European Journal of Applied Business Management, 4(2), 2018, pp. 110-127.

EJABM European Journal of Applied Business and Management

ISSN 2183-5594

Research paper

Corporate governance, capital and risk-taking in savings banks

Submitted in 26, March 2018
Accepted in 12, June 2018
Evaluated by a double blind review system

LUÍS OTERO-GONZÁLEZ[1], DILDORA IBRAJIMOVA[2], MILAGROS VIVEL-BÚA[3], RUBÉN LADO-SESTAYO[4]

Abstract

Purpose: This paper analyzes the impact of bank corporate governance and capital on risk-taking during the period 2004-2011, focusing on Spanish saving banks.

Methodology: This paper uses a dynamic panel data modeling and the system Generalized Methods of Moments (GMM) as a method of estimation.

Findings: The results highlight the importance of bank ownership nature and show the positive association between risk and Spanish savings banks. Furthermore, widely held banks tend to induce bank managers to increase risk-taking. The empirical evidence in this paper also contradicts the logic of prudent bank behavior which implies reserving more loan provisions during periods of rapid credit expansion. In addition, the amount of capital is found to be essential in the crisis period and all equity indicators were equally informative.

Originality: Several researches in finance attempt to explain the risk-taking behavior of banks and identify precise indicators of banks' fragility This issue became especially prevalent following the recent financial crisis which has had a dramatic impact on the banking and financial sector of most countries. This research contributes to the existing literature by presenting unpublished evidence of Spanish banks risk taking. Note that despite the importance of the issue, there are few empirical studies and the most of these are not referred to this particular subject.

Keywords: regulation, risk, bank, corporate governance, capital.

1. Introduction

The main purpose of the study is to identify what aspects of the bank corporate governance influences on Spanish banks' risk-taking. It also investigates whether bank capital helped banks to survive the crisis and which indicators were important during the crisis period. The choice of the Spanish banking sector is not accidental. Before the crisis the Spanish banking sector was believed to be one the best and safest in Europe, but following the crisis it was one of the most troubled banking sectors in the Eurozone.

[1] University of Santiago de Compostela. E-mail: luis.otero@usc.es (Corresponding author).
[2] University of Santiago de Compostela. E-mail: dildora.ibrajimova@gmail.com.
[3] University of Santiago de Compostela. E-mail: mila.vivel@usc.es.
[4] University of La Coruña. E-mail: ruben.lado.sestayo@udc.es.

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

This situation has been associated to the particular structure of ownership of Spanish saving banks and their prevailing position in the financial system of the country.

In general, there are several types of financial firms with different organizational forms and ownership structures which compete in the same market in Spain. Spanish commercial banks are shareholder oriented corporations owned by families, individual investors and institutional investors. Spanish savings banks (SSBs) unlike commercial banks (SCBs) do not have either formal owners or capital, and are considered to be a mix of mutual companies and public institutions which are mainly controlled by regional governments. Before the crisis, SSBs controlled about half of the Spanish retail banking market. Their earnings are either retained or invested in social and cultural programs. As a result of deregulation, SSBs began gaining greater market share which occurred principally at the expense of private SCBs (Kumbhakar et al., 2001). In terms of governance, SSBs are like private foundations with a board of trustees represented mainly by public authorities, depositors, employees, and the founding entities. The control of SSBs by public authorities in the bank governance structure would influence on its decision-making. In particular, García-Marco and Robles-Fernández (2008) point out that the Spanish regional governments could have incentives to control saving banks and encourage managers to undertake more risk. According to the statistics of National Bank of Spain (2010) in the period 2003-2008, SSBs increased the number of branches by 20% and accumulated about 20% of the total credits related to real estate development. Some studies attribute this fact to the composition and structure of SSB's General Board, the low qualification of executives and to the politicization of the general council, among others reasons (Cuñat and Garicano, 2010). Furthermore, Eichler and Sobanski (2012) argue that public stakes increased moral hazard incentives of banks through implied bail-outs and could tempt managers to accept riskier lending and investment policies. In the case of Spain, saving banks are the financial institutions which have incurred in the highest levels of risk during the crisis and received majority of bailout resources afterwards.

In addition to the ownership structure, the role of equity is prominent in analyzing bank risk. Among other factors, insufficiency of bank capital is also extensively discussed among academics and policymakers as a contributor to the on-going financial turmoil. The most recent empirical literature presents contradictory results on the relationship between capital and risk-taking. In this aspect, it is again interesting to analyze the Spanish case since unlike other countries Spanish banks held countercyclical capital buffers that were subsequently included in the reform of Basel II. Therefore, our work also examines the role of capital in the financial stability of the Spanish banking system.

The new capital rules known as Basel III and the Spanish regulation have increased corporate governance controls and capital requirements. Specifically, the Law 10/2014 of supervision and solvency of credit institutions (LOSS) considers both issues, devoting an entire chapter to corporate governance and other additional to regulate capital needs. On the one hand, try to professionalize risk management, with eligibility requirements to members of the board of directors and the configuration of specific risk departments. Moreover, it increases capital requirements of the highest quality through the creation of four countercyclical buffers. In this sense, it is necessary to determine whether empirical analysis supports the changes in regulation.

This research contributes to the existing literature by presenting unpublished evidence of Spanish banks risk taking. Note that despite the importance of the issue, there are few empirical studies and the most of these are not referred to this particular subject. The

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

results highlight the importance of bank ownership nature and it shows the positive association between risk and SSBs. Furthermore, this paper supports the hypothesis that widely held banks tend to induce bank managers to increase risk-taking. The evidence also contradicts the logic of prudent bank behavior which implies reserving more loan provisions during periods of rapid credit growth in the particular case of saving banks. In addition, there are not any differences in the ability of alternative capital ratios to increase the financial stability of banks, but higher levels of capital have increased the financial stability and lower the risk taking. Thus, the amount of capital is found to be essential in the crisis period and all equity indicators were equally informative.

The paper is structured as follows. After this introduction, the second section provides a critical review of recent empirical and theoretical studies of corporate governance and capital factors. The third section presents the empirical study. Finally, this paper ends showing the conclusions on the overall effect of risk-taking determinants on bank's solvency during the Spanish financial crisis.

