

FINANCIAL PERFORMANCE AFTER THE SPANISH BANKING REFORMS: A COMPARATIVE STUDY OF 19 COMMERCIAL BANKS

Pison F. Irene, Cibrán F. Pilar**, Ntoug A. T. Lious****

Abstract

A diagnostic review of the Spanish financial system during the 2008 financial crisis reveals the emergency need for banking reform in the sector. In an attempt to evaluate the impact of the Spanish reform, the present study examines the bank's performance before/after the reform was adopted, using data of 19 Spanish commercial banks extracted from the Global Vantage research database (Standard and Poor's) over the period 2006 to 2013. This study uses multivariable regression method to investigate the impact of the CAMELS rating system: capital adequacy, asset quality, management quality, liquidity and sensitivity to