GREEK BANKING SECTOR IN THE ECONOMIC CRISIS AND M&As AS A SOLUTION

Michail Pazarskis *, George Drogalas **, Alkiviadis Karagiorgos ***, Efthalia Tabouratzi ****

* *Corresponding author*, Department of Accounting and Finance, Technological Educational Institute of Central Macedonia, Greece
Contact details: Magnesias Street, GR-621 00, Serres, Greece
** Department of Business Administration, University of Macedonia, Greece
*** Department of Business Administration, Technological Educational Institute of Central Macedonia, Greece
**** Department of Accounting and Finance, Technological Educational Institute of Crete, Greece

How to cite this paper: Pazarskis, M., Drogalas, G., Karagiorgos, A., & Tabouratzi, E. (2019). Greek banking sector in the economic crisis and M&As as a solution. *Corporate Board: Role, Duties and Composition, 15*(2), 37-44. https://doi.org/10.22495/cbv15i2art4

Copyright © 2019 The Authors

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0). https://creativecommons.org/licenses/by/4.0/

ISSN Online: 2312-2722
ISSN Print: 1810-8601

Received: 09.05.2019
Accepted: 01.07.2019

JEL Classification: G34, M40
DOI: 10.22495/cbv15i2art4

Abstract

This study examines the impact of thirteen mergers and acquisitions in the Greek banking sector which took place during the period of economic crisis: 2008-2014. More specifically, the sample of this study consists of all the mergers and acquisitions that led to the four remaining Greek banks (the acquirers of the above-mentioned transactions) which are: National Bank of Greece, Piraeus Bank, Eurobank and Alpha Bank. These specific banks were chosen due to the fact that after the M&As transactions we were able to compare their financial data. This comparison was made by using eight ratios for statistical tests one-year pre- and post-merger. The results of the study indicate statistically significant improvement in three capital structure and viability ratios, as well as a slight improvement on a liquidity ratio, while there is statistically insignificant change or no improvement on the profitability and efficiency ratios. In conclusion, there was some improvement in terms of capital adequacy and loan structure as far as the total capital employed of the merged institutions is concerned, but without improving the profitability of the banks during the economic crisis in Greece.

Keywords: Mergers, Acquisitions, Banks, Ratios, Economic Crisis

Authors' individual contributions: Conceptualization – M.P.; Methodology – M.P. and G.D.; Validation – A.K. and E.T.; Investigation – M.P.; Writing – M.P. and G.D.; Supervision – M.P.

Acknowledgements: The authors are grateful to Mrs. Anastasia Demertzi, postgraduate student of the Department of Business Administration (T.E.I. of Central Macedonia, Greece) for excellent research assistance.

1. INTRODUCTION

It is a fact that the structure of the banking industry has changed, both at an international level, and in the Greek market, due to mergers and acquisitions, a phenomenon quite old and widespread in foreign countries (Lin, Hung, & Li, 2014; Alam & Ng, 2014; Mlachila & Sanya, 2016; Ibrahim & Raji, 2018; Yusuf & Raimi, 2019; Tanna & Yousef, 2019), but which only began to be observed in Greece in the 1980s. From this period onwards, foreign investments started to occur in the country, most of which were realized through acquisitions and mergers (Thanou & Daskalakis, 2013; Kyriazopoulos & Drymbetas, 2015).

The shifting of the banking market's regulatory framework on one hand, and the smaller players' – such as EFG Eurobank and Piraeus Bank – claim for a larger share of the domestic market, on the other, put significant pressure on the larger and more traditional banks, such as National Bank of Greece

and Alpha Bank. As a result, the latter ones were compelled to face and adjust to this new reality, by proceeding either with their own acquisitions, their technological upgrading or employee learning practices (Maditinos, Theriou, & Demetriades, 2009; Kyriazopoulos & Petropoulos, 2010; Liargovas & Repousis, 2011).

This trend persisted through the following years, spreading to other industries and across the economy (Triantafyllopoulos & Mpourletidis, 2014; Antoniadis, Alexandridis, & Sariannidis, 2014). Since 2004, a significant increase in the acquisition of Greek banks by foreign ones and vice versa, can be observed, culminating in the year 2006 (Pazarskis, Charalampidou, Pantelidis, & Paschaloudis, 2014; Kyriazopoulos & Drymbetas, 2015). After the U.S's crisis (in mid-2007), its worldwide impact and the economic crisis in Greece at the end of 2009, several profitability problems dominated in many Greek business sections (Beltratti & Paladino, 2013; Pantelidis, Pazarskis, Deloudi, & Stamatouros, 2014; Georgantopoulos & Filos, 2017). Thus, the Greek government in 2009 started a mechanism (called as 'support mechanism'), which was created from the IMF – International Monetary Fund, the EE – European Union and the ECB – European Central Bank. However, the historical changes in the Greek banking system began in 2012 and continue during the economic crisis, resulting in multiple negative effects, especially in the business performance of Greek banking companies (Sompolos & Mavri, 2018).