2. Theoretical Background and Hypothesis

Under agency theory, some conflicts of interests arise between the principal and agent because the agent does not always act in the interests of the principal. So, these conflicts between managers and shareholders affect risk taking behavior (Jensen & Meckling, 1976). The agency theory predicts that managers are risk averse whereas shareholders have incentives to increase bank risks after collecting funds and deposits (Esty, 1998; Galai & Masulis, 1976). In general, managers avoid risk-taking due to career concerns, because they are not able to diversify the risk of their unemployment (Amihud & Lev, 1981; Hirshleifer & Thakor, 1992). This is in line with Saunders et al. (1990) whom found that banks controlled by shareholders take more risk than banks controlled by managers. The agency problem may be mitigated in firms which have strong monitoring of managers, with the possibility to replace them upon their performance (Franks et al., 2001). The level of monitoring and thus, risk taking, is affected by ownership concentration (Iannotta et al., 2007). Laeven and Levine (2009) find that the bank risk is higher in banks with large owners. On the other hand, shareholders with dispersed ownership have larger incentives to behave risk-neutral (Demsetz & Lehn, 1985; Esty, 1998), because they are going to diversify their risk by engaging in a large number of projects instead of concentrate their fund in one option.

Regarding the impact of ownership concentration on risk taking, there is no consensus at the empirical level concerning the sign of the relationship. Some studies find a positive association between ownership concentration and risk (Gropp & Köhler, 2010; Haw et al., 2010; Laeven & Levine, 2009; Saunders et al., 1990). In other words, powerful bank owners tend to induce bank managers to increase risk-taking. Those firms which are controlled by large shareholders are more likely to engage in increased risk-taking behavior (Amihud & Lev, 1981; Shavell, 1979). Also, Pathan (2009) provides empirical evidence for the period 1997-2004 that US bank holding companies assume higher risks if they have a stronger shareholder representation in the boards. Moreover, Beltratti and Stulz (2012) find that banks with higher controlling shareholder ownership are riskier. Nevertheless, other studies like find the opposite (Burkart et al., 1997; García-Marco & Robles-Fernández, 2008; Iannotta et al., 2007), suggesting that banks with concentrated ownership are taking lower risk in terms of credit risk and insolvency risk than banks in diffuse ownership. Finally, Anderson & Fraser (2000) and

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

Gorton & Rosen (1995) showed that ownership concentration has a non-linear or inverse U relationship with risk.

The nature of bank ownership also is other factor that can have an influence on risk taking. Previous researches associate bank organizational form with its risk behavior (Verbrugge & Goldstein, 1981; Cordell et al., 1993; García-Marco & Robles-Fernández, 2008). From moral-hazard perspective, commercial banks are expected to take greater risk than saving banks, mainly due to presence of greater shareholder concentration. In case of saving banks, the diversity of interests in the governance structure could result in different patterns of risk-taking (García-Marco and Robles-Fernández, 2008). In other words, the effects of politicization of decision making could be divergent; politicians could try to conserve saving banks existence or, alternatively, to finance non profitable projects increasing bank's risks. Empirical studies have some contradictions in their findings. Iannotta et al. (2007) analyze the effect of ownership structure on European banks' profitability, cost efficiency and their risk level from 1999-2004. The study considers both dimensions of ownership structure – ownership nature and concentration. By comparing mutual banks (MB), privately-owned stock banks (POB) and government-owned banks (GOB) and using different risk proxies it suggests that public sector banks have poorer loan quality and higher insolvency risk than banks with other ownership types. The study explains this evidence through the role of GOBs in a country's banking system. GOBs usually pursue industrial policies directed at remedying market failures and providing loans that POBs or MBs would not grant. As reported by Rasmusen (1988), managers of MBs cannot fully benefit from increased variability of returns and therefore they are involved in less risky activities than POBs. Other studies also show the increase of banks fragility when they are owned by the government (La Porta et al., 2002; Eichler & Sobanski, 2012). In addition, Eichler and Sobanski (2012) point out that public stakes increase moral hazard incentives relying on bailout in case of bank insolvency where managers could be attracted by riskier lending and investment policies. Similar studies have been done in Spanish market. Garcia-Marco & Robles-Fernández (2008) examine the risk-taking behavior of SCBs and SSBs from 1993 until 2000 and reveal major differences linked with legal forms (nature) of ownership as well as the size of the bank. They found that in general commercial banks exhibited a stronger tendency toward risk-taking than saving banks in the given period. Specifically, moral hazard problems indicating a stronger relation with risk-taking are found only in small commercial banks with high ownership concentration. Saving banks are not under the control of shareholders which can affect their risk taking (Crespi et al., 2004; La Porta et al., 2002). Also, the composition of board could affect financial distress, but some studies did not find any association between political appointees in boards of directors and distress (Sagarra, Mar-Molinero & García-Cestona, 2015). However, other studies such as Jiménez & Saurina (2004) find SSBs loans are riskier, finding evidence of effects of board composition on risk taking. The desires of expansion beyond their traditional markets could explain riskier loans (Illueca et al., 2014; Sagarra et al., 2015). Moreover, local authorities could have interest to grant loans to the business and individuals of their regions, even if they were considered at high risk for commercial banks (Sagarra, Mar-Molinero & García-Cestona, 2015). In this sense, local authorities could benefit for a higher lending activity considering it could booster real state and economic activity. Both of them are directly related to tax revenues.

Based on analysis of previous studies this paper suggests the following hypotheses regarding ownership structure:

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

H1: Higher ownership concentration causes greater risk-taking.

H2: Government controlled (Saving banks) or government owned banks incurred in higher risk than other forms of ownership.

The role of capital is also remarkable in analyzing bank risk. Among other factors, insufficiency of bank capital is also extensively discussed among academics and policymakers as a contributor to the on-going financial turmoil. The most recent empirical literature presents contradictory results on the relationship between capital and risk-taking. Demirgüç-Kunt et al. (2013) highlight the role of bank capital in withstanding a shock such as the financial crisis. In particular, they investigate whether better capitalized banks had higher stock returns during the financial crisis. They also examine what concept of capital is more relevant in stock valuation during the crisis and what items are counted as capital for regulatory purpose. Their results obtained from a large sample of international banks suggest that during the crisis banks with higher capitalization were better valued than undercapitalized banks though this trend is not observed before the crisis. Moreover, they find that big banks' stock returns are more sensitive to the leverage ratio as a capital measure than to the risk-adjusted Basel ratio. This may be explained by a lack of reliability in the Basel risk-weighted indicators by market participants at the time of the crisis. Finally, this research concludes that "higher quality capital" [Tier 1] and tangible common equity are more relevant.

