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SPANISH BANKING SYSTEM: ASSESSING THE IMPACT OF RESTRUCTURING AFTER THE CRISIS OF 2008

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ABSTRACT

Following the sub-prime mortgage crisis of 2008 in the US, global financial systems were in crisis. This phenomenon led towards the restructuring of the financial services in several countries. In Spain, the authorities formed the Fund for orderly Bank Restructuring (FROB) in 2009 and over the period, 2009-2019, the FROB made three interventions in the Spanish Banking System. The restructuration process started in 2010 and even in 2012 several banks were not healthy as the economy was also in recession. The aim of this study is to compare and contrast the performance of the Spanish banking system prior to and post restructuration by the FROB and also to assess whether capital and liquidity as proposed in Basel III are showing improvements post crisis. Analysis has been conducted based on data which could be accessed (37 observations in the period 2000-7, and 62 observations in the period 2013-9). The results are conclusive. This research adds to the literature on bank restructuration and the effectiveness of policies and actions initiated.

1. INTRODUCTION

1.1. Background

The antecedents of the global financial crisis of 2008 are well documented; the collapse of the sub-prime mortgage market in the US, contagiously spread to financial markets world-wide, creating a severe liquidity contraction. Banks are susceptible to a range of risks. These include credit risk (loans and other assets turn bad and cease to perform), liquidity risk (withdrawals exceed the available funds), and interest rate risk (rising interest rates reduce the value of bonds held by the bank, and force the bank to pay relatively more on its deposits than it receives on its loans). As a result of the US sub-prime mortgage market

crisis, the entire financial system was under threat in 2008 with the failure of several mortgage lenders, investment and commercial banks, insurance companies and loan associations (World Bank (2016)).

1.2. The crisis in the European banking system and Spain

In the early 2000s the European Union countries were growing well,. When the credit crunch hit, through European area contagion, borrowers faced difficulty in repaying loans and banks were left with huge losses and by 2009, much of the European Union was in recession.

In Spain the construction sector was in boom in the early 2000s and when the credit crunch hit, real estate prices collapsed and construction companies could not repay loans. The economy went into recession in 2008 and unemployment rose to 18.7%. In the Spanish banking system, Banks, Savings Banks and Cooperative Banks are the core of the system. Prior to the financial crisis, several financial institutions had eased their procedures for measuring credit risk . The blow-up of the credit boom which considerably affected the wholesale funding market was highly associated with debt instruments connected to mortgages with inadequate credit rating.

This phenomenon led towards the restructuring of the financial services in several countries. Based on the guidelines from policy-makers and regulators, several European countries undertook restructuring of their banking systems. In Spain, the authorities formed the Fund for orderly Bank Restructuring (FROB) in 2009 and over the period, 2009-2019, the FROB has made three interventions through a series of improved guarantees for depositors, increasing the capital of troubled banks, merging banks where warranted, improving the quality of management, and transferring toxic assets to SAREB, an authority with State involvement. The European Union published its framework for financial crisis management in 2011 (ECB Monthly Bulletin, July 2011).

1.3. Basel Accords

To facilitate better functioning of a banking system, the Basel Committee on Banking Supervision (BCBS) was formed in 1974 by G10 countries to review and make policy recommendations in times of financial stress in the banking system. The BCBS has come up with three accords to date in response to various crisis: the first Accord (Basel I) was finalized in 1988 and it recommended that banks have a minimum capital requirement of 8% in relation to risk-weighted assets. Following a failure of the banking system in 1997, a second Accord (Basel II) was finalized in 1998; which had three pillars i.e. minimum capital requirements, prudential supervision and market discipline. However, it was clear that these measures were insufficient to cope with the crisis of 2008 and problems of inadequate capital reserves and liquidity came into focus because of defects in the internal credit risk rating models and inability of the banks to cope with market wide shocks. So a third Accord, Basel III was formulated in 2009 toward ensuring that financial institutions

possess suitable reserves to conserve capital, curb excess credit growth and also have sufficient liquidity to meet obligations in difficult market conditions.

1.4. Aim

Given the background in the banking industry and specifically that in Spain, the main aim of this research is to compare and contrast the performance of the Spanish banking system prior to and post restructuration by the FROB and also to assess whether capital and liquidity as proposed in Basel III are showing improvements post crisis.

1.5. Structure

In the first section, the aim and overview of the research were provided. Section Two is a review of relevant literature. This part presents a critical review of relevant articles on the subject of this research. Section Three explains the design of the research, methodological choices made and data sources. Section Four presents the results of the analysis conducted with interpretations and discussions while in Section Five, the conclusions of the research and recommendations for future research are presented.

2. LITERATURE REVIEW

Financial crises have been linked with damaged banking systems, and inevitably an adverse effect on the economy as a whole. Two issues over-ride others in the repair of a banking system and allowing it to operate efficiently: firstly, the banks must be restructured for the purpose of avoiding a severe credit crisis and secondly, the banking environment must be enhanced so that similar issues are less likely to recur. Thus, the application of capital regulations, supervisory actions and adequate depositor measures must be taken. However, while it is rather simple to determine different factors, it is quite challenging to carry it out. So it is imperative to analyze the origin of the causes and to implement actions in a way that such situations can be avoided in the future (Hawkins, 2000).

The Spanish Financial system faced a huge financial crisis in 2007 which is also known as the ‘Great Recession in Spain’ which evolved due to the simplistic nature of the system which was not integrated with complex and toxic products (Banco de España, 2011). The financial institutions have a prominent responsibility towards the provision of loans and keeping deposits whereas they are also likely to keep the earning of interest income (Suehiro, 2002). The Iberic financial system encompassed of commercial and saving banks where the saving banks were also referred to as ‘cajas’ having the opportunity to attain deposits for the purpose of being loaned out or being used for financial investments (Escobar *et. al*, 2013), moreover they also emphasized social welfare by investing a proportion of their profits amongst the share of society (CECA, 2018). Furthermore, it was essential for savings banks to assign ‘social dividends’ within the region. Thus, the inclusion of social welfare and benefit of the

public was encouraged by the Spanish population thereby resulting in an enhanced reputation of savings banking system. As a result, the support and growing status allowed them to extend their operations to cater for the prospects of autonomy (CECA, 2018).

The Basel Committee on Banking Supervision (BCBS) was formed in 1974 by G10 countries to review and make policy recommendations in times of financial stress in the banking system. Following a crisis in 1987, the first Basel Accord, or Basel I, was finalized in 1988. It was based on assessing the credit risk of a bank's assets on a risk weighting scale and in relation to that proposed a minimum capital requirement of 8%. However, its shortcoming was that national debt and corporate debt were not qualitatively rated in relation to a country or corporation. Following the next banking crisis in 1997, a second Basel accord, Basel II was formulated in 1998, which has three pillars i.e. minimum capital requirements, prudential supervision and market discipline. The first pillar i.e. Tier 1 is related to capital requirements and specifically to conserve equity against credit, operational and market risk faced by banks. The first pillar prescribed that banks must hold capital which is at least the 8 % of their assets after adjusting for these risks. The second pillar i.e. Tier 2 is related to the supervisory review process. It prescribes regulations and measures to deal with systematic risk, concentration risk, strategic risk, reputation risk, liquidity risk and legal risk. The third pillar i.e. Tier 3 deals with market discipline. It asserts that the exchange of information among banks, investors, financial analysts and rating agencies are required for market discipline. Therefore, banks must disclose details in relation to their risk assessment processes, capital adequacy ratios and financial exposures. However, these measures appeared to be insufficient to cope with the crisis of 2008 and problems of inadequate capital reserves and liquidity came into focus because of defects in the internal credit risk rating models and inability of the banks to cope with market wide shocks. So a third Accord Basel III was formulated in 2009 toward ensuring that financial institutions possess suitable reserves to conserve capital (CCB, Capital Conservation Buffer) by curbing excess credit growth and also a liquidity provision (LCR, Liquidity Coverage Ratio), to ride out any short-term liquidity disruptions, that may plague the market (Kapoor and Kaur, 2017).