Thus, the purpose of this study is to analyse the changes realized by each bank, from 2008 until today. More specifically, a comprehensive reference to all the acquisitions and mergers that took place in each of the four existing systemic banks (National Bank of Greece, Piraeus Bank, Eurobank and Alpha Bank) will be demonstrated, alongside parallel historical reports that played an important role in each bank's progress and achievement of systemic stability. The results revealed that M&As have a partial positive impact on the post-merger performance of the four examined banks.

Based on the above, the structure of this paper is as follows: (a) the following section provides an analysis of the relevant literature; (b) subsequently, the research methodology module, presents the survey sample to be investigated, the ratios-quantitative variables of the research, and the methodology-testing of the sample's hypothesis; (c) then, the results are analysed (research and discussion of the results obtained, in comparison with the relevant literature), and; (d) finally, the paper is completed with specific concluding remarks, as derived from the data analysis and the applied methodology, and suggestions for future research.

2. LITERATURE REVIEW

This section presents the analysis of the relevant literature, concerning mergers in the banking industry, both in Greece and internationally.

A study for a developing market that employs analysis's financial statements to determine the impact on profitability, leveraged acquisitions, and shareholders' wealth with computation of several ratios was carried out by Omoye and Aniefor (2016), which focused on the M&As of the Nigerian economic environment. The financial ratios they examined, are divided into three categories: (a) *Profitability ratios:* return on equity (ROE), return on capital employed (ROCE), return on asset margin (ROAM), net profit margin, gross profit margin, interest paid to total deposit; (b) *Investment ratios:* earnings per share (EPS), dividend per share (DPS), price earnings ratio, dividend payout ratio, dividend yield, earnings yield; (c) *Leveraging ratios-debt ratios:* total debt to shareholders ratios, long term debt to shareholders funds, gearing ratio, fixed interest cover, proprietary ratio, fixed dividend cover. The statistical method used was the McNemar test, and the time period involved three years before and after the merger. The results of the study showed that the above ratios were positively influenced by M&As, and led the authors to the conclusion that M&As can induce the economic development of a nation.

The banking industry of Nigeria was also examined by Yusuf and Sheidu (2015). More specifically, they investigated the potential improvement in the ROE ratio, following the numerous mergers and acquisitions that took place in the Nigerian banking industry, during the period 2004-2005. This study compares the mean ROEs before and after the merger of 25 banking establishments. The research data was collected from the banks' annual financial reports, in order to calculate the mean ROE ratio of those banks, within the study time period. The methodology used included statistical tests, such as: chow structural break tests, paired sample t-tests, independent sample t-statistics. The results of their study suggest that M&As in the banking industry do not improve the ROE ratios of the banks involved, and the researchers conclude that mergers lead to insignificant or zero improvement in the financial performance of the banks. Based on these findings, the authors advice participants in upcoming bank mergers to be prepared to "be disappointed", as any optimistic expectations before the merger, prove, more often, unrealistic. Finally, they encourage the pursuit of other strategies to prevent the unsatisfactory functioning of these establishments.

For the Greek market, Kyriazopoulos and Drymbetas (2015) studied the long-term impact on profitability and efficiency of various banks, following M&As. Their research utilized a sample of 118 domestic banking agreements, from 1996 to 2010, to test their performance using profitability and loan quality ratios. The results of their research indicate that, while, initially, M&As affected negatively the profitability of banks, after the third year following the realization of the M&A, the profitability of the merged banks appeared to improve slightly. Furthermore, the results vary, regarding the efficiency ratios. The analysis of empirical evidence reveals a general expansionary policy of the acquired banks, two or three years after the M&As, but the results did not indicate a clear trend. The same applies to the fluctuation in the share price of the merged banks, which does not lead to a conclusion concerning a profit yield, two years after the merger.

Furthermore, Ayako, Musyoki, and Kanwal (2015) analysed the performance of Nairobi commercial banks, during the period from 2001 to 2014, using the paired t-test statistical method and trend analysis of the ROA (Return on Assets) and

ROE ratios (Return on Equity), on a sample of 46 banks. The results, which are consistent with several previous studies, indicate that mergers increase the value of the company only in the long-term, demonstrating positive outcomes usually three years after the merger. These advantages generally signify a fluctuation trend, which, initially, appears downward, but begins to ascend at about three years after the announcement of the merger. Moreover, the benefits were higher for the ROE ratio, compared to the ROA. Finally, the merged banks did not perform better at the ROE and ROA ratios at first, since their mean scores were significantly lower than the average values of the banking industry. Based on the paired t-test scores, at a significance level of 0.01 and 0.05, the authors conclude that the performance of commercial banks after the merger did not exceed that of the banking industry in Kenya.

According to Haider, Shoaib, and Kanwal (2015), bank mergers are not corporate decisions that improve the performance of the involved banks. They examined the impact of mergers on the profitability of banks in Pakistan and they reviewed a sample of six banks, three years before and after the merger. Their analysis was based on the paired t-test statistical method, and regression results showed a negligible impact on bank performance, while the t-test indicated that the performance of each acquiring bank did not improve significantly after the merger, regarding issues of liquidity, profitability, leverage, capital adequacy, and size.