Berger & Bouwman (2013) also examine bank performance variations across financial crises and periods of economic stability. They measure bank performance in terms of survival and market share and test the joint effect of capital and size on it during the crisis. The main findings of the study support the hypothesis that capital helps banks to survive in line with Altunbas et al. (2011), Demirgüç-Kunt et al. (2013) and others. In addition, it reveals that for small banks capital is essential for survival at all times and for medium and large banks only during banking crises. The importance of Tier 1 capital for large banks is also supported by Beltratti & Stulz (2012). They find that large banks with more Tier 1 capital, more deposits, less exposure to US real estate, and less funding fragility, performed better than banks financed with short-term funds raised in the money markets and with more exposure to US real estate.

It is also believed that a higher level of capital decreases the bank risk because the higher the capital reserves, the stronger the buffer to withstand losses especially during a crisis (Demirgüç-Kunt et al., 2013; Berger & Bouwman, 2013; Beltratti & Stulz, 2012). Moreover, evidence suggests that less leverage reduces risk-shifting incentives from shareholders towards excessively risky projects at the expense of debt holders, especially in conditions of quasi-flat deposit insurance. A number of studies advise that a higher level of capital motivates a more intensive screening of borrowers and negatively affects risk (Berger & Bouwman, 2013; Demirgüç-Kunt et al, 2013). On the other hand, some studies find a positive relationship between bank capital and risk due to regulators or market pressure to raise capital or because banks with more capital have a greater risk absorption capacity and thus take on more risk (Berger and Bouwman, 2013). Lastly, there is a non-linear relationship where both very low and very high levels of capital induce banks accept more risk (Altunbas et al., 2011).

To test the impact of capital structure on bank's risk-taking this paper proposes the following hypotheses:

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

H3: Higher levels of capital lead to lower bank risk.

H4: Capital enhances the banks' probability of survival during financial crises and periods of economic stability.

H5: Leverage ratio and Equity ratio (Equity-to-Assets) are viewed as more informative measures of capital than risk-adjusted capital ratios at the time of financial crisis.

3. Empirical Tests

3.1. Sample Selection

Sample comprises 91 Spanish banks, selected by applying the following criteria (Table 1). The data is taken from the BankScope International Bank Database provided by Fitch/Bureau Van Dijk and includes listed and unlisted Spanish commercial, savings and cooperative banks from 2004-2011. In Spain commercial banks, savings banks and cooperative banks compete under equal conditions in the loan, deposit and financial service markets. Regulations, accounting practices, external reporting and credit-risk management standards are practically identical for all. The time period used in this paper allows us to see changes in banks' data prior to the crisis as well as the extent of the impact of the crisis in later years.

Table 1. Criteria of the search strategy

World Region/Country	Spain
Accounting standards	International Accounting Standards, International Financial Reporting Standards (IFRS)
Specialization	Commercial banks, Savings banks, Cooperative banks
Listed banks	Listed and unlisted banks
Total Assets	2007, min 1,000,000 (thousand EUR)
Time Period	2004-2011

Source: Authors' analysis.

3.2. Measurement of variables

This paper uses several alternative risk measures (Table 2). In this way, the results do not depend on specific definitions of bank risk and take into consideration different aspects of risk realization. This ratio is very common in many recent empirical research papers as a measure of risk (Boyd and Runkle, 1993; De Nicoló *et al.*, 2004; Michalak & Uhde, 2009). The formula is as follow:

$$\boldsymbol{Z} \equiv \frac{\mu + \mathbf{k}}{\boldsymbol{\sigma}}$$

Where:

- μ is the ROAA variable (Return on Average Assets);
- k is the balance of capital relative to total assets of the entity (equity / total assets);
- σ is the standard deviation (volatility) of ROAA.

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

- The ratio Z-score measures "the distance to insolvency of an entity" so that a higher Z-score implies a lower probability of default risk (or financial stability), and vice versa. We also have included alternative measures such as non-performing loans (Impaired Loans/ Gross Loans) and loan loss reserves (Loan Loss Reserve / Gross Loans) to analyze the effect on bank credit risk.

Table 2. Dependent variables

Variables	Definition	Source
Z-score	Zscore=(ROAA+Equity/Total Assets)/σ ROAA	Bankscope
NPL	Impaired Loans(NPLs)/ Gross Loans	Bankscope
Loan Loss ratios	Loan Loss Reserve / Gross Loans	Bankscope

Source: Authors' analysis.

The Table 3 briefly summarizes the explanatory variables and hypothesis/predictions in this empirical analysis. In line with previous literature, the paper uses a variable for ownership nature (dummies for type of ownership: commercial, saving or cooperative banks) and ownership concentration (concentrated vs. widely held). To distinguish concentrated banks from widely held ones, the research uses the Bankscope's BvD Independence Indicator with cut-off rate 25%. It represents the degree of independence of an entity with regard to its shareholders. A cut-off rate of 25 % denotes that the largest owner has no more than 25% of total share. The paper uses the number of recorded shareholders as a proxy for widely held bank. It represents the number of legally recognized shareholders (the person or entity) whose name is listed on a stock certificate. This variable serves as an alternative to independence indicator. Bank capital is measured by three alternative measures: Capital Adequacy Ratio, Tier 1 and Equity ratio. The use of various capital ratios allows us to see which components of capital were believed to be able to absorb losses during the crisis period. In order to incorporate lending activity, which could affect risk taking, the paper considers as control variable the annual growth of loans and the extent of bank's lending. Also, it considers size and a temporal effect in order to reduce efficiency aspects and seasonal conditions.