The potential impacts of bank restructuring were assessed by Rose (1994) through assessing the return on assets (ROA), return on equity (ROE), net interest margin (NIM) the spread and the (NPL). The research concluded that bank restructuring led towards a significant improvement in the efficiency and profitability of the bank. On the other hand, Hoenig and Morris (2012) managed to highlight the fact that a restructuration is solely done for the purpose of short-term issues being faced by the bank or to resolve potential problems which are being currently faced. Similarly, it was also observed that a restructuration is only likely to succeed if the commercial banks collectively work towards the final goal (Dziobek, 2002).

There are around four types of bank restructuration namely: financial, operational, asset and capital (Dziobek and Pazarbasioglu, 1998). While the government may decide to

restructure the banking sector to restore efficiency and profitability, it may also do so to inhibit different social groups and individuals from accessing the financial system (Vallascas and Hagendorff, 2011). The security attained through the surge of credit impacted the financial sectors and the authorities failed to adequately monitor the financial institutions and avoided potential signs of the markets. According to Conlon (2014), the central bank can figure things out even if it has restricted information regarding the basis of the problem. Thus, the assessment of the banking system before a financial crisis occurs is as crucial as it gets in order to restore the functioning of the system (Hawkins and Turner, 1999). It is to be noted, that there are numerous problems in the financial system that could eventually make countries alleviate their monetary policies to stabilize the real economy (Gravelle and Li, 2013). On the other hand, there are multiple variables that could make banks restructure their system due to either low profitability (Hoggarth, 2004), failure or a surge of non-performing loans (Claessens, et.al 2011). Concurrently, the banks that are not illiquid or large scale are required to re-structure their operations as well (Demirguc-kunt, 2000).

Bank restructuring issues experienced in East Asia are covered well in a paper by Kawai (2011). The most imperative feature of a bank's liabilities are the deposits of the customers. Similarly, banking restructure also entails refining the operational policies, re-arranging activities, managing and restricting the number of branches in order to increase the profitability of the offices which will in turn reduce additional costs. Moreover, if the number of offices are controlled and minimized, it will not only reduce the costs but improve operational efficiency with fewer branches which will be able to successfully communicate and mitigate financial issues (Maudos, 2014). Hence, according to Melle and Maroto (1999), there is a strong association between the political participation in the savings bank management and the proportion of loans being issued to the community.

Kwaning (2014) managed to explore different factors to comprehend the causes behind the restructuration of the financial system. He highlighted that changes in the environment along with weak governance, inadequate strategic monitoring and poor performance are prevalent reasons for reduced profitability thereby resulting in restructuration. Similarly, Kose et.al, (1995) supported the aforementioned notions meanwhile stating that the capital restructure refers to the conversion of debt to equity which enhances the financial structure of the banks. Furthermore, according to Dziobek (1998) restructuration is mainly required for the purpose of bailout by the government or a boost from the stakeholders. Nonetheless, the inefficiency of the financial institutions is most commonly managed through mergers and acquisitions. As a result, mergers and acquisitions may enhance the profitability through reduction of cost which would in turn enhance the efficiency (Akhavein, Berger, and Humphrey, 1997).

Lozano-Vivas (2010) managed to evaluate whether internal mergers amongst the financial institutions were finalized appropriately when there was a lower performance of merging activities related to the economy of scale. Similarly, Ithiri (2013) emphasized on

the fact that a banking merger massively enhances the profitability of financial institutions. Lastly, Cuesta and Orea (2002) researched the prospects of efficiency within saving banks post-merger and stressed to decide if merged and non-merged banks can be distinguished over their efficiency level. Therefore, the results highlighted that the first reaction of a merger was low efficiency but with improved performance in the upcoming years due to the consolidation of the merge.

Throughout the Asian banking crisis, mergers were rather a beneficial approach utilized by Asian countries to control the severity of the banking issues. Mergers are viewed to be an economical solution due to the low costs in restructuring the banking system (Hawkins, 1999). Concurrently, mergers are also likely to enhance more productivity if the diversification of operations progresses the risk-return trade-offs. As a result, regulators need to work towards consolidation amidst a financial crisis (Berger, 1999). On the contrary, (Athanasoglou, 2004) believes that mergers and acquisitions specifically involving smaller banks are more likely to have a positive impact over the profitability and cost efficiency which has a better probability towards improvement. Likewise, state-owned banks are evidently more cost-efficient as compared to private domestic or private foreign integration (Staub, 2010). Nevertheless, there is still a lack of literature supporting the perception that banks in industrialized countries are likely to attain benefit through a merger. In developing nations, for instance, a researcher did propose potential improvement in the efficiency of production within Malaysian post-merger banks during 2000 to 2001 but the author explicitly associated the progress with technological efficiency of the entire banking system as opposed to a single unit (Krishnasamy, 2004). Moreover, bank mergers are able to improve the cost efficiency of Taiwanese banks as well (Peng, 2004).

Nonetheless, while various researchers highlight the positive impacts of mergers and acquisitions within the banking system for the purpose of restoring efficiency, there is also evidence pertaining to the change in regulatory reforms, consolidation and competitive pressure from European countries that have resulted in alteration of the banking environment where effects over the competitiveness have been rather balanced (Angelini, 2003), (Berger, 2001). Similarly, Islamic banks also went through slight inefficiencies during the 1998-1999's global crises, which demonstrated how efficiencies can be distinguished according to country-specific variables (Yudistira, 2004).

Factors relevant to a Banking Restructuration Program

The management of a banking crisis is one of the most demanding and challenging tasks for a policy maker. More often than usual, the measures are required to be determined quickly for the purpose of upholding and delaying any significant losses (Sommariva, 1993). Therefore, the decisions will be inevitably mapped onto inadequate information mainly due to the intrinsic problem because the banking industry is less likely to portray its information for public use (Borish, 1995). Furthermore, various features may also work

towards restricting one's access to appropriate details due to the restrictive movement of banks due to which there are far-reaching consequences specifically when numerous market economies are also coping with banking crises (Philippatos, 2007). Thus, the restructuring of the banking systems is a practical way to introduce essential changes at the banking level for the purpose of improving financial performance as well as customer services, thereby re-positioning within the banking market (Borish, 1995).

Amongst different prominent factors leading towards banking restructure, the microeconomic factor is notably the primary reason for the implementation of amendments. The literature pertaining to the banking crises has emphasized over inadequate banking practices along with poor capital failures of loan policy, furthermore, inappropriate evaluation and prediction of credit risks; inefficient diversification of the loan book where the specialist banks are solely dependent over a specific region; offering loans to linked enterprises or extensive maturity with mismatches of currency (Gertler, 1994). However, while there are other microeconomic factors influencing the decision towards bank restructure, the aforementioned variables are the most prevalent. The issue regarding the principal-agent incentive has been imperative specifically when the loan officers are provided rewards over the mass of loans that are given without any appropriate emphasis over the risks, leading the banks to be exposed (Jordon, 1998). Moreover, the problem of over-staffing has been a long-lasting issue which is lingering on since the advent of banking industries especially in state-owned banks (Angelini, 2003). On the other hand, however, restrictive labour practices may obstruct the investment in new technology that may alleviate or alter the character of the employment. Similarly, the trade unions in developing countries are widely known for the practices of impeding advanced operations within the banks (De Juan, 1998).

Apart from microeconomic factors, the second prominent cause is macroeconomic factors that are beyond the range of normal experiences mainly because prudent banks are likely to have contingency plans in place for the purpose of dealing with cyclical recessions, depreciation of the exchange rates, reduction in the asset price and other similar indications within the normal economic arrangement (Ariff, 2009). Similarly, every country has their own distinct patterns that are dissimilar from others; such as banks in emerging market countries may be susceptible to face increased macroeconomic uncertainty as compared to those banks residing in the industrial world. Thus, banks must be able to cope with different features of instability which are usually encountered in the market (Borish, 1995). However, practically, the bankers may avoid taking adequate steps to restore the macroeconomic crises as they are likely to conform to the crowd in order not to lose market share for the purpose of handling greater risks. As a result, macroeconomic crises should not be viewed as independent of the banks and their prior responsibilities (Fries, 1994).