Another survey that examined the impact of M&As, this time in Nigeria's banking industry, is that of Eferakeya and Alagba (2015), which showed that the financial performance of banks deteriorated after M&As and became riskier in terms of profitability, liquidity, and some other performance indicators, in a sample of nineteen banks. This outcome was also confirmed by the t-test results, which demonstrated that there was no statistically significant improvement in these ratios. The study concludes that the merging companies should, firstly, comprehend the economic conditions that prevail, before deciding on mergers.

The banking industry of Greece was also examined by Pazarskis et al. (2014) who analysed the impact of bank mergers and acquisitions on the performance of Greek banks, through an accounting approach. More specifically, they investigate the performance of seven banks, listed on the Athens Stock Exchange, using accounting data (19 financial ratios, suitable for banks and financial corporations) for the period between 2004 and 2007. The operating performance of banks is estimated for three, two and one years, before and after the merger or acquisition. The results indicate that mergers provide better financial returns for the acquiring banks. These exclude the dividend policy of each bank, which must be quite conservative, due to the global economic crisis. Additionally, the effect of mergers and acquisitions in the financial performance of Greek banks is not direct but becomes evident within the next two years. The researchers, therefore, come to the conclusion that the impact of the M&As on the sample is positive, and, in fact, grows, parallel to the expansion of the control interval.

For the US market, Lin et al. (2014) examined how the capacity of human resources of a company can influence the development and effectiveness of strategic corporation mergers and acquisitions. In the context of their research, M&As are considered to be a long-term strategic orientation, based on the strengths of human resources, rather than a tactic for achieving short-term goals. Using a sample of 267 US banking companies, they investigate the main impacts and interaction between the M&As intensity and the capacity of human resources, in four performance indicators. The findings confirm that banking M&As can prove very effective, in cases where the bank has a high human resource capacity that has a direct impact on the company's performance.

In their study, Achua and Ola (2013) attempted to fill the gaps of previous studies concerning the Nigerian banking industry, which, either due to insufficient sample or due to methodological problems, led to conflicting conclusions. They provide information on the effects of the recapitalization strategy through M&As of the Nigerian banking industry, in terms of profitability, liquidity, leverage and profit volatility. The results of their study indicate that there is no significant improvement in the economic performance of the Nigerian banking industry, following M&As, which may be due to the fact that these actions were mandatory and the market did not demonstrate sufficient liquidity, or because they had to be implemented within a very short period of time, responsibility of which may partially lie with the political leadership that led to such decisions.

The role of strategic similarities in achieving improved post-merger performance was examined by Thanou and Daskalakis (2013) in the Greek banking industry. They describe developments in this area over the past two decades and study the impact of various strategic features on the economic performance, after the merger of fourteen out of the twenty-three M&As that took place over the period 1997-2007. In their analysis, they utilize the model proposed by Altunbas and Ibanez (2004), using the difference between ROE after the acquisition and the weighted average ROE of the merged banks two years before the merger, as a dependent variable. Due to the small sample size, and the fact that their analysis is limited to domestic mergers, they don't rely solely on the results of the regression, but also use descriptive statistics to obtain further information from their data. Then, they analyse the economic characteristics of successful mergers, as compared to those of failed ones, in terms of change in performance, both descriptively and with regression. The results show that different liquidation strategies between the acquiring and the acquired banks led to synergies, which are associated with a positive performance. Another important finding is that similarities in the cost structure of the merging establishments contribute to the success of the merger. Finally, there is also evidence indicating that the larger the size of the acquired, in relation to the acquiring bank, the lower the return, following the merger, a fact which suggests that the practical difficulties and costs involved in the merging of two establishments of the same size cannot be easily overcome.

Regarding the Romanian banking industry, Huian (2012) tried to determine the effects of M&As on Romanian banks. She studied twenty transactions

(two mergers and ten acquisitions) that took place between 1998 and 2008. In her work, she evaluated the performance of banks, in terms of profitability, drawing information from the annual financial statements for three years after each transaction, starting from the year immediately following the M&A. The study recognizes the 2007 financial crisis and, therefore, divides the sample into two subgroups, one before and one after 2007, each of which includes 6 transactions. The findings of the study are contradictory. On the one hand, the ROE and ROA ratios show no improvement, but, rather deterioration, and on the other, the mean NIM (Net Interest Margin) appears to be above the average NIM of the Romanian banking industry.

Another study which deals with employee productivity, as well as the operational productivity of the banking industry, is that of Akhil (2012), and concerns the banking industry in India. The study examined the effects of bank mergers, from 1999 to 2011. The year that the merger was realized, was used as the base year, and a two-year time-period, before and after that, was examined, utilizing the paired t-test for the analysis. The results showed significant improvement, both in the labour productivity ratios and in the branch productivity ratios. This was mainly due to the voluntary retirement schemes carried out by the banks in order to reduce the number of employees. Furthermore, the increase in the industry's productivity might also have derived from the transfer of technology, between the acquired and the acquiring bank and vice versa. Akhil (2012) presumes that, due to the positive correlation between labour productivity and profitability, an increase in labour productivity would release the synergies of mergers and acquisitions.