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

Table 3. Summary of variables and predictions

Variable		Prediction		Definition	Source
		Z-Score	Credit risk		
Total Risk of default [Z-Score]		Dependent variable		Ratio of the sum of equity capital to total assets and ROAA regarding the standard deviation of ROAA (sdROAA)	Bankscope
Credit Risk	**NPL ratio % [Imparedloans]**	Dependent variable		(non-performing loans / total gross loans)	Bankscope
	Loan loss reserve % [Loanlossres]	Dependent variable		Loan loss reserve / gross loans %	Bankscope
Ownership Structure [Savdummy], [Comdummy] & [Coopdummy]		+/-	+/-	Dummy variable for Saving banks, Commercial banks and Cooperative banks respectively.	Bankscope
Ownership concentration [BvDdummy]		+	-	Proxy BvD Indep. Indic. With cut-off rate 25%. If widely held=1 (with the largest owner no more than 25% of share), otherwise 0.	Bankscope
Widely held bank proxy [Recordshar]		+	-	The widely held bank proxy which represents the number of recorded shareholders in a bank	Bankscope
Capital [Capitrat]		+	-	Total Capital Ratio or Capital Adequacy Ratio. Tier 1 + Tier 2 as a percentage of risk weighted assets and off balance sheet risks	Bankscope
Tier 1 Capital [Tier1]		+	-	Shareholder funds plus perpetual non cumulative preference shares as a percentage of risk weighted assets and off balance sheet risks measured under the Basle rules	Bankscope
Equity ratio [*EqtotAssets*]		+	-	Equity/Total Assets ratio	Bankscope
Debt-to-Equity ratio [$logEqtoliab$]		-	+	log of Equity/Liability ratio	Bankscope
Control variables					
Annual growth of loans[logGrowthloans] [$Growthloans2$]		-	+	Logarithm of annual loan growth rate and squared percentage of loan growth respectively	Bankscope
Bank size[Logtotassets]		-	+	Logarithm of Total Assets; controls for bank's size	Bankscope
Extent of bank's lending [Netloantoas]		-	+	Net loans/Total Assets; control for extent of bank's involvement in lending activity	Bankscope
Years [Year]				Year dummies	-

Source: Authors' analysis.

3.3. Descriptive Analysis

Table 4 shows the quantity of commercial, savings and cooperative banks and their percentage weight in the sample. Even though commercial banks comprise 27 entities they hold more than half of the total assets of the sample in the given period. Cooperative banks have the lowest weight both in terms of quantity and total assets.

Table 4. Sample characteristics

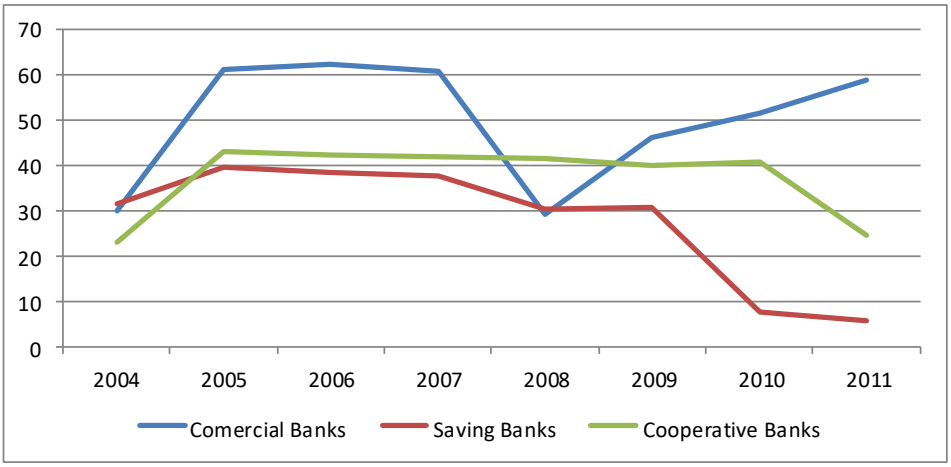
Bank type	Number of banks	% in Sample Total Assets
Commercial banks	27	58.6%
Saving banks	46	38.8%
Cooperative banks	18	2.6%
Total	91	100%

Source: Authors' analysis.

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

The analysis of the evolution of Z-score for each type of bank is given in the Figure 1. In 2004 saving banks have the highest Z-score but it started a downward trend after 2007. Savings banks exhibit the highest risk, with a dramatic increase in the level of Z-score from 2007 onwards.

Figure 1 Evolution of Z-score by bank type



Source: Authors' analysis.

The summary of descriptive statistics for dependent variables is subdivided into pre-crisis (2004-2007) and post-crisis (2008-2011) periods. Table 5 shows the variations of coefficients- mean and standard deviations- in two periods. Before the crisis the mean Z score was higher and standard deviation lower implying lower pre-crisis insolvency risk. Moreover, credit risk variables exhibit lower mean and lower dispersion from 2004-2007 than from 2008-2011.

Table 5. Descriptive statistics for dependent variables before and after crisis

Variable	Obs	Mean	Std. Dev.	Min	Max
2004-2007					
Total Risk of default [Z-Score]	364	41.97586	54.0495	0	437.4862
Loan loss reserve % [Loanlossres]	282	1.909188	0.36148	0.23	3.144
NPL ratio % [Imparedloans]	277	0.833791	0.453206	0.13	3.02
Loan loss provision % [LoanLossPtoloans]	321	0.390394	0.242087	-1.39147	1.72524
2008-2011					
Total Risk of default [Z-Score]	364	30.55037	68.45979	-1.33494	789.2855
Loan loss reserve % [Loanlossres]	219	2.654539	1.38659	0	7.802
NPL ratio % [Imparedloans]	207	4.259372	2.596639	0	16.1
Loan loss provision % [LoanLossPtoloans]	254	0.803943	1.299404	-13.6213	9.836809

Source: Authors' analysis.

Descriptive statistics of independent variables for all bank types before and after the crisis generally exhibit similar changes as dependent variables with decreased mean and dispersed standard deviation (Table 6). The most significant changes are observed in loan growth rates which drop from an average of 22.08 to 2.4 and non-deposit funding from an average of 7.2 to 4.2. Tier 1 average value increases in the post crisis to 9.6 reflecting banks' adjustments to new capital requirements. Table 7 shows the correlations between the variables considered in the analysis.

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

Table 6. Descriptive statistics of independent variables for all types of banks

Variable	Obs		Mean		Std. Dev.		Min		Max	
	before	after	before	after	Before	After	before	after	before	after
Loan ratio [Netloantoas]	90	80	72.05	67.58	22.29	22.62	2.74	0.58	99.43	96.18
Loan growth rate [Growthloans]	66	78	17.83	3.97	11.67	15.42	-20.65	-53.44	53.92	88.73
Bank size [Logtotassets]	93	83	16.42	16.86	1.66	1.73	13.59	14.17	20.63	20.95
Equity/Total Assets [EqtotAssets]	93	83	6.59	6.36	4.50	4.89	1.05	1.29	27.82	26.81
Tier 1 Capital [Tier1]	55	51	8.94	10.04	3.05	3.27	5.62	2.02	19.60	22.40
Capital [Capitrat]	46	52	11.55	12.14	2.20	2.78	8.80	3.35	19.60	22.40
Equity/ Liabilities [Eqtoliab]	93	83	7.43	7.23	6.10	6.69	1.07	1.31	38.54	36.63

Source: Authors' analysis.