Nonetheless, macroeconomic uncertainties can jolt even the most prepared banks that have every precaution in place. For instance, the oil shocks during the 1970s, the dejection

within Latin America, post the debt crisis in 1980s and the resulting consequence of a succession of crises all along the emerging markets (Daniel, 1997). Overall, a macroeconomic crisis is likely to create difficulties for bank debtors thereby making it difficult for individual banks to pin-point long-term clients (Goldstein, 1996).

The third cause leading towards bank restructure is system-related in the sense that banking circumstances are not favorable for adoption of advanced technology in order to increase efficiency of the banking industry. Moreover, there are various instances of such occurrences for example, a large state-owned banking sector can disrupt the entire bank industry collectively in extension of loans as well as the accumulation of deposits (Goldstein, 1993). Similarly, special quasi-state banks are likely to be given additional freedom and rights of action that may ruin the competition and restrict the possibilities for banks diversification. Furthermore, the government direction regarding credit may also inhibit banks from catering to improved loan assessment skills. A poor legal framework may in turn impede the effectiveness of the banking system whereas an inadequate securities market specifically where there is unavailability for long-term securities can be quite detrimental for the banks itself (Berger, 1992). However, various countries have successfully developed by being dependent on banks, but a poor regulatory or supervisory government can be a major source of conflict. Thus, banking crises are more often than usual, caused due to the inefficiencies and prompt changes within the banking environment therefore, the 'regime changes' may increase the vulnerability of the system eventually leading towards a crisis (Dziobek, 1997).

One such instance was presented by (Gil-Díaz, 1998) where similar instances were observed in Mexico. A sudden privatization of the commercial banks during 1990s coupled with inexperienced investors acquiring banks along with measures for financial liberalization and the rapid alleviation of borrowing requirements of the public sector led towards a revised regime and system for the banks. Therefore, the prompt extension of credit that came after such rapid changes along with the poor supervisory ability accumulated a lot of mismanagement prior to the devaluation in 1994 (Boubakri, 2005). Hence, fundamental causes have a great role in the provision of potential solutions. In case the problems arose due to poor banking practices, the official intervention is likely to be held where the bank shareholders are expected to suffer losses. However, if the basis of the problem is due to unexpected and severe changes along the macroeconomic factors that are likely to impact majority of the banks, then it may lead towards a more tolerant treatment (Hsiao, 2010).

Nevertheless, there are other justifications for restructuring the banks for the purpose of improving its performance and services as well. For instance, in case of increased competition within the banking industry against other banks or non-financial institutions does encourage concerned authorities to find alternate ways to reach a solution through

which they could either decide to implement different policies for banking (Philippatos, 2007). Therefore, procedures like diversification within the functions or expansion through acquisitions or mergers can be implemented for the purpose of increased productivity because less productive banks are likely to exit as compared to productive banks (Llorens, 2020). Similarly, technological developments are another significant area affecting banking and financial activities due to the surge of development within the field of information and communication which has allowed for the improved customer service (ONGENA, 2004). Thus, amongst various developments, the most prominent progression is the expansion of computerized access leading towards speedy delivery of services with alleviated bureaucratic burden which saves the time of both the bank employees and consumers. Furthermore, technological advancement is also likely to contribute to efficient financial transactions in more open financial markets with better access to client services (Shafie, 2004).

The constant evolution of technological forces has allowed banking sector to implement advanced tools in their operations, for this purpose the modern technologies are being largely adopted for electronic means of payment (credit cards, smart money, plastic money and electronic money) (Bultum, 2014). However, in the features of financial liberalization and banking operations, the mobile open financial markets and globalization of banking activities have been contributing towards the banking crises coupled with the surge of competition amidst banks and other financial institutions encouraging the dealings with capital and short-term expansion in operations exceeding the budget thereby leading towards uncertainty and instability within the general economy (Zaim, 1995).

Therefore, addressing the problems occurring in different competitive and uncertain environments can give rise to dilemmas that could otherwise lead towards unambiguous decisions. Despite the challenges, it must be noted that every institution takes time to fully adapt to the change and advancement within the new environment. Therefore, the problems being linked to conventional patterns and poor management must be consistently monitored and examined in order to strategically device a plan to counter the spread (Ariff, 2009).

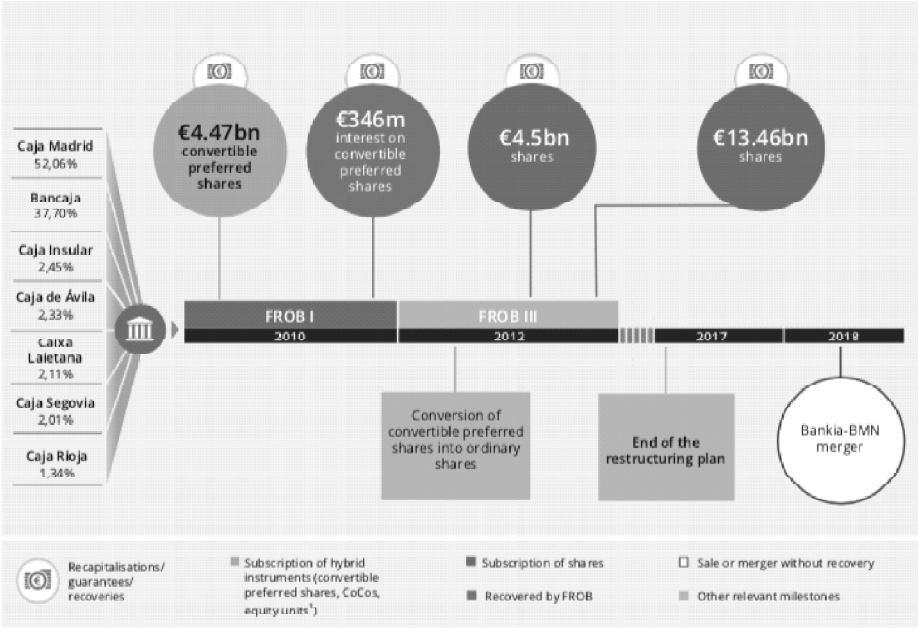
Spanish Government Interventions: FROB I, II and III

The characteristics of the Spanish banking system have been stated earlier. In Spain, the authorities formed the Fund for orderly Bank Restructuring (FROB). In the first phase (FROB I), capital was injected into banks and institutions via convertible preference shares to meet minimum capital requirements and depositors were given guarantees. The convertible preference shares were to be redeemed by the banks and institutions at the next phase. In the second phase (FROB II), in 2011, the ability of banks and institutions to meet the minimum capital requirements and redemption of the convertible shares was reviewed. In the third phase (FROB III), in the cases of banks and institutions which were not able to meet minimum capital requirements or redeem the convertible preference shares the FROB

intervened to make changes in the Board of Directors or started a merger process between institutions and transfer assets to the SAREB, an authority with state involvement for the management of assets resultant from Restructuring the Banking System). As a result of these interventions, by 2015, economic growth in Spain was in the positive area.

The graph below (Figure 1), related to the Bankia-BMN merger, summarizes the whole process

Figure 1: The restructuration process as related to the Bankia-BMN merger.



Source: Bank of Spain, 2019

SUMMARY

Having examined the factors relevant to performing a restructuration program and the literature on the impacts of bank structuring, this research tries to assess the overall effects of the three programs initiated by the FROB, and specifically their effect on capital and liquidity improvements required in a banking system to increase its well-functioning and durability.

3. DATA AND METHODOLOGY

The present research lays emphasis on the evaluation and assessment of the performance of financial institutions in Spain prior and post the restructuring ever since the escalation

of the credit boom in 2007. Concurrently, this research also works towards analysing the effectiveness of the entities once they have been merged.

Methodology

The present study encompasses the analysis of panel data in which the researcher is likely to estimate various observations pertaining to every variable that will assist us in the provision of an adequate estimation as compared to other cross-sectional models. Panel data refers to longitudinal or cross-sectional time-series data that is a data set. Therefore, amongst various issues, the major benefit is that the size of the sample would generate small values of collinearity that will elevate the prospects of accurate estimation. Hence, it is also likely to allow the study of the dynamic-repeated cross-sectional observations to be utilized and addressed over time, furthermore, it also has the ability to account for heteroskedasticity across variables. The selection of the panel data method also allows estimation of the impact of restructure over the financial system through inclusion of various entities.