In the Greek banking industry, the impact of M&As on employee performance was examined by Liargovas and Repousis (2011). Using four economic ratios, they obtain contradictory results regarding employee performance, during the post-merger period in the Greek banking industry. The results were as expected since the M&As represent a dilemma that disorients employees, as it may have a positive, but also a negative influence on their performance. Such dilemmas cause anxiety and stress to the employees, due to the review and re-evaluation of their position. On the other hand, they could possibly urge employees to seek new learning practices that may help those working in the merged banks adopt a more creative mind-set and practice. According to this study, there is no evidence to suggest that employee performance improved after M&As since it appeared lower than that of non-merging banks. An improvement in employee performance can be achieved through transformative learning, if the human resources departments of banks become aware of, and adopt such practices.

Regarding the pros and cons of bank mergers, Kyriazopoulos and Petropoulos (2010) attempted to distinguish the advantages and disadvantages of banks deriving from M&As, as well as to explain the causes and incentives that prompt banks to merge and achieve possible surplus values following the merger. Using the Altman's Z-Score Model-based methodology, they review two major mergers that took place in Greek banks, the EFG Eurobank's acquisition of Ergasias Bank (2000), and the merger between Marfin Bank and Egnatia Bank (2007). Examining the above cases, they sought to discover whether the M&As had provided an improved position of the created from mergers banks according to Altman's Z-Score Model. Furthermore, they analysed a sample of the largest Greek banks that merged with or acquired other smaller Greek or Balkan banks, using the same model. According to the conclusions of this study, all Greek banks operated in a problematic area, mainly because they presented a low market value of equity and a high book value of total liabilities. We note that the low rating of Greek banks, according to the Altman's Z-Score Model, persists, even after the M&As with other small banks in Greece and the Balkans. A classic example of such a bank is EFG Eurobank. The major Greek banks are also aware of this problem, and thus resort to M&As, seeking a solution. Hence, the authors conclude that only three or four banks should remain in the Greek banking market, in order for them to be capable of competing with the European banks.

For the Indian market, Ravichandran, Mat-Nor, and Mohn-Said (2010) attempted to analyse the parameters that affect bank performance, before and after the merger. For their analysis they used the CRAMEL model (containing the following data: Capital adequacy, Resource raising ability, Asset quality, Management and systems evaluation, Earning potential, Liquidity/asset liability management) on the selected private and public banks, with the regression method, as well as a factor analysis, to identify the important variables in the CRAMEL model, such as, increases in assets and in profit margins, which affect significantly the performance of merged banks, before and after the merger. The sample they utilized consisted of 7 bank mergers of Indian banks, and the data for the survey were collected from the annual financial statements of these 7 banks, during the period 2000 to 2007. The results of the analysis indicate that mergers did not appear to improve the performance of banks, as no significant difference was observed. The economic performance suggests that banks focus on retail banking and that the main reason for the merger is to enhance their services in retail banking. Finally, the company's profitability is significantly affected, presenting a negative impact on earnings.

Last, as a case study with ratios' analysis, Maditinos et al. (2009) study the results of the merger between two banks (Pisteos Bank and Ionian Laiki Bank), which was actualized in 1999, and the resulting establishment was Alpha Bank. The study is divided into two parts. The first part, examines the short-term effects of the merger, through the analysis of the bank share value (which seems to improve in the short term), while the second part deals with the long-term effects, using ratios to examine the relative position of Alpha Bank in the industry. The analysis of the ratios illustrated that the merger of the two banks not only led to positive outcomes, but it also rendered the new, emerging bank, highly competitive in the Greek banking market.

3. RESEARCH DESIGN

3.1. Sample

The sample of companies that advanced to bank mergers or acquisitions consists of several Greek banks which made bank mergers or acquisitions during the 2008-2014 period and it relates to transactions with other banks or with companies that had financial activities. For these banks, we selected the M&As transactions for which it was possible to compare the financial data before and after the M&As transaction and without any other similar transactions being carried out at that time. The merger announcements and the annual reports have been found on the web site of the Athens Exchange. The quantitative variables of the study (accounting ratios) have been calculated from the financial statements of the merger-involved banks or other online information provided by each bank. The four banks examined are the following, while the table below presents for them each M&As transaction: (a) National Bank of Greece; (b) Piraeus Bank; (c) Eurobank; (d) Alpha Bank.