Table 7. Correlation matrix between dependent and independent variables

	Zscore	LLR	NPL	LLP	Loans/TA	Loans Growth	LnTA	Equity /TA	ROAA	Tier 1	Equity /Liabil.	Record shar
Zscore	1											
LLR	-0.14*	1										
NPL	-0.17*	0.80*	1									
LLP	-0.10*	0.38*	0.47*	1								
Loans/TA	0.10*	0.14*	0.03	0.09*	1							
LoansGrowth	0.02	-0.22*	-0.48*	-0.14*	-0.06	1						
LnTA	-0.22*	0.17*	0.21*	0.14*	-0.22*	0.02	1					
Equity/TA	-0.05	-0.02	-0.21*	-0.04	0.21*	0.01	-0.14*	1				
ROAA	-0.04	-0.26*	-0.45*	-0.18*	0.09*	0.16*	0.04	0.66*	1			
Tier1	0.18*	-0.02	-0.03	-0.07	-0.26*	-0.12*	-0.11*	0.53*	0.31*	1		
Equity/Liab.	-0.05	-0.01	-0.19*	-0.03	0.17*	0.01	-0.11*	0.99*	0.68*	0.53*	1	
Recordshar	-0.03	-0.02	0.00	0.06	-0.14*	-0.02	0.50*	-0.12*	0.05	-0.04	-0.11*	1

Notes: * p<.1; ** p<.05; *** p<.01. Source: Authors' analysis.

4. Estimations and Results

This research uses a dynamic panel data modeling and the system Generalized Methods of Moments (GMM) method of estimation. By applying dynamic modelling this paper not only take into account temporal autocorrelation in the residuals, but we are also able to reduce the amount of potential spurious regression, which may lead to incorrect inferences and inconsistent estimation in static models. Since each bank has its own culture and its own way of managing risk, and considering the possibility of an endogenous relationship between variables, we have opted for a methodology based on dynamic panel data, making estimates using the system generalized method of moments (GMM). System GMM is designed for dynamic models and is well suited to tackle the endogeneity problem. By applying Generalized Method of Moments (GMM), we believe we can construct more efficient estimates of the dynamic panel data model. The

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

difference and system GMM estimators developed by Holtz-Eakin et al. (1988); Arellano & Bond (1991); Arellano & Bover (1995) and Blundell & Bond (1998) are designed for situations with "small *T*, large *N*" panels such as ours. They deal well with independent variables that are not strictly exogenous i.e. correlated with past and possibly current realizations of the error, with fixed effects, heteroskedasticity and autocorrelation within individuals (Roodman, 2009). System GMM was developed to tackle the weak instrument problem and allows for the introduction of more instruments and the improvement of the models' efficiency. The model for Z-score is as follows:

$$[logZscore]_{it} = \alpha + \beta_1[logZscore]_{it-1} + \beta_2\,[\text{Corporate Governance Variables}]_{it} + \beta_3\,[\text{Capital Variables}]_{it} + \beta_4\,[\text{Growthloans}]_{it} + \beta_5\,[\text{logEqtoliab}]_{it} + \gamma_1[\text{Logtotassets}]_{\text{it}} + \gamma_2[\text{Netloantoas}]_{\text{it}} + \sum_{t=1}^{8} Year_t + \varepsilon_{it}$$

Where: $logZscore_{it}$ - log of Z-score of bank *i* in period *t* and $logZscore_{it-1}$ is its one period lag; $Corporate\ Governance\ Variables$ are the different corporate governance variables considered in the study; $Capital\ Variables$are the different variables used for Capital; $logGrowthloans$ - logarithm of annual loan growth rate; *Logtotassets* – control variable for bank size; $Netloantoas$ and $Netloantoas_{it-1}$ - control for extent of bank's involvement in lending activity for the current period and one period before. Similarly, we build the baseline model for credit risk variables.

This paper uses the J statistic of over-identifying restrictions in order to test for the absence of correlation between the instruments. Moreover, it applies the error term and m1 and m2 statistics developed by Arellano and Bond (1991) in order to test for the lack of first and second-order serial correlation in our models. In addition, the paper uses a two-step methodology and robust estimation to control for heteroscedasticity.

The results of the estimates showed in Table 8 suggest that savings banks [Savdummy] have a strong negative effect on Z-score. Ianotta et al. (2007) argue that private banks are expected to be more efficient than public banks as the latter provide loans which are not profitable enough for the private sector i.e. loans which are politically motivated. Cuñat & Garicano (2010) also find evidence in support of this hypothesis within the Spanish market arguing that saving banks with higher politicized board members had more exposure to real estate risks. They state that Spanish savings banks do not have formal shareholders and are usually heavily politicized. Furthermore, their shares are not quoted in the stock market and therefore major external bank disciplinary governance mechanisms do not work for this type of bank. As was observed post crisis, most Spanish banks which were found to be in trouble were savings banks. Our findings contradict those of Garcia Marco and Robles-Fernández (2008) as their analyses indicate that Spanish commercial banks exhibit a stronger tendency toward risk-taking than saving banks. But their study is based on an earlier period, namely 1993-2000. In this sense, this research can conclude that the traditional attitude towards risk in Spanish saving banks has shifted towards other more aggressive characteristics contributing to the build-up of excess risk concentration in this type of bank ownership.

The widely held bank proxy, bank's independence indicator [BvDdummy] shows a negative and highly significant effect on banks' Z score. This results contradicts agency theory , suggesting that banks with concentrated ownership are taking lower risk than banks in diffuse ownership and are in line with the findings of (Burkart et al., 1997; García-Marco & Robles-Fernández, 2008; Iannotta et al., 2007).

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

Furthermore, capital has a positive influence on Z-score for all the measures considered in the analysis. Demirgüç-Kunt et al., (2013) state that during the crisis banks with higher capitalization were better valued than undercapitalized banks, though this trend is not observed before the crisis. Since our data includes more crisis and post-crisis data, our findings reflect the importance of all measures of capital in the estimated period. The importance of capital in reducing risk is also supported by Berger & Bouwman (2013), Altunbas et al., (2011), Demirgüç-Kunt et al., (2013), García-Marco & Robles-Fernández (2008) and others. Berger & Bouwman (2013) also stress that for small banks capital is essential for survival at all times (crisis and non-crisis) and for medium and large banks only during crises.

