sampled banks for the evaluation of the relative change in the performance indices. It depicted the combined means, standard deviation and the calculated t-value and p-value of the all banks after merger. The profitability position of banks measured by Return on Asset (ROA) and net profit margin (NPM) show noteworthy decrease, or small increase (Return on Equity). ROA, ROE and revealed T-Value of -0.024 (P-Value=0.981) and 1.056 (P Value= 0.300) and 1.396 (T-Value=0.183) respectively. It is evidenced that pre-merger profitability was significantly higher, but not statistically significant, than the post-merger. Moreover, the significance level is more than 0.05; therefore the null hypothesis is accepted that there is no significant effect of mergers on performance of banks in the Czech Republic on the basis of ROA, ROE or NPM of the banks.

Looking at the result of the t-test, one is made to conclude that bank mergers have no significance impact on financial efficiency of selected banks. After M&A we see that in various financial parameter of the bank performance have shown no change but it may be possible that improved performance of merged bank will show in later years the profit are not visible because we compared only three years financial ratios, it may be possible that profit will be seen in future. Finally the Czech Banking Sector has used M & As for enhanced branch network, increase market share and improve infrastructure.

TABLE IV. T- STATISTICS (TWO-TAIL) OF FINANCIAL INDICES

| Variables | | Mean | Std. Deviation | t-value | Sig.(Pvalues) |
|---|---|---|---|---|---|
| ROE | Pre | 7.500 | 5.727 | -.024 | .981 |
| | Post | 7.606 | 15.884 | | |
| ROA | Pre | .494 | .348 | 1.056 | .300 |
| | Post | .0,050 | 1.591 | | |
| NPM | Pre | 16.524 | 13.335 | 1.396 | .183 |
| | Post | -9.806 | 71.815 | | |

Source: SPSS independent sample test output (level of significant at 5% level)

### B. Panel Data Methodology

#### 1) Descriptive statistics

Table V records the descriptive statistics of the variables used to examine whether M&As have any effect on the profitability of listed banks. The 6-year study period the five banks under study recorded an average return on equity of about 7% even though it is apparent that some recorded huge negative returns. Debt capital covered a greater proportion (about 83%) of the means of banks assets, showing that most banks in the Czech Republic use more debt as their main source of funding. The average log of total sales was 7.62 while firm growth rate averaged at -38.16% (BAWAG Bank and Banco Popolare experienced a huge decrease of gross earning in first year after mergers with over -1000% growth rate).

TABLE V. DESCRIPTIVE STATISTICS OF VARIABLES

| Variables | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| MGR | 30 | 0.5 | .5085476 | 0 | 1 |
| ROE | 30 | 7.66667 | 11.6561 | -27.75 | 30.07 |
| TDA | 30 | 83.451 | 15.57044 | 37.74 | 97.39 |
| Size | 30 | 7.629 | .767438 | 5.97 | 8.45 |
| Growth | 30 | -38.16267 | 285.1498 | -1019.68 | 412.08 |

*2) Correlation and variance inflation analysis*

The low levels of pair correlation among the variables explain that the problem of multicollinearity was not significant. This is corroborated by the results of the variance inflation test (2.52). These results have been shown in Table VI and VII.

TABLE VI. CORRELATION MATRIX

| | ROE | MGR | TDA | Size | Growth |
|---|---|---|---|---|---|
| ROE | 1 | | | | |
| MGR | .005 | 1 | | | |
| sig. | .980 | | | | |
| TDA | .396 | .210 | 1 | | |
| sig. | .030 | .266 | | | |
| Size | .612 | .133 | .853 | 1 | |
| sig. | .000 | .484 | .000 | | |
| Growth | .575 | -.276 | .193 | .284 | 1 |
| sig. | .001 | .140 | .307 | .128 | |

TABLE VII. VARIANCE INFLATION TEST

| Variable | VIF | 1/VIF |
|---|---|---|
| Size | 3.89 | .257110 |
| TDA | 3.81 | .262685 |
| Growth | 1.21 | .825892 |
| Mgr | 1.16 | .860835 |
| Total | 2.52 | |

## C. Regression Results (TABLE VIII)

The aim of this study was to evaluate the relationship between M & As and the performance of banks in Czech Republic. Even though, the results are not statistically significant, our results differ from previous researches which have concluded that M&As have negative effect on the performance of firms but does not offer any support for the fact that M&A increase firm profitability. Our findings suggest that M&A's benefit the return on equity of the merged firm. Among some of the likely reasons that could account for this include sharing of experienced management executives, proper and effective implementation of the merger or acquisition strategy, IT systems, ability to profit from the synergies that the M&As bring. Consequently it is imperative for managers of merged or acquired firms to make conscious efforts to reap the benefits of M & As because these benefits do not just occur.