Table 1. Bank mergers/acquisitions during the 2008-2014 period

Bank	*Year*	*Transaction*	*Target bank*	*Notes*
National Bank	2013	Acquisition	FBB bank	Acquisition of all deposits and loans of FFB
National Bank	2013	Acquisition	Probank	Acquisition of all bank assets (3.1 billion in deposits and 2.5 billion in loans)
Piraeus Bank	2012	Absorption	Agricultural Bank	Absorption of all assets and liabilities of the healthy part of Agricultural Bank
Piraeus Bank	2012	Acquisition	General Bank	Acquisition of all holdings of Societe Generale (99,08%) in General Bank
Piraeus Bank	2013	Acquisition	Bank of Cyprus	Acquisition of all deposits, loans and offices in Greece of Cyprus Popular Bank and the Hellenic Bank, including loans and deposits of their subsidiaries in Greece (leasing, factoring and the Investment Bank of Greece – IBG)
Piraeus Bank	2013	Acquisition	Cyprus Popular Bank	
Piraeus Bank	2013	Acquisition	Hellenic Bank	
Piraeus Bank	2013	Acquisition	Millennium Bank S.A.	Completion of acquisition of all holdings (100%) of Millennium BCP in its subsidiary in Greece, the Millennium Bank S.A., after acquiring all necessary approvals
Eurobank	2011	Absorption	DIAS PIC	Merger by absorption of DIAS PIC
Eurobank	2013	Acquisition	New TT Hellenic Postbank	The Eurobank Group expands by the acquisition of the New TT Hellenic Postbank and Nea Proton Bank. Nea Proton Bank achieves operational integration in December.
Eurobank	2013	Acquisition	Nea Proton Bank	
Alpha Bank	2013	Acquisition	Commercial Bank	Acquisition of the share capital of Commercial Bank. The share capital was transferred to Alpha Bank from Crédit Agricole
Alpha Bank	2014	Acquisition	Citibank	Acquisition of bank retail business of Citibank

3.2. Ratios-quantitative variables

It is possible to extract financial ratios (with several utilities) by analysing the financial statements of the acquiring companies (before and after the merger or acquisition). When data of past years are compared to similar data of previous years we reach to more interesting conclusions. For the purpose of this study, the ratios chosen (VAR_1-VAR_4) for the analysis and evaluation of the above sample are in accordance with the methodologies followed at several previous studies (Maditinos et al., 2009; Akhil, 2012; Huian, 2012; Achua & Ola, 2013; Pazarskis et al., 2014; Eferakeya & Alagba, 2015; Haider et al., 2015; Ayako et al., 2015; Yusuf & Sheidu, 2015; Omoye & Aniefor, 2016). Also, the ratios selected for analysis are presented in the next table and are grouped into the three following categories: (a) Capital structure and Viability ratios: VAR_1, VAR_2, VAR_3; (b) Profitability ratios: VAR_4, VAR_5, VAR_6; (c) Liquidity ratios: VAR_7, VAR_8.

Table 2. Classification of financial ratios

Variable	*Ratios*	*Analysis*
Capital structure and Viability ratios		
VAR_1	Equity to Total Assets	Equity / Total Assets
VAR_2	Equity to Net Loans	Equity / Net Loans
VAR_3	Equity to Liabilities	Equity / Liabilities
Profitability ratios		
VAR_4	Net Interest Margin	Net Interest Margin
VAR_5	Return on Equity (ROE)	Profit / Equity
VAR_6	Return on Assets (ROA)	Profit / Total assets
Liquidity ratios		
VAR_7	Interbank Ratio	Loans to banks / Loans from banks
VAR_8	Net Loans to Total Assets	Net Loans / Total Assets

3.3. Methodology

The purpose of the present research is to determine whether each bank improves or deteriorates its position after the M&As transaction by comparing the respective time period before the M&As transaction. The use of the above mentioned ratios assists in observing their performance change pattern (Akhil, 2012; Huian, 2012; Achua & Ola, 2013; Pazarskis et al., 2014; Eferakeya & Alagba, 2015; Haider et al., 2015; Ayako et al., 2015; Yusuf & Sheidu, 2015; Omoye & Aniefor, 2016). In order to analyse the aforementioned issue, i.e. the change in business performance of the bank sample after the M&A transaction by using their financial statement ratios, we investigated the event of none or a certain change is expected after the M&A transaction.

The M&As transaction is considered as an investment transaction and is assessed in relation to the Net Present Value (NPV) of each acquiring

company (Healy, Palepu, & Ruback, 1992), while the selected ratios are calculated for all the sample companies during the period of the year before (year $t - 1$) or the year after (year $t + 1$) the M&As transactions and the mean from the sum of each ratio for the $(t - 1)$ years is compared to the respective mean from the sum of the $(t + 1)$ years, respectively. In this study, the mean from the sum of each financial ratio is computed than the median, as this could lead to more accurate research results, and this argument is consistent with many other researchers (Neely & Rochester, 1987; Pazarskis et al., 2014). It is also important to note that we did not include in the study the comparison of the ratios of the year that the M&As transactions occur ($t = 0$), as during this period some one-off events happen, such as the financial cost of implementing the M&As transactions that contribute to the formation of merger event. Finally, in order to assess our data and to apply the above-mentioned methodology, two independent sample mean t-tests are applied to the ratios of the sample companies before the merger (Pre-Merger) and after the merger transaction (Post-Merger).

4. RESULTS

Descriptive statistics of the data (before and after the M&As' events) are presented in the next two tables.