In contrast, *growth of loans* negatively influences Z-score congruous with the findings of Altunbas & Manganelli (2011), Köhler (2012), Martín-Oliver & Saurina, (2007), and Jimenez et al. (2008) among others signifying that banks might have softened their lending standards prior to the crisis and provided more loans to borrowers with a bad or no credit history. Bank size also has a negative effect on Z-score. This is referred to in the literature as "size effect" and is supported by Garcia Marco & Robles-Fernández (2008), Bai & Elyasiani (2013) and Altunbas et al., (2011) among others. In particular, Altunbas et al., (2011) suggested that ex-post bank risk may be associated with ex-ante bank size and the degree of credit expansion in the years preceding the crisis. Banks may intend to maximize the value of implicit government guarantees and disregard risky transactions Bai & Elyasiani (2013). Loan ratios [Netloantoas] are also introduced to control banks' level of involvement in loan activity. GMM estimation is a well-fitting model with statistically insignificant test statistics for both second order autocorrelation and Hansen J-statistics of overidentifying restrictions. It demonstrates that we are able to construct more efficient estimates of the dynamic panel data model by using the system GMM method.

Table 8. Models with Z-score

Variable	Model1	Model2	Model3	Model4	Model6	Model7	Model8
L1.logZ	0.95***	0.96***	0.90	0.98***	0.96***	0.99***	0.98***
Growthloans	-0.03**	-0.03***	-0.04	-0.05	-0.01	-0.03**	-0.03**
Logtotassets	-0.02**	-0.00	-0.05	0.00	-0.03**	0.02*	-0.00
Netloantoassets	-0.00	-0.00	-0.00	-0.00	-0.00**	0.00	0.00
Comdummy	0.14***						
Savdummy		-0.15***					
BvDdummy_			-0.54*				
logRecordshar				-0.05			
logEqtoliab					0.24***		
logTier1						0.26***	
logCapitratio							0.12*
yr2005a	-0.03	-0.02	0.03	-0.04	0.01	0.00	-0.01
yr2006a	0.00	-0.00	-0.01	0.03	0.02	-0.01	-0.00
yr2007a	-0.10***	-0.11***	-0.06	-0.06	-0.07***	-0.16***	-0.14***
yr2008a	0.07**	0.05	0.01	-0.02	0.06	0.09***	0.11***
yr2009a	-0.06	-0.07**	-0.05	-0.03	-0.02	-0.05*	-0.02
yr2010a	-0.05	-0.03	-0.01	-0.04		-0.05	-0.01
_cons	0.65**	0.42*	1.50	0.36*	0.44*	-1.00**	-0.14
N	375	375	126	145	357	258	268
AR(2)	0,565	0,429	0,124	0,325	0,51	0,95	0,826
Hansen	0,828	0,928	0,998	0,999	0,971	0,81	0,999

Note: Table reports the panel data estimates for the system Generalized Method of Moments where the dependent variable is the Log of Z-score [logZ] and all estimates are robust. Year dummies are included. Hansen is a test for overidentifying restrictions, asymptotically distributed. Legend: * p<.1; ** p<.05; *** p<.01 | Source: Authors.

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

Table 9 reports the model results of our second dependent variable Non Performing Loans (NPL). Signs are consistent across all estimation methods and their effect on dependent variable is as we hypothesized. The effect of equity ratio is consistent with earlier discussions - negative and strongly significant in all models. In system GMM estimation the size of the bank is no longer significant whilst one period lag of the total lending ratio is significant and has a positive effect. The diagnostic tests of GMM estimation show that it is a well-fitting model with statistically insignificant test statistics for both second order autocorrelation and Hansen J-statistics of overidentifying restrictions. To summarize, the results of alternative credit risk definitions in general are consistent, suggesting that the effect of the independent variables considered in the analysis are the same in the overall risk and credit risk measure.

Table 9. Models with NPL

Variable	Model1	Model2	Model3	Model4	Model5	Model6	Model7
L1.logNPL	0.7522***	0.7368***	0.7638***	0.8919***	0.7959***	0.6621***	0.6818***
Logtotassets	0.0895**	0.0721*	0.2662	0.0251	0.1103**	0.0439	0.0323
Netloantoassets	0.0079*	0.0077	-0.0053	-0.0053	0.0076*	0.0064	0.0085**
Comdummy	-0.2186***						
Savdummy		0.2218***					
BvDdummy_			-0.6500				
logRecordshar				0.0262			
logEqtoliab	-0.3753***	-0.3215***	-0.1462	0.0673	-0.3660**		
logTier1						-0.5345***	
logCapitrat							-0.5788***
yr2005a	0.0327	0.0388	-0.0091	-0.0024	0.0493	-0.0111	0.0503
yr2006a	0.3675***	0.3703***	0.2713**	0.2769***	0.3509***	0.4007***	0.3672***
yr2007a	0.9391***	0.9395***	1.0043***	0.9634***	0.9310***	1.0737***	1.0169***
yr2008a	-0.4611***	-0.4416***	-0.4924	-0.4766***	-0.5025***	-0.3074***	-0.3297***
yr2009a	-0.2458***	-0.2127***	-0.1755	-0.2777	-0.3216***	-0.1611**	-0.2214***
yr2010a	0.2064***	0.2040***	0.0660	0.0324		0.2066**	0.1423*
_cons	-1.4628*	-1.4762*	-39.230	-0.4365	-1.8531*	-0.3529	0.0057
N	395	395	124	129	365	330	335
AR(2)	0.393	0.407	0.483	0.52	0.495	0.546	0.468
Hansen	0.952	0.957	0.998	0.999	0.246	0.965	0.967

Note: Table reports the panel data estimates for the system Generalized Method of Moments where the dependent variable is the Log of Non Performing Loans [logNPL] and all estimates are robust. Year dummies are included. Hansen is a test for overidentifying restrictions, asymptotically distributed. Legend: * p< .1; ** p<.05; *** p<.01. | Source: Authors' analysis.