Common Effects model

In order to analyse the panel data, the Common Effects Model or the Pooled Least Square (PLS) model is first estimated.

The regression for the Common Effects model is as follows:

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it} \quad (1)$$

where

$i = 1, 2,\ldots, N$ and $t = 1, 2,\ldots, T$

N = Cross section

T = Number of Periods

Fixed and Random Effects models

The Fixed and Random Effects models will also be estimated.

The regression for the Fixed Effect model is as follows:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it} \quad (2)$$

where

Y_{it} = Dependent Variable

β_1 = Coefficient of the Independent Variable

X_{it} = Independent Variable

α_i = unknown intercept for each entity

u_{it} = Error Term

In the Fixed Effects model, there are individual intercepts for the entities.

The regression for the Random Effects model is as follows:

$$Y_{it} = \beta X_{it} + \alpha + u_{it} + \varepsilon_i \quad (3)$$

where;

u_{it} = Between-Entity Error

ε_i = Within-Entity Error

In the Random Effects model, α is the overall mean, ε_i is a random variable specific for entity *i*.

Selection of Model

Once the models above are estimated tests can be applied to ascertain which is the best model: the Redundant fixed effects test and the Hausman test. The Redundant fixed effects test evaluates the Common effects model against the Fixed effects model and the Hausman test evaluates the Random effects model against the Fixed effects model. In addition to the Redundant fixed effects test, it is necessary to ascertain if the residuals are cross-sectionally independent, if this test becomes the deciding factor. If the Random effects model is chosen, no further tests are necessary as the model is estimated with the GLS method.

Data Source

Data on Bank variables has been collected through Bloomberg, in order to estimate the ratios proposed in the next section. As it is an objective of the current research to compare performance of the banking system in Spain in the pre and post crisis periods, the current research utilizes the annual data in two distinct periods; the duration of the first period is from 2000 to 2007 whereas the duration of the second period is from 2013 to 2019. The reason for this period selection is that the Spanish banking system recovery was proper only after FROB III initiatives were implemented.

The data for five banks in Spain could be accessed for the pre-crisis period (37 observations) and the data for ten banks in Spain could be accessed for the second period (62 observations). The names of the banks are as in Table 1 below. These banks represent a substantial portion of the Spanish Banking System.

Table 1
Bank and time range of data

Bank	*Pre crisis*	*Post crisis*
Bankinter	2000-7	2013-9
Ibercaja	2002-6	2013-9
BBVA	2000-7	2013-9
Sabadell	2000-7	2013-9
Santander	2000-7	2013-9
Abanca		2013-8
Unicaja		2017-9
Kutxaja bank		2013-8
Bankia		2014-9
Caixabank		2013-9

Ratios used in the analysis

The CAMEL framework is an accepted method for analyzing the performance of a bank and this is covered in several published papers (Rostami, M (2015)). Here below, ratios used in the current analysis are discussed:

Return on Equity (ROE): ROE is a measure of the return that shareholders' obtain. It is computed as Net Income over the shareholder's equity and is the dependent variable in the analysis to follow.

Cash to Total Assets (CASHTA): This ratio measures the proportion of the assets that entities are likely to hold in cash or marketable securities. The ratio has been estimated as the cash and marketable securities over the total assets. While the greater value would increase the security, the surplus of cash however does lead to unproductivity.

Efficiency Ratio (EFFRAT): The efficiency ratio is a measure of the bank's operating cost. It is calculated as the net interest income plus non-interest income minus the provision for credit losses over the operating expenses. Lower values of efficiency ratio explain that the entities are spending more proportionate to what they are earning.

Net Interest Margin (NIM): The NIM is another ratio that measures the profitability of a financial institution. In other words, it explains how much money the entities are making on their lending operations. It is calculated as the Interest Incomes minus the interest expenses over the average of their earning assets.

Growth Asset (GRTHASS): The growth in assets explains the increase or decrease of assets in the balance sheet of financial institutions. The bank's assets are the financial instruments that the entities are holding such loans, securities or treasury bonds. The variable has been estimated as a result of the growth of assets with the previous period.

Reserve Loan Losses/Total Loans (RLLTOTL): This ratio explains the percentage of reserves which the entities decided to provide for non-repayment of loans and interest over

the issued loans. The variable has been calculated as the reserve of loan losses over the total loans issued by each entity.

Size (SIZE): This variable has been estimated as the logarithm of the total assets held by each institution. It explains the assets that are held by the financial institution.

Total Loans/Total Assets (TLTA): This ratio measures the percentage of loans issued by the financial institutions over their total assets. It has been calculated by division of the total loans over the total assets.

Common Equity/Total Assets (CEQTA): This ratio measures the percentage of the investment of the shareholders over the total assets. The ratio has been calculated by division of the common equity over the total assets.

4. ANALYSIS AND FINDINGS

4.1. Introduction

In the previous section, variables which are relevant for bank performance (ROE) analysis were discussed; these are CASHTTA, NIM, EFFRAT, CEQTA, RLLTOTL, GRTHASS, SIZE, TLTA. In this section, descriptive statistics of the data used for assessing the performance of the Spanish Banking System before and after the restructuration will first be presented and then graphically inspected. To enable comparison of the Spanish Banking System before and after the restructuration, the analysis is conducted in two parts: 2000-2007 and 2013-2019.

4.2. Data analysis

(i) The descriptive statistics of data for the two periods will be ascertained, and thereafter graphically analyzed.

(ii) Performance estimation:
ROE is postulated as a function of the independent variables described earlier which have their basis in the CAMEL framework

ROE=f(CASHTTA, NIM, EFFRAT, CEQTA, RLLTOTL, GRTHASS, SIZE, TLTA)

(iii) testing for significant differences in the means
The mean of the variables in the pre and post crisis periods will be tested for significant differences. If the distribution of the variables is parametric, t-test will be applied; if some of the distributions are non-parametric, the two variable version of the Kruskal Wallis test, the Man-Whitney test will be applied.

4.3. Before Banking Restructuration

4.3.1. Descriptive Statistics Before Banking Restructuration:

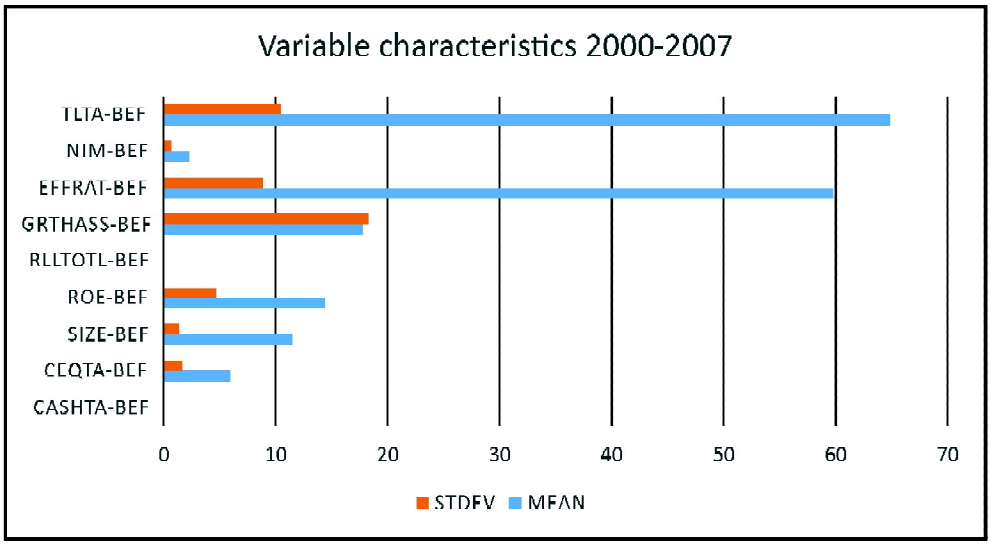
The descriptive statistics of the data for the first period are given below in Table 2.