Table 3. Descriptive statistics for examined financial ratios in pre-M&As period

Variables	*Mean*	*Std. Dev.*	*Minimum*	*Median*	*Maximum*
VAR_1	0,60	4,77	-3,93	-0,33	6,99
VAR_2	1,00	7,26	-5,70	-0,56	10,83
VAR_3	0,78	4,99	-3,82	-0,30	7,56
VAR_4	2,898	0,499	2,514	2,733	3,614
VAR_5	-4,03	5,64	-12,37	-1,93	0,10
VAR_6	-221	526	-992	-39	186
VAR_7	154	207	11	77	451
VAR_8	67,27	2,42	64,54	67,44	69,66

Table 4. Descriptive statistics for examined financial ratios in the post-M&As period

Variables	*Mean*	*Std. Dev.*	*Minimum*	*Median*	*Maximum*
VAR_1	9,67	2,29	8,20	8,72	13,07
VAR_2	15,69	2,84	12,81	15,16	19,60
VAR_3	10,78	2,87	8,96	9,57	15,03
VAR_4	2,454	0,466	2,061	2,329	3,098
VAR_5	-1,393	1,023	-2,175	-1,746	0,094
VAR_6	-15,54	11,68	-24,86	-19,23	1,16
VAR_7	125	218	2	25	451
VAR_8	61,39	4,86	55,79	61,56	66,65

Next, the results of the study presented at the following table revealed that four of the eight examined ratios are statistically significant, which is signalising a different accounting performance in the post-merger period for the examined banks than this before the merger. More specifically, these ratios outperformed after the bank mergers. Firstly, the problem of banks' efficiency on capital structure and viability ratios, regarding the capacity of equity to total assets, net loans and liabilities (VAR_1-VAR_3, respectively) seems to have an improvement during the post-merger period. The ratios VAR_1-VAR_3 that measures the equity to total assets, equity to net loans and equity to liabilities, respectively, are statistically significant ($p < 0.05$) and is associated with the likelihood of increased capital adequacy and loan structure, as it is provided from their financial statements. Secondly, regarding the category of liquidity ratios, one of the two examined ratios, the VAR_8, improved statistically significant ($p < 0.1$) as well. The VAR_8 that compute the size of net loans in relation to total assets provide also an improvement of the loan size to capital adequacy. Last, in the category of the profitability ratios, none of the three examined profitability ratios presents a statistically significant changed. Thus, the banks M&As do not improve their profitability during the economic crisis in Greece.

Table 5. Comparison results (t-tests) for pre- and post-merger performance

Variable	*Mean Post-merger*	*Mean Pre-merger*	*t-value*	*p-value*	*95% CI*
Capital structure and viability ratios					
VAR_1	9,67	0,60	3,43	0,027**	(1,73; 16,43)
VAR_2	15,69	1,00	3,77	0,033**	(2,28; 27,08)
VAR_3	10,78	0,78	3,47	0,025**	(2,01; 17,99)
Profitability ratios					
VAR_4	2,454	2,898	-1,30	0,250	(-1,321; 0,433)
VAR_5	-1,39	-4,03	0,92	0,425	(-6,48; 11,76)
VAR_6	-15,5	-221	0,78	0,491	(-631; 1043)
Liquidity ratios					
VAR_7	125	154	-0,19	0,857	(-415; 358)
VAR_8	61,39	67,27	-2,16	0,096*	(-13,42; 1,66)

*Notes: ***,**,* indicate that the change of the mean is significantly different from zero at a significance level of 0.01, 0.05, and 0.10, respectively, as calculated by comparing the average of two independent subassemblies (two independent sample mean t-tests) at ratios of the sample. More specifically, for the three above cases the classification levels relative to the value of the p-value are the following: $p < 0.01$ as strong evidence against Ho (see on ***); $0.01 \leq p < 0.05$ moderate evidence against Ho (see on **); $0.05 \leq p < 0.10$ minimum evidence against Ho (see on *); $0.10 \leq p$ no real evidence against Ho.*

Thus, the study is in accordance with the research made by Ravichandran et al. (2010), Huian (2012), Achua and Ola (2013), Yusuf and Sheidu (2015), Ayako et al. (2015), Hussien, Alam, Murad, and Wahid (2019), which submitted that there is no substantial improvement in the profitability of the merging bank institutes. Also, these results are not consistent with the results of some other past studies, which claimed that there is after the merger transactions in the banking institutions a deteriorated or remained unchanged business performance and profitability (Eferakeya & Alagba, 2015; Kyriazopoulos & Drymbetas, 2015; Haider et al., 2015; Yusuf & Raimi, 2019) or showed a long-term improvement (Maditinos et al., 2009; Pazarskis et al., 2014; Omoye & Aniefor, 2016).

5. CONCLUSIONS

During the economic crisis period in Greece, the strategic moves that began after 2010 concerning the Greek banking system and that continue up to this date have influenced in various ways the business performance of the Greek banking institutions. That influence created the need for further investigation of the aforementioned results. Hence, as a sample of companies that proceeded in merger and acquisition transactions, we have selected various Greek banks that gave effect to a merger or an acquisition transaction during the time period from 2008 to 2014. The four banks that we examined are the following: National Bank of Greece, Piraeus Bank, Euro bank and Alpha Bank. For these banks, we selected the M&As transactions for which it was possible to compare the financial data before and after the transactions. the comparison was made by studying eight ratios (equity to total assets, equity to net loans, equity to liabilities, net interest margin, return on equity, return on assets, interbank ratio, net loans to total assets) and by applying two independent sample mean t-tests.