Loan Loss Reserves (LLR) reflects banks' estimated losses on loans due to defaults and non-payment (Table 10). It indicates how stable its lending base is and how conservative are banks estimating its future losses. The regressions with LLR are presented in Table 10**Error! Reference source not found.**. As in previous models, capital has a negative and size has a positive effect on risk though the latter does not demonstrate consistency in significant levels. The most interesting finding is that the type of bank is not significant, despite the fact that the sign is in accordance with previous models. Nevertheless, the results contradict the logic of prudent bank behavior which implies reserving more loan provisions during periods of rapid credit growth. Since the provision of loan reserves involves a high degree of subjective judgment it could be used by bank managers as a tool to present a bank's earnings in a better than realistic light. The results are in accordance with Laeven & Majnoni (2003), whose find that banks appear to be less prudent during periods of rapid credit growth. As a result, banks on average create insufficient provisions in good times and are then forced to increase them during cyclical downturns, magnifying losses and the size of negative

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

capital shocks. In this sense, the greater level of risk taking by savings banks seems not to be accompanied by a more prudent estimation of reserves.

Table 10. Models with LLR

Variable	Model1	Model2	Model3	Model4	Model5	Model6
L1.logLLR	0.9344***	0.9328***	0.9650***	0.9527***	0.8506***	0.9030***
Logtotasse~_	0.1172***	0.1086**	-0.01230	0.02990	-0.00620	-0.00270
Netloantoas_	0.0058**	0.0058**	-0.00330	-0.00320	0.00060	0.00090
Comdummy	-0.13050					
Savdummy		0.12800				
BvDdummy_			0.02820			
logRecords~r				0.00580		
logEqtoliab	-0.5343***	-0.5088***	-0.33800	-0.16670		
logTier1					-0.3009***	
logCapitrat						-0.3523***
yr2005a	-0.03330	-0.03960	-0.01200	-0.00140	-0.04270	-0.00840
yr2006a	0.01560	0.02040	0.05190	0.01140	0.0664*	0.0577*
yr2007a	-0.03660	-0.02770	0.10540	-0.02020	0.1702***	0.1560***
yr2008a	0.1608**	0.1562**	0.05820	0.21320	0.0876*	0.0718*
yr2009a	-0.12100	-0.11380	-0.15200	-0.13680	-0.04260	-0.1004*
yr2010a	0.05820	0.05570	0.03760	0.00010	0.07920	0.06420
_cons	-1.15530	-1.18070	1.07500	0.03640	0.7774*	0.8861**
N	408	408	128	135	338	343
hansenp	0.99950	0.99920	0.99990	0.99880	0.99870	0.99990
ar2p	0.40340	0.40660	0.46950	0.73880	0.40830	0.46830

NOTE: Table reports the panel data estimates for the system Generalized Method of Moments where the dependent variable is the Log of Non Performing Loans [logNPL] and all estimates are robust. Year dummies are included. Hansen is a test for overidentifying restrictions, asymptotically distributed. Legend: * p< .1; ** p<.05; *** p<.01.!
Source: Authors' analysis.

As it can be seen in Table 11, the same conclusions have been obtained for different models and the rest of risk variables supporting the robustness of our estimates.

Table 11. Summary Results

Risk Factors	Z-score	Impaired Loans	Loan Loss Reserves
Ownership nature	Decrease with saving banks	Increase with saving banks	_
Ownership concentration	Decrease with widely held banks	Increase with widely held banks	_
Tier 1 ratio	Increase	Decrease	Decrease
Leverage ratio	Increase	Decrease	Decrease
Capital ratio	Increase	Decrease	Decrease

Source: Authors' analysis.

5. Conclusions

The recent global financial crisis has further intensified interest in understanding the possible causes of bank risk-taking and early warning mechanisms to predict bank fragility. This paper re-examines banks' internal governance mechanisms giving special attention to the bank ownership structure and the level of concentration. It also analyzes the sensitivity of capital ratios to bank risk-taking.

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

The findings on bank ownership nature are most consistent and signify the positive association between higher risk and Spanish savings banks. This result confirms the most empirical previous studies and supports the idea of Ianotta et al. (2006) that public banks (or government owned or controlled banks) usually pursue industrial policies and provide loans which may not be profitable enough for the private sector. Further, it seems that the Spanish regional governments could encourage managers to undertake more risk. This research concludes that SSBs due to governance problems encountered higher risk-taking during the crisis. This is also consistent with the fact that the bank bailout has been concentrated mainly on savings banks.

Relating ownership concentration, the results contradict agency theory, suggesting that banks with concentrated ownership are taking lower risk than banks in diffuse ownership and are in line with the findings of (Burkart et al., 1997; García-Marco & Robles-Fernández, 2008; Iannotta et al., 2007). This would imply that when managers feel less controlled by shareholders, could take a riskier strategy. The evidence in this paper also contradict the logic of prudent bank behavior which implies reserving more loan provisions during periods of rapid credit growth in the particular case of saving banks.

The results of banks' equity measures demonstrate their stable risk reducing effect. In contrast with Demirgüç-Kunt et al. (2013), the paper found evidence that all capital ratios have an equivalent effect on financial stability and we haven´t found differences in the quality of capital between the different ratios. Thus, the amount of capital is found to be essential in the crisis period and all equity indicators were equally informative.

This research supports regulatory changes in financial institutions where ownership is widely held and in which ownership or control is public. Measures should be addressed to the professionalization of the managers, the demand for higher levels of responsibility that limiting the excessive risk taking and the control that politicians can exert on the board. It would be possible that new Basel III, country specific regulations and the improvement in supervision of financial institutions by EU can help to alleviate all these problems.

References

Altunbas, Y., Manganelli, S., & Marques-Ibanez, D. (2011). Bank Risk During Financial Crisis. Do Business Model Matter? Working Paper Series N. 1394.

Amihud, Y., & Lev, B. (1981). Risk reduction as a managerial motive for conglomerate mergers. *The bell journal of economics*, 1(1), 605-617.

Anderson, R., & Fraser, D. (2000). Corporate control, bank risk taking, and the health of the banking industry. *Journal of Banking & Finance*, 24(8), 1383-1398.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58(2), 277-297.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, 68 (1), 29-51.

Bai, G., & Elyasiani, E. (2013). Bank stability and managerial compensation. *Journal of Banking & Finance*, 37(3), 799-813.

Beltratti, A., & Stulz, R. (2012). The Credit Crisis Around the Globe: Why Did Some Banks Perform Better? *Journal of Financial Economics*, 105 (1), 1-17.