Table 2
Descriptive Statistics Before Banking Restructuration, Source: Authors' Work

Statistic	*CASHTA*	*EFFRAT*	*NIM*	*GRTHASS*	*RLLTOTL*	*ROE*	*SIZE*	*TLTA*	*CEQTA*
Mean	0.0192	59.7566	2.3073	17.7648	0.0163	14.4030	11.4881	64.8163	5.9266
Median	0.0170	58.4493	2.2400	13.0000	0.0161	13.0200	10.8869	67.3433	5.9696
Maximum	0.0450	84.1390	3.5057	88.8924	0.0296	25.9000	13.7244	82.2716	9.6353
Minimum	0.0055	45.5500	1.1200	-9.6000	0.0037	9.1447	9.7139	47.5423	3.4400
Std. Dev.	0.0088	8.8283	0.6830	18.2810	0.0067	4.7267	1.3727	10.4389	1.6396
Skewness	0.7737	0.8622	0.1431	1.6705	0.1662	1.1840	0.2181	-0.1947	0.3544
Kurtosis	3.2760	3.3551	1.8531	7.4015	2.9392	3.3777	1.4188	1.6538	2.4801
JB	3.8089	4.7782	2.1543	47.0754	0.1760	8.8642	4.1477	3.0277	1.1910
Probability	0.1489	0.0917	0.3406	0.0000	0.9158	0.0119	0.1257	0.2201	0.5513
Observations	37	37	37	37	37	37	37	37	37

The mean value of all the variables is positive; the null hypothesis of normal distribution of the data on the variable is accepted for some variables (CASHTA, EFFRAT, NIM, RLLTOTL, SIZE, TLTA, CEQTA), it is rejected for others (GRTHASS, ROE).

Figure 2: Mean and Standard deviation of variables data 2000-7
Source Authors' work



Variable	CASHTA	CEQTA	SIZE	ROE	RLLTOTL	GRTHASS	EFFRAT	NIM	TLTA
COEFFVAR	0.4585	0.2766	0.1195	0.3282	0.4100	1.0291	0.1477	0.2960	0.1611

The coefficient of variation is less than 1 for all variables, except the growth in assets variable (GRTHASS) meaning there was a wider variation in the growth data compared to the mean in the period 2000-2007.

4.3.2. Empirical Results Before Banking Restructuration:

Using the method of Panel least squares various models as outlined in the methodology are estimated for the data on the banks 2000-7. The best results are from the Common Effects model; the null hypothesis of Redundant fixed effects test is accepted and this model also shows independence in the residuals cross-section dependence test.

Table 3
Common Effects Model Before Banking Restructuration
Source: Authors' work

Dependent Variable: ROE
Equation: EQ01CEM Method: Panel Least Squares
Sample: 2000 2007
Periods included: 8
Cross-sections included: 5
Total panel (unbalanced) observations: 37

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-26.54117	14.61060	-1.816570	0.0800
CASHTA	185.4293	113.2070	1.637967	0.1126
NIM	1.707966	1.651648	1.034098	0.3099
EFFRAT	-0.131878	0.097646	-1.350573	0.1876
CEQTA	-1.455944	0.520141	-2.799134	0.0092
RLLTOTL	-36.11244	93.38248	-0.386715	0.7019
GRTHASS	0.034163	0.028472	1.199888	0.2402
SIZE	2.275886	0.729608	3.119326	0.0042
TLTA	0.366956	0.095691	3.834804	0.0007
R-squared	0.731041	Mean dependent var		14.40296
Adjusted R-squared	0.654195	S.D. dependent var		4.726736
S.E. of regression	2.779566	Akaike info criterion		5.090240
Sum squared resid	216.3276	Schwarz criterion		5.482085
Log likelihood	-85.16943	Hannan-Quinn criter.		5.228383
F-statistic	9.513118	Durbin-Watson stat		2.000180
Prob (F-statistic)	0.000003			

Table 4
Redundant Fixed Effects Tests on Common Effects model
Source: Authors' work

Redundant Fixed Effects Tests
Equation: EQ01FEM
Test cross-section fixed effects

Effects Test	*Statistic*	*d.f.*	*Prob.*
Cross-section F	0.379248	(4,24)	0.8212
Cross-section Chi-square	2.267760	4	0.6866

Table 5
Residual Cross-Section Dependence Test on Common Effects model
Source: Authors' work

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: EQ01CEM
Periods included: 8
Cross-sections included: 5
Total panel (unbalanced) observations: 37
Note: non-zero cross-section means detected in data
Test employs centered correlations computed from pairwise samples

Test	*Statistic*	*d.f.*	*Prob.*
Pesaran CD	-1.556140		0.1197

The estimated model shows that financial performance was higher significantly when the capital ratio (CEQTA) was lower, size (SIZE) was higher and the ratio of total loans to total assets (TLTA) was higher. Overall it means that larger banks with lower capital ratios and higher ratio of loans to assets, performed better financially.

4.4. After Banking Restructuration

4.4.1. Descriptive Statistics after financial restructuration

The following period after the financial restructure, presents the descriptive statistic that are shown in Table 6.

Table 6
Descriptive Statistics After Banking Restructuration, Source: Authors' work

Statistic	*CASHTA*	*CEQTA*	*EFFRAT*	*GRTHASS*	*NIM*	*RLLTOTL*	*ROE*	*SIZE*	*TLTA*
Mean	0.0435	6.7343	63.0680	1.3457	1.7633	0.0314	6.3926	12.0722	64.7980
Median	0.0388	6.4700	61.2264	0.5419	1.4860	0.0261	5.9218	12.1864	60.4169
Maximum	0.1191	10.3612	88.1500	41.3877	3.2100	0.0995	35.8100	14.2360	81.4805
Minimum	0.0058	4.0123	39.5181	-17.5195	0.9100	0.0012	-2.8900	10.7175	52.1161
Std. Dev.	0.0298	1.2525	10.3752	9.3480	0.7129	0.0230	4.8048	1.1527	8.8341

contd. table 6

Statistic	*CASHTA*	*CEQTA*	*EFFRAT*	*GRTHASS*	*NIM*	*RLLTOTL*	*ROE*	*SIZE*	*TLTA*
Skewness	0.5058	0.8785	0.5147	1.5213	0.9216	1.1840	3.6761	0.4399	0.6165
Kurtosis	2.3338	4.1008	2.9424	7.7365	2.3301	4.1860	23.9349	1.8464	1.8711
Jarque-Bera	3.7900	11.1049	2.7465	81.8697	9.9351	18.1187	1271.83	5.4378	7.2203
Probability	0.1503	0.0039	0.2533	0.0000	0.0070	0.0001	0.0000	0.0659	0.0270
Observations	62	62	62	62	62	62	62	62	62

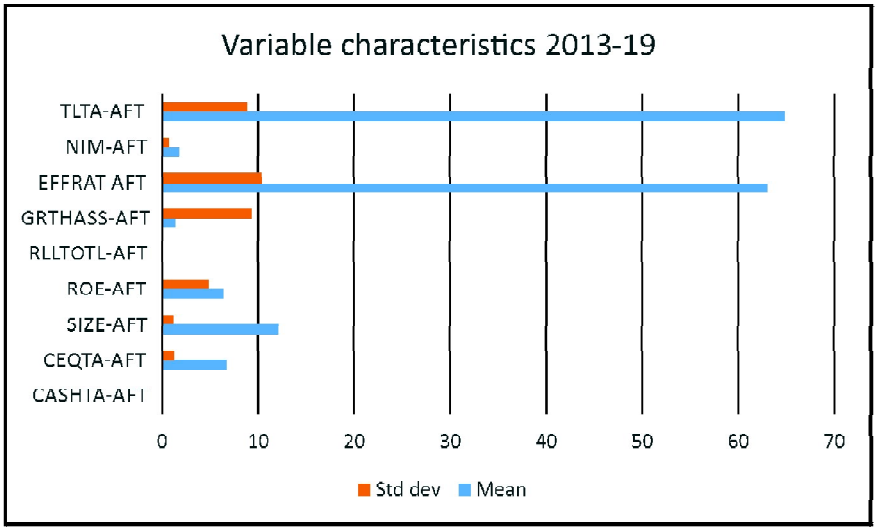
The mean value of all the variables is positive; the null hypothesis of normal distribution of the data on the variable is accepted for some variables (CASHTA, EFFRAT, SIZE), it is rejected for (CEQTA, GRTHASS, NIM, RLLTOTL, ROE, TLTA).