The results show some improvement of four of the ratios: equity to total assets, equity to net loans, equity to liabilities and net loans to total assets, while it does not show a statistically significant change of the four other ratios (net interest margin, return on equity, return on assets, interbank ratio). In other words, we notice some improvement in capital adequacy and loan structure in relation to the total capital employed of the merging banks during the financial crisis, but with no statistically significant increase of their profitability, as shown in our results.

The following limitations have been taken into account when implementing this study. First, the methodology and the selection of the financial ratios used in this research are in accordance with the methodologies followed at several previous studies (Maditinos et al., 2009; Akhil, 2012; Huian, 2012; Achua & Ola, 2013; Pazarskis et al., 2014; Eferakeya & Alagba, 2015; Haider et al., 2015; Ayako et al., 2015; Yusuf & Sheidu, 2015; Omoye & Aniefor, 2016). Second, the sample of the study was listed banks on the Athens Stock Exchange, with M&As transactions during the financial crisis in Greece and more specifically in the period from 2008 to 2014. Third, the research sample was examined on results from bank performance for one year before and after the M&As transaction.

Last, the results of this study could be useful for accounting research for the banks' examination after mergers during a period of economic crisis. Also, different research samples could be compared with banks involved in international bank merger activities (if there are) or within different time intervals, as it would also be useful to further investigate the influence of the same actions for a longer period of time in order to ascertain the long-term effects of these transactions. The research results that present recent empirical evidence from Greek bank mergers during the economic crisis could be useful for governmental policy issues examined from tax and other state authorities, managers or investors for a potential investment in Greece.

REFERENCES

1. Achua, J., & Ola, P. (2013). Mergers and acquisitions recapitalization strategy and banks' financial volatility in Nigeria. *Proceedings of 5th Annual American Business Research Conference* (pp. 1-15). Retrieved from https://www.wbiworldconpro.com/uploads/new-york-conference-2013/banking/1369890862_607-Joseph.pdf
2. Akhil, A. (2012). An examination of labour productivity and branch productivity in selected merged banks of India. In S. Kumar & B. Lakhani (Eds.), *Management research: Current trends and practices* (pp. 108-113). Delhi, India: Wisdom Publications.
3. Alam, N., & Ng, S. L. (2014). Banking mergers – An application of matching strategy. *Review of Accounting and Finance*, *13*(1), 2-23. https://doi.org/10.1108/RAF-12-2012-0124
4. Altunbas, Y., & Ibanez, D. M. (2004). *Mergers and acquisitions and bank performance in Europe: The role of strategic similarities* (ECB Working Paper No. 398). Retrieved from https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp398.pdf
5. Antoniadis, I., Alexandridis, A., & Sariannidis, N. (2014). Mergers and acquisitions in the Greek banking sector: An event study of a proposal. *Procedia Economics and Finance*, *14*, 13-22. https://doi.org/10.1016/S2212-5671(14)00680-7
6. Ayako, A., Musyoki, D., & Kanwal, S. (2015). Post-merger and acquisitions performance of commercial banks listed at the Nairobi Securities Exchange. *Research Journal of Finance and Accounting*, *6*(10), 65-79. Retrieved from https://iiste.org/Journals/index.php/RJFA/article/download/22571/23384
7. Beltratti, A., & Paladino, G. (2013). Is M&A different during a crisis? Evidence from the European banking sector. *Journal of Banking and Finance*, *37*(12), 5394-5405. https://doi.org/10.1016/j.jbankfin.2013.02.004
8. Eferakeya, I., & Alagba, O. (2015). Regulatory-induced consolidation through mergers and acquisitions and its implications on banks performance in Nigeria. *International Journal of Business and Industrial Marketing*, *1*(1), 6-15. Retrieved from https://article.aascit.org/file/pdf/9260721.pdf
9. Georgantopoulos, A., & Filos, I. (2017). Corporate governance mechanisms and bank performance: Evidence from the Greek banks during crisis period. *Investment Management and Financial Innovations*, *14*(1), 160-172. https://doi.org/10.21511/imfi.14(1-1).2017.02