Our results also show that capital structure (as measured by Total Debt to Total Assets can harm merged banks. It seems to suggest by inefficient use of debt capital/resources. The increased debt use seems not to be beneficial to banks. The results therefore do not support for the capital structure relevance theory. On the other hand, size and growth of banks are seen as major catalyst for the profitability (ROE) of merged banks in Czech Republic.

TABLE VIII. REGRESSION RESULTS

| Source | SS | df | MS |
|---|---|---|---|
| Model | 2317.37875 | 4 | 579.344687 |
| Residual | 1622.69808 | 25 | 64.9079231 |
| Total | 3940.07683 | 29 | 135.864718 |

| | | |
|---|---|---|
| Number of obs | = | 30 |
| F (4, 25) | = | 8.93 |
| Prob > F | = | .0001 |
| R-squared | = | .5882 |
| Adj R-squared | = | .5223 |
| Root MSE | = | 8.0565 |

| ROE | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| MGR | 1.910694 | 3.170723 | .60 | .552 | -4.619532 | 8.44092 |
| TDA | -.2882024 | .1874699 | -1.54 | .137 | -.674304 | .0978991 |
| Size | 12.25497 | 3.84456 | 3.19 | .004 | 4.336945 | 20.17298 |
| Growth | .0178473 | .0057732 | 3.09 | .005 | .0059572 | .0297374 |
| _cons | -62.04993 | 18.28679 | -3.39 | .002 | -99.71227 | -24.38759 |

# V. LIMITATIONS AND RECOMMENDATION FOR FURTHER FINDINGS

There are certain limitations or weaknesses of this research study:

The limitation of this research study is the non-availability of financial data, information regarding financial data for some banks. The sample used for this research could be bigger. Furthermore, this study refers to the overall change in performance by comparing the post with the pre-M&A performance. However, some of this difference could be due to a continuation of firm-specific performance before the merger or to economy wide and industry factors, or different types of variables influencing operational efficiency improvement in bank M&A as stated by [25]. Also, the change of profit efficiency may be caused by changes in the pricing behavior of the acquired banks or decrease market power, etc., therefore, next researcher should investigate further those issues.

There are also others recommendations for next researches. Similar type of studies on impact of mergers and acquisitions on financial performance for companies in other sectors like telecommunication sector, IT sector etc. Furthermore, apart from the profitability, other performance ratios like liquidity, cash flow can be used to know the performance of companies undergone for M&A

strategy. Next, the study can compare financial performance for cross-border M&A, either for acquiring or acquired companies. Last but not least, the different types of methodologies (DEA, t-test) could be applied.

## VI. Conclusion

One of the main reasons for mergers and acquisitions is an improvement in firm performance. Even though some studies have been done in developed economies same cannot be said of the Czech Republic. In the Czech Republic, there are no empirical evidence exists on the effect of M & As on the performance of merged banks. Therefore, this study attempts to look into and make a comparative analysis of the effects of M&As in the Czech banking system. It focuses on target banks located in Czech and involved in mergers between 2000 and 2010. It follows a methodology of measuring performance in terms of bank profitability using accounting approach.

The univariate analysis revealed mix profitability after the merger for banks with the t-test showing no significant difference in profitability before and after merger. The evidence from panel methodology indicates that M&A has no significant, however positive effect on the profitability (ROE) of banks. This study therefore supports the value creation theories of mergers and acquisition. Overall, it can be stated from this research, that M&A marginally increase the financial efficiency and performance of banks. The present findings are in the line with to [9] or [15] findings that bank M&A results in improved ROE. However, it would be mistaken to assume, on the basis of this study, that, M&A activities are completely positive to banks. Consequently, the paper recommends that the banks should come up with more aggressive strategies that would improve their performance, financial efficiency, in order to gain the most from post M&A. It is essential that M & As are properly planned, executed and evaluated. Gains from mergers and acquisitions do not just occur. Furthermore, our results indicate that firm size and growth have significantly positive relationship with firm profitability while debt capital decreases firm profitability.

## Acknowledgment

The author wishes to thank Department of Corporate Finance, The University of Economics, Prague. This work was supported by a grant IP 100040.

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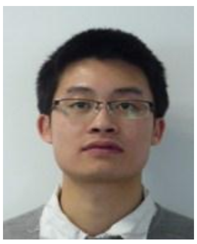

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