The coefficient of variation is less than 1 for all variables, except the growth in assets (GRTHASS) variable meaning that again there was a wider variation in the growth data compared to the mean in the period 2013-2019.

4.4.2. Empirical Results After Banking Restructure

Again, using the method of Panel least squares various models as outlined in the methodology are estimated for the data on the banks 2013-9. The best model results are again from the Common Effects Model; the null hypothesis of Redundant fixed effects test is accepted and this model also shows independence in the residuals cross-section dependence test.

Figure 3: Mean and Standard deviation of variables data 2013-9
Source Authors' work



Variable	CASHTA	CEQTA	SIZE	ROE	RLLTOTL	GRTHASS	EFFRAT	NIM	TLTA
COEFFVAR	0.6859	0.186	0.0955	0.7516	0.7306	6.9467	0.1645	0.4043	0.1363

Table 7
Common Effects Model Before Banking Restructuration
Source: Authors' work

Dependent Variable: ROE

Equation: EQ02CEM Method: Panel Least Squares

Date: 13/12/20 Time: 14:19

Sample: 1 62

Periods included: 10

Cross-sections included: 7

Total panel (unbalanced) observations: 62

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	58.24550	14.44793	4.031408	0.0002
NIM	1.752518	1.776023	0.986765	0.3282
CASHTA	22.73978	25.13397	0.904743	0.3697
CEQTA	0.990882	0.498843	1.986359	0.0522
GRTHASS	0.060475	0.063245	0.956194	0.3433
RLLTOTL	14.27467	28.43235	0.502057	0.6177
SIZE	-2.648509	1.033865	-2.561755	0.0133
EFFRAT	-0.232148	0.064123	-3.620359	0.0007
TLTA	-0.254953	0.078179	-3.261166	0.0019
Root MSE	3.942115	R-squared		0.315835
Mean dependent var	6.392635	Adjusted R-squared		0.212565
S.D. dependent var	4.804849	S.E. of regression		4.263706
Akaike info criterion	5.871634	Sum squared resid		963.4968
Schwarz criterion	6.180412	Log likelihood		-173.0207
Hannan-Quinn criter.	5.992868	F-statistic		3.058334
Durbin-Watson stat	1.905074	Prob(F-statistic)		0.006629

Table 8
Redundant Fixed Effects test for Common effects model
Source: Authors' workResidual Cross-Section Dependence Test

Redundant Fixed Effects Tests

Equation: EQ02FEM

Test cross-section fixed effects

Effects Test	*Statistic*	*d.f.*	*Prob.*
Cross-section F	0.367210	(6,47)	0.8960
Cross-section Chi-square	2.840359	6	0.8286

Table 9
Residual Cross-Section Dependence Test on Common Effects model
Source: Authors' Work

Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: EQ02CEM
Periods included: 10
Cross-sections included: 7
Total panel (unbalanced) observations: 62
Note: non-zero cross-section means detected in data
Test employs centered correlations computed from pairwise samples

Test	*Statistic*	*d.f.*	*Prob.*
Pesaran CD	0.921421		0.3568

The estimated model shows that financial performance was higher significantly when the capital ratio (CEQTA) was higher and significantly lower when size (SIZE), the efficiency ratio (EFFRAT), the ratio of total loans to total assets (TLTA) were higher. Overall it means that smaller banks with larger capital ratios, lower net interest margins in relation to operating expenses and lower ratio of loans to assets were lower, performed better financially.

Given the recommendations in Basle III it is prudent to compare the means of variables in both the periods studied. As many of the variables have a non-parametric distribution, the appropriate test for this purpose is the Mann-Whitney test. The results given in Table 10 below, show that banks after the restructuration had a significantly lower ROE, but

Table 10
Mann Whitney test for difference in means in the two periods
Source: Authors' work

Variable	*Mean 2000-7*	*Mean 2013-19*	*p-value#*	*Inference*
CASHTA	0.0192	0.0435	0.000***	significant increase in CASHTA
CEQTA	5.9266	6.7343	0.008***	significant increase in CEQTA
SIZE	11.4881	12.0722	0.015**	significant increase in SIZE
ROE	14.4030	6.3926	0.000***	significant decrease in ROE
RLLTOTL	0.0163	0.0314	0.000***	significant increase in RLLTOTL
GRTHASS	17.7648	1.3457	0.000***	significant decrease in GRTHASS
EFFRAT	59.7566	63.0679	0.109	insignificant change in EFFRAT
NIM	2.3073	1.7633	0.000***	significant decrease in NIM
TLTA	64.8163	64.7980	0.857	insignificant change in TLTA

p-value of Mann Whitney test
*** significant at 1% level or lower
** significant at the 5% level

significantly higher capital ratios (CEQTA), significantly higher liquidity ratios (CASHTA), significantly larger size (SIZE), significantly higher provisions for loan losses (RLLTOTL), significantly lower growth rates (GRTHASS), and significantly lower net margins (NIM).There was no significant change in the efficiency ratio (EFFRAT) or the loans to assets ratio (TLTA).

5. CONCLUSIONS

Research has been conducted on the basis of the data available, which represents a substantial portion of the Spanish Banking system. The current research is an assessment of the process of restructuration which will go on for many more years. The intention of Basel III, was to increase the resilience of a banking system and insulate it better in a crisis situation; excess credit growth was to be curbed, capital reserves were to be increased to combat insolvency pressures, adequate provisions had to be made for non-performing loans and liquidity was to be improved to ride out unforeseen short term claims.

The analysis of data on the Spanish Banking system pre and post crisis showed that after the restructuration, banks had significantly lower net margins and profitability, but significantly higher capital and liquidity ratios and were making significantly higher provisions for loan losses, while growth rates were curbed. The analysis of profitability (ROE), after restructuration showed that even though it was lower after restructuration, banks were operating more safely with higher capital ratios and lower net margins with a lower level of lending on the assets under their management. These are all signs of more prudent lending and banking operations.

This research concludes that the initiatives implemented under FROB I, II and II whereby capital of banks was increased through the issue of redeemable preference shares, mergers performed where warranted to improve efficiency and non-performing assets were transferred to SAREB, an asset management company with government involvement have overall been successful in leading the Spanish banking system toward a more prudent path to safe operations and withstanding economic shocks.

The methodology used in the current research can be used to assess the state of the banking system in other countries as well.

References

Angelini, P. and Cetorelli N., (2003). The effects of regulatory reform on competition in the banking industry. *Journal of Money, Credit, and Banking*, 35(5).

Ariff, M. &. Can. L., (2009). IMF bank-restructuring efficiency outcomes: Evidence from East Asia. *Journal of Financial Services Research*, 35(2).

Ariìztegui, J. (2010). “El sector bancario espanÞol ante la crisis financiera internacional: diagnoìstico y medidas adoptadas”, en Reunioìn de Presidentes de Comisiones de Economiìa y Hacienda de Parlamentos Nacionales de la Unioìn Europea/Congreso de los Diputados, Madrid: 15 de abril de 2010.

Association Española Montes de Piedad, A.E.M. de P. (no date). Todas Archivos. PRESEA. Available from https://www.presea.org/provincia/todas/ [Accessed 28 July 2020].

Association Española Montes de Piedad, A.E.M. de P. (no date). Todas Archivos. PRESEA. Available from https://www.presea.org/provincia/todas/ [Accessed 28 July 2020].

Athanasoglou, P. &. Brissmis, S., (2004). The effect of M&A on bank efficiency in Greece, Germany: University Library of Munich.

Bachiller, P. and Garcia-Lacalle, J. (2018). Corporate governance in Spanish savings banks and its relationship with financial and social performance. Management Decision, 56 (4).