10. Haider, A., Shoaib, M., & Kanwal, S. (2015). Impact of mergers on performance of banking sector of Pakistan. *Pakistan Business Review*, *17*(1), 60-79. https://doi.org/10.22555/pbr.v17i1.19
11. Healy, P., Palepu, K., & Ruback, R. (1992). Does corporate performance improve after mergers? *Journal of Financial Economics*, *31*(2), 135-175. https://doi.org/10.1016/0304-405X(92)90002-F
12. Huian, M. (2012). Post M&A accounting performance of Romanian banks. *Journal of Eastern Europe Research in Business & Economics*, *1*, 1-16. https://doi.org/10.5171/2012.184557
13. Hussien, M. E., Alam, M., Murad, W., & Wahid, A. (2019). The performance of Islamic banks during the 2008 global financial crisis: Evidence from the Gulf Cooperation Council countries. *Journal of Islamic Accounting and Business Research*, *10*(3), 407-420. https://doi.org/10.1108/JIABR-01-2017-0011
14. Ibrahim, Y., & Raji, J. O. (2018). Cross-border merger and acquisition activities in Asia: The role of macroeconomic factors. *Studies in Economics and Finance*, *35*(2), 307-329. https://doi.org/10.1108/SEF-06-2017-0146
15. Kyriazopoulos, G., & Drymbetas, D. (2015). Long-term performance of acquirers involved in domestic bank M&As in Europe. *International Journal of Financial Research, 6*(1), 56-67. https://doi.org/10.5430/ijfr.v6n1p56
16. Kyriazopoulos, G., & Petropoulos, D. (2010). What are the advantages and disadvantages that lead banks into mergers and acquisitions? Is Altman's Z-score model for bankruptcy motivate banks for mergers and acquisitions? Evidence from the Greek banking system. *Proceedings: International Conference On Applied Economics 2010* (pp. 447-458). Retrieved from https://www.academia.edu/10501386/what_are_the_advantages_and_disadvantages_that_lead_banks_into_mergers_and_acquisitions_is_altmans_z-score_model_for_bankruptcy_motivate_banks_for_mergers_and_acquisitions_evidence_from_the_greek_banking_system
17. Liargovas, P., & Repousis, S. (2011, October). Merging activity and employee performance: The Greek banking system. Paper presented at the *International Conference on Integrated Information*. Retrieved from https://ejournals.teiath.gr/index.php/JIIM/article/download/3217/2966
18. Lin, B., Hung, S., & Li, P. (2014). Mergers and acquisitions as a human resource strategy: Evidence from US banking firms. *International Journal of Manpower*, *27*(2), 126-142. https://doi.org/10.1108/01437720610666173
19. Maditinos, D., Theriou, N., & Demetriades, E. (2009). The effect of mergers and acquisitions on the performance of companies – The Greek case of Ioniki-Laiki bank and Pisteos bank. *European Research Studies*, *12*(2), 111-130. Retrieved from https://www.ersj.eu/repec/ers/papers/09_2_p8.pdf
20. Mlachila, M., & Sanya, S. (2016). Post-crisis bank behavior: Lessons from Mercosur. *International Journal of Emerging Markets*, *11*(4), 584-606. https://doi.org/10.1108/IJoEM-06-2015-0116
21. Neely, W., & Rochester, D. (1987). Operating performance and merger benefits: The savings and loans experience. *Financial Review*, *22*(1), 111-130. https://doi.org/10.1111/j.1540-6288.1987.tb00321.x
22. Omoye, A. S., & Aniefor, S. J. (2016). Mergers and acquisitions: The trend in business in Nigeria. *Accounting and Finance Research*, *5*(2), 10-19. https://doi.org/10.5430/afr.v5n2p10
23. Pantelidis, P., Pazarskis, M., Deloudi, K., & Stamatouros, S. (2014). Do M&As of Greek listed firms before the economic crisis improved their current liquidity and profitability? *MIBES Transactions*, *8*(1), 100-112. Retrieved from https://mtol.teilar.gr/vol8_2014/Pantelidis-Pazarskis-Deloudi-Stamatouros.pdf
24. Pazarskis, M., Charalampidou, D., Pantelidis, P., & Paschaloudis, D. (2014). Examining bank mergers and acquisition in Greece before the outbreak of the sovereign debt crisis. *Corporate Ownership & Control*, *11*(4-1), 171-183. https://doi.org/10.22495/cocv11i4c1p2
25. Ravichandran, K., Mat-Nor, F., & Mohn-Said, R. (2010). Market based mergers in Indian banking institutions. *International Research Journal of Finance and Economics*, *5*(37), 30-39. Retrieved from https://www.internationalresearchjournaloffinanceandeconomics.com/issues/irjfe_37_03.pdf
26. Sompolos, Z., & Mavri, M. (2018). Estimating the efficiency of Greek banking system during the last decade of world economic crisis: An econometric approach. *Benchmarking: An International Journal*, *25*(6), 1762-1794. https://doi.org/10.1108/BIJ-01-2017-0009
27. Tanna, S., & Yousef, I. (2019). Mergers and acquisitions: Implications for acquirers' market risk. *Managerial Finance*, *45*(4), 545-562. https://doi.org/10.1108/MF-09-2018-0446
28. Thanou, E., & Daskalakis, N. (2013). Mergers and acquisitions in Greek banking: The role of strategic similarities in achieving post-merger enhanced performance. *International Journal of Economic Research*, *10*(2), 235-255. Retrieved from https://serialsjournals.com/abstract/40192_3.pdf
29. Triantafyllopoulos, Y., & Mpourletidis, K. (2014). Mergers and acquisitions and economic crisis. A case study approach from a qualitative analysis in Greece. *Procedia – Social and Behavioral Sciences*, *148*, 437-445. https://doi.org/10.1016/j.sbspro.2014.07.063
30. Yusuf, H., & Sheidu, A. (2015). Mergers and acquisitions in the banking sector and implications for return on equity (ROE): Evidence from Nigeria. *International Journal of Business and Social Science*, *6*(9), 184-191. Retrieved from https://ijbssnet.com/journals/Vol_6_No_9_September_2015/20.pdf
31. Yusuf, H., & Raimi, L. (2019). Does positive relationship exist between bank mergers and asset turnover?: Empirical evidence from Nigeria. *International Journal of Ethics and Systems*, *35*(1), 133-147. https://doi.org/10.1108/IJOES-10-2018-0147