Berger, A. N., & Bouwman, C. H. (2013). How does capital affect bank performance during financial crises? *Journal of Financial Economics*, 109(1), 146-176.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, 87(1), 115-143.

Boyd, J., & Runkle, D. (1993). Size and Performance of Banking Firms: Testing the Predictions of Theory. *Journal of Monetary Economics*, 31 (1), 47-67.

Burkart, M., Gromb, D., & Panunzi, F. (1997). Large shareholders, monitoring, and the value of the firm. *The Quarterly Journal of Economics*, 112 (3), 693-728.

Cordell, L. R., Mac Donald, G. D., & Wohar, M. E. (1993). Corporate ownership and the thrift crisis. *The Journal of Law and Economics*, 36 (2), 719.

Crespi, R., Garcia-Cestona, M., & Salas, V. (2004). Governance Mechanisms in Spanish Banks. Does Ownership Matter? *Journal of Banking and Finance*, 28(10), 2311-2330.

Cuñat, V., & Garicano, L. (2009). *Did Good Cajas Extend Bad Loans? Governance, Human Capital and Loan Portfolios*. Munich Personal RePEc Archive.

De Nicoló; G., Bartholomew, P., Zaman, J., Zephirin, M., 2004. *Bank consolidation, internalization, and conglomerization*. IMF Working Paper No. 03/158, IMF.

Demirguc-Kunt, A., Detragiache, E., & Merrouche, O. (2013). Bank capital: Lessons from the financial crisis. *Journal of Money, Credit and Banking*, 45(6), 1147-1164.

Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *The Journal of Political Economy*, 93(6), 1155-1177.

Eichler, S., & Sobański, K. (2012). What drives banking sector fragility in the Eurozone? Evidence from stock market data. *Journal of Common Market Studies*, 50(4), 539-560.

Esty, B. C. (1998). The impact of contingent liability on commercial bank risk taking. *Journal of Financial Economics*, 47(2), 189-218.

Franks, J., Mayer, C., & Renneboog, L. (2001). Who disciplines management in poorly performing companies? *Journal of Financial Intermediation*, 10(3), 209-248.

Galai, D., & Masulis, R. W. (1976). The option pricing model and the risk factor of stock. *Journal of Financial Economics*, 3(1), 53-81.

García-Marco, T., & Robles-Fernández, D. (2008). Risk Taking Behaviour and Ownership in the Banking Industry: The Spanish Evidence. *Journal of Economics and Business*, 60(4), 332-354.

Gorton, G., & Rosen, R. (1995). *Banks and derivatives*. NBER Macroeconomics Annual, 10, 299-339.

Gropp, R., & Köller, M. (2010). *Bank Owners or Bank Managers: Who is Keen on Risk? Evidence from Financial Crisis*. Centre for European Economic Research.

Haw, I.-M., Ho, S. S., Hu, B., & Wu, D. (2010). Concentrated control, institutions, and banking sector: An international study. *Journal of Banking & Finance*, 34 (3), 485-497.

Hirshleifer, D., & Thakor, A. V. (1992). Managerial conservatism, project choice, and debt. *Review of Financial Studies*, 5(3), 437-470.

Holtz-Eakin, D., Newey, W., & Rosen, H. S. (1988). Estimating vector autoregressions with panel data. *Econometrica: Journal of the Econometric Society*, 1 (1), 1371-1395.

Iannotta, G., Nocera, G., & Sironi, A. (2007). Ownership structure, risk and performance in the European banking industry. *Journal of Banking & Finance*, 31 (7), 2127-2149.

Illueca, M., Norden, L., & Udell, G. F. (2014). Liberalization and Risk-Taking: Evidence from Government-Controlled Banks. *Review of Finance*, 18 (4), 1217-1257.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3 (4), 305-360.

Jiménez, G., & Saurina, J. (2004). Collateral, type of lender and relationship banking as determinants of credit risk. *Journal of Banking & Finance*, 28(9), 2191-2212.

Jimenez, G., Ongena, S., Peydro, J., & Saurina, J. (2008). *Hazardous times for monetary policy: What Do Twenty-Three Million Bank Loans Say About the Effect of Monetary Policy on Credit Risk?* CERP Discussion Paper.

Köhler, M. (2012). Which banks are more risky? *The impact of loan growth and business model on bank risk-taking*. Deutsche Bundesbank Discussion Paper, No 33.

Kumbhakar, S. C., Lozano-Vivas, A., Lovell, C. K., & Hasan, I. (2001). The effects of deregulation on the performance of financial institutions: the case of Spanish savings banks. *Journal of Money, Credit and Banking*, 1 (1), 101-120.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2002). Government ownership of banks. *The Journal of Finance*, 57(1), 265-301.

EJABM European Journal of Applied Business and Management
ISSN 2183-5594

Laeven, L., & Levine, R. (2009). Bank governance, regulation and risk taking. *Journal of Financial Economics*, 93 (2), 259-275.

Laeven, L., & Majnoni, G. (2003). Loan loss provisioning and economic slowdowns: too much, too late? *Journal of Financial Intermediation*, 12 (2), 178–197.

Martín-Oliver, A., & Saurina, J. (2007). *Why do banks securitize assets*. XV Spanish Finance Forum Conference.

Michalak, T., & Uhde, A. (2009). *Credit Risk Securitization and Banking Stability: Evidence from the Micro-Level for Europe*. 22nd Australasian Finance and Banking Conference.

Pathan, S. (2009). Strong Boards, CEO Power and Bank risk-taking. *Journal of Banking and Finance*, 33(7), 1340-1350.

Rasmusen, E. (1988). Mutual Banks and Stock Banks. *Journal of Law and Economics*, 31 (2), 395-421.

Roodman,D., 2009. A Note on the Theme of Too Many Instruments. *Oxford Bulletin of Economics and Statistics*, 71 (1), 135-158, 02.

Sagarra, M., Mar-Molinero, C., & García-Cestona, M. (2015). Spanish savings banks in the credit crunch: could distress have been predicted before the crisis? A multivariate statistical analysis. *The European Journal of Finance*, 21 (3), 195-214.

Saunders, A., Strock, E., & Travlos, N. G. (1990). Ownership structure, deregulation, and bank risk taking. *The Journal of Finance*, 45 (2), 643-654.

Verbrugge, J. A., & Goldstein, S. J. (1981). Risk return, and managerial objectives: Some evidence from the savings and loan industry. *Journal of Financial Research*, 4 (1), 45-58.