Available from 10.1108/md-01-2017-0079 [Accessed 5 February 2020].

Banco de España (2011). Evolución y reforma de las Cajas de Ahorros.

Banco De España (2018). Briefing note on financial assistance in the restructuring of the Spanish banking sector (2009-2017).

Banco de España (2020). Banco de España - Sobre el Banco. Www.bde.es. Available from https://www.bde.es/bde/es/secciones/sobreelbanco/ [Accessed 5 February 2020].

Bank of Spain and FROB (2019). 10 Years of FROB, A Decade for Financial Stability.

Basel Committee (2005). History - overview. Bis.org. Available from https://www.bis.org/about/history.htm?m=1%7C4%7C445 [Accessed 5 February 2020].

Basel Committee (2011). The Basel Committee - overview. Bis.org. Available from https://www.bis.org/bcbs/.

Berger, A. N. & Humphrey, D. B., (1992). Measurement and efficiency issues in commercial banking. In Output measurement in the service sectors, Chicago, US: University of Chicago Press.

Berger, A. N., Young, R. D. &. Udell, G. F., (2001). Efficiency barriers to the consolidation of the European financial services industry. European Financial Management, 7(1)

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 & Finance*, 23(2), pp. 135-194.

Bernad Morcate, C. (2017). Revesco (125) 2017: 7-23 7 Artículos Revesco. Revista de Estudios Cooperativos. REVESCO, 1885–8031 . Available from https://www.researchgate.net/publication/320497052_Reestructuracion_de_las_cajas_de_ahorros_evolucion_ del_numero_de_oficinas_1986-2013 [Accessed 12 July 2020].

Borish, M., Millard, L. and Michel, N., (1995). Restructuring Banks and Enterprises: Recent Lessons from Transition Countries, s.l.: Worldbank Discussion Paper, 279.

Boubakri, N., Cosset, J.-C., Fischer, K. &. Guedhame, O., (2005). Privatization and bank performance in developing countries. *Journal of Banking & Finance*, 29(8), pp. 2015-2041.

Buch, C., Bundesbank, D. and Dages, G. (2018). Committee on the Global Financial System Structural changes in banking after the crisis Report prepared by a Working Group established by the Committee on the Global Financial System The Group was chaired by.

Bultum, A. G., (2014). Factors Affecting Adoption of Electronic Banking System in Ethiopian. *Journal of Management Information System and E-commerce*, 1(1), pp. 1-17.

Can, M. A. &. Can, L., (2009). IMF Bank-Restructuring Efficiency Outcomes: Evidence from East Asia. *Journal of Financial Services Research*, Volume 35, pp. 167-187.

Caprio, G. J. a. Klingebiel. D., (1997). Bank Insolvency: Bad Luck, BadPolicy, or Bad Banking?, 79-104: WorldBank.

Colombo, L.V.A. and Turati, G. (2012). Why do Acquiring Banks in Mergers Concentrate in Well-Developed Areas? Regional Development and Mergers and Acquisitions (M&As) in Banking. Regional Studies, 48 (2), 363–381. Available from [Accessed 5 February 2020].

Claessens, S., Ayhan Kose, M and Terrones, M. E., (2011). Financial Cycles: What? How? When? IMF working paper, WP/11/76.

Comín Comín, F. and Torres Villanueva, E. (2008). Historia de la cooperación entre las cajas/ : la Confederación Española de Cajas de Ahorros (1928-2007). Madrid: Alianza Editorial.

Confederación Española de Cajas de Ahorro. (2018). CECA. Ceca.es. Available from https://www.ceca.es.

Conlon, J.R. (2014). Should Central Banks Burst Bubbles? Some Microeconomic Issues. The Economic Journal, 125 (582), 141–161. Available from [Accessed 5 February 2020].

Cuesta, R.A. and Orea, L. (2002). "Mergers and technical efficiency in Spanish savings banks: a stochastic distance function approach", *Journal of Banking and Finance*, Vol. 26 No. 12, pp. 2231-2247.

Daniel, J. A., (1997). Fiscal aspects of bank restructuring, s.l.: IMF Working Paper, 97.

De Hoyos, R.E. and Sarafidis, V. (2006). Testing for Cross-Sectional Dependence in Panel-Data Models. The Stata Journal: Promoting communications on statistics and Stata, 6 (4), 482–496. Available from [Accessed 8 June 2020].

Demirguc-Kunt A. & Huzinga, H. (1999). Determinants of commercial bank interest margins and profitability: Some International Evidence. The World Bank Economic Review, 13 (2), 379 – 408.

De Juan, A., (1998). Clearing the decks: experiences in banking crisis resolution. El Salvador, 4th annual conference on development in Latin America and the Carribean .

Dziobek, C. a. Pazarbasioglu, C., (1997). Lessons from systemic bank restructuring:a survey of 24 countries, s.l.: IMF Economic Issues, 14.

Dziobek, C. (1998). Market-based policy instruments for systemic bank restructuring, IMF Working Paper, 98/113, IMF, Washington D.C.

ECB Monthly Bulletin, July (2011). The new EU framework for financial crisis management and resolution.

Escobar Pérez, B. and del Mar Miras Rodríguez, M. (2013). Spanish savings banks' social commitment: just pretty words? *Social Responsibility Journal*, 9 (3), 427–440. Available from [Accessed 5 February 2020].

Fernández-Olit, B. *et al.* (2019). Banks and Financial Discrimination: What Can Be Learnt from the Spanish Experience? *Journal of Consumer Policy*, 42 (2), 303–323. Available from [Accessed 5 February 2020].

Fries, S. M. a. Lane, D. T., (1994). Financial and enterprise restructuring in emerging market economies, s.l.: Market Economies. IMF.

Gertler, M. a. Gilchrist, S., (1994). Monetary policy, business cycles and the behaviour of small manufacturing firms, No.437: Quarterly Journal of Economics.

Gil-Díaz, F., (1998). The origin of Mexico's financial crisis. *Cato Journal*, 17(3).

Gilchrist, S. and Mojon, B. (2017). Credit Risk in the Euro Area. The Economic Journal, 128 (608), 118–158. Available from [Accessed 5 February 2020].

Goldstein, M. a. D. F.-L., (1993). International Capital Markets: Part II: Systemic Issues in International Finance, s.l.: IMG, August.

Goldstein, M. a. Turner, P., (1996). "Banking crises in emerging economies: origins and policy options, October: BIS Economic Papers, No.46.

Gravelle, T. and Li, F. (2013). Measuring systemic importance of financial institutions: An extreme value theory approach. *Journal of Banking & Finance*, 37 (7).

Hawkins, J. &. Turner, P., (1999). Bank restructuring in practice: An overview. BIS Policy Paper, Volume 6.

Hawkins, J., (2000). Restructuring Banking Systems, J. R. Bisignano et al. (eds.), Global Financial Crises.

Herrero, T., Luis, B. and Pita Da Veiga, T. (no date). La reestructuración de las cajas de ahorros tras la crisis Tasa de variación interanual (%). Available from https://www.funcas.es/Publicaciones/Detalle.aspx?IdArt=20790.

Heru Margono, Sharme, C. a. Melvin. D. P., (2010). Cost efficiency, economies of scale, technological progress and productivity in Indonesian banks. *Journal of Asian Economics*, 21(1).

Hoggarth, G., Reidhill J. & Sinclair P. (2004). On the resolution of banking crises: Theory and evidence, Working Paper No. 229, Bank of England.

Hsiao, H.-C., Chang, H., Cianci, A. M. &. Huang, L.-H., (2010). First financial restructuring and operating efficiency: Evidence from Taiwanese commercial banks. *Journal of Banking & Finance*, 34(7).

Hull, J. (2018). Risk management and financial institutions. Hoboken, New Jersey: John Wiley & Sons, Inc.

Ithiri, M. D. (2013). Corporate restructuring and its effects on Kenya Commercial Bank performance. A Research Project in Masters of Business Administration, School of Business, Kenyatta University.

Jordon, J., (1998). Resolving a banking crisis: what worked in New England, Federal Reserve Bank of Boston: New England Economic Review.

Kapoor, S. and Kaur, M. (2017). Basel III Norms: A SWOT and TOWS Approach. Vision: The Journal of Business Perspective, 21 (3), 250–258. Available from [Accessed 5 February 2020].

Kawai, Masahiro (2001). "Bank and Corporate Restructuring in Crisis-Affected East Asia: From Systemic Collapse to Reconstruction," Asia Pacific Economic Papers 317, Australia-Japan Research Centre, Crawford School of Public Policy, The Australian National University.

Kithinji, A.M. *et al.* (2017). Intervening Effect of Financial Services on the Relationship Between Bank Restructuring and Financial Performance. *European Scientific Journal*, ESJ, 13 (28), 121.

Koetter M, Noth, F., (2013). IT use, productivity, and market power in banking. J Finance Stab, 9(4).

Kose,J., Saunders, A. and Senbet, L. W., (1995). "Perspectives on bank capital regulation and managerial compensation," *Journal of Banking & Finance*, Elsevier, vol. 19(3-4).

Krishnasamy, G., Ridzwa, H. A., &. Perumal, V., (2004). Malaysian post merger banks' productivity: Application of Malmquist productivity index. *Managerial Finance*, 30(4).

Kwaning, C. O., Churchill, R. Q. & Opuku, A. K. (2014). The impact of organisational restructuring on the financial performance of public banks; A post restructuring assessment of Agricultural Development Bank, Ghana. *Journal of Financial Accounting*, 5.

Laeven, L. and Levine, R., (2009). Bank governance, regulation and risk taking. *J Financial Economics*, Volume 93.

Lázaro-Aguilera, I. and Palomo-Zurdo, R. (2016). Has the reduction of employment been efficient in the restructuring of banks in Europe? An insight into the overbranched sector in Spain. *Journal of Transnational Management*, 21 (4).

Lee, Y. and Okui, R. (2012). Hahn–Hausman test as a specification test. Journal of Econometrics, 167 (1), 133–139. Available from [Accessed 5 February 2020].

Lozano-Vivas, A., Meléndez-Jiménez, M.A. and Morales, A.J. (2010). With whom to merge? A tale of the Spanish banking deregulation process. SERIEs, 2 (2).

Martín-Oliver A, Ruano, S., and Salas-Fumas, V., 2013. Why high productivity growth of banks preceded the financial crisis. *J Financ Intermed*, Volume 22.

Martin, E., Bachiller, A. and Bachiller, P. (2018). The restructuring of the Spanish banking system: analysis of the efficiency of financial entities. Available from https://www.emerald.com/insight/content/doi/10.1108/MD-04-2017-0292/full/html

McCann, L., (2013). Managing from the echo chamber: Employee dismay and leadership detachment in the British banking and insurance crisis. Emerald Group Publishing Limited, 9(4).

Maroto Aciìn, J.A. and Melle Hernaìndez, M. (1999). "Una aplicacioìn del gobierno de empresas: incidencia de las Administraciones Puìblicas en las decisiones asignativas de las Cajas de Ahorro espanolas", Revista Europea de Direccioìn y Economiìa de la Empresa, Vol. 8 No. 2.

Maudos, J. (2014). Restructuracioìn bancaria y accesibilidad financiera [Banking restructuring and financial accessibility]. Cuadernos de Informacioìn Econoìmica, (238).

Molyneux, P., Schaeck, K. and Zhou, T.M. (2014). 'Too systemically important to fail' in banking – Evidence from bank mergers and acquisitions. *Journal of International Money and Finance*, 49 (49), 258–282. Available from [Accessed 5 February 2020].

Ongena, H. and Degryse, H., (2004). The impact of technology and regulation on the geographical scope of banking. *Oxford Review of Economic Policy*, 20(4).

Ozaki, H. D. S. a. M., (2009). Restructuring of State-owned Financial Institutions. Philippines: Asian Development Bank.

Pasiouras, F., (2008). International evidence on the impact of regulations and supervision on banks' technical efficiency: an application of two-stage data envelopment analysis. Rev Quant Financ Account, Volume 30.

Peng, Y.-H. &. Wang, K., (2004). Cost efficiency and the effect of mergers on the Taiwanese banking industry.. *The Service Industries Journal*, 24(4).

Philippatos, C. G and Yildrim, S. H, (2007). Restructuring, consolidation and competition in Latin American banking markets. *Journal of Banking and Finance*, 31(3).

Roberts, E., (2002). The Challenges of Bank Restructuring and Banking Supervision in Transition Economies. s.l., Completing Transition: The Main Challenges.

Rose, P. S. (1994). The rescue of troubled banks; consequences for corporate strategies to deal with financial and operating stress. *Journal of Financial and Strategic Decisions*. 7(2).

Rostami, M (2015). Camels' analysis in banking industry, Article in Global Journal of Engineering Science and Research Management · November 2015

Rousseau, P. and Sylla, R. (2001). Title: Financial Systems, Economic Growth, and Globalization.

Salas, V. *et al*. (2002). Credit Risk in Two Institutional Regimes: Spanish Commercial and Savings Banks. *Journal of Financial Services Research*, 22 . Kluwer Academic Publishers.

Scardovi, C., (2016). Restructuring and Innovation in Banking. s.l.:Springer Briefs in Finance.

Shafie, S., (2004). Adopting and measuring customer service quality in Islamic banks. *Journal of Muamalat and Islamic Finance Research*, 1(1).

Sheytanova, T. (2014). The Accuracy of the Hausman Test in Panel Data: a Monte Carlo Study. Örebro University: Örebro University School of Business. Available from http://oru.diva-portal.org/smash/get/diva2:805823/FULLTEXT01.pdf [Accessed 5 February 2020].

Sommariva, A. a., (1993). Banking sector and restructuring in Eastern Europe. *Journal of Banking and Finance*, 17(5).

Staub, R. B., E Souza, D. S. G. &. Tabak, B. M., (2010). Evolution of bank efficiency in Brazil: A DEA approach. *European Journal of Operational Research*, 202(1).

Suehiro, A. (2002). Restructuring and Re-engineering of Local Commercial Banks in Thailand From Family-owned Bank to A Universal Bank The 4 th MDT Project.

Tan, M. a. T. T. S., (2000). Factors Influencing the Adoption of Internet Banking. *Journal of the Association for Information System*, 1(1).

Torres-Reyna, O. (2007). Panel Data Analysis Fixed and Random Effects using Stata (v. 4.2).

University of Stirling, U. of S. (no date). Topic 4: Random Effects and the Hausman Test the Hausman Test. Available from http://www.restore.ac.uk/Longitudinal/surveynetwork/master_class_2/Random_Effects.pdf [Accessed 5 February 2020].

Urbaneja Cillaìn, J. (2014). La reestructuracioìn del sistema financiero espanÞol. El proceso de reforma tras la asistencia financiera a la Banca espanola. Revista Juriìdica de Castilla y Leoìn, (32).

Vallascas, F. and Hagendorff, J. (2011). The impact of European bank mergers on bidder default risk. *Journal of Banking & Finance*, 35 (4). Available from [Accessed 5 February 2020].

Vanesa Llorens, Martin-Oliver, A., (2020). Productivity, competition and bank restructuring process.

Weill, L., (2013). Bank competition in the EU: how has it evolved?. *J Int Finance Mark Inst*, Volume 26.

Werner, R.A. (2002). Post-Crisis Banking Sector Restructuring and Its Impact on Economic Growth. Japanese Economy, 30 (6), 3–37. Available from [Accessed 5 February 2020].

Williams, J., and Nguyen, N., (2005). Financial liberalization, crisis and restructuring: a comparative study of bank performance and bank governance in South East Asia. *J Bank Finance*, Volume 29.

World Bank publication (2016). Banking Crisis, https://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/banking-crisis

Yudistira, D., (2004). Efficiency in Islamic banking: An empirical analysis of eighteen banks. *Islamic Economic Studies*, 12(1).

Zaim, O., (1995). The effect of financial liberalization on the efficiency of Turkish commercial banks. *Applied Financial Economics*, 5(4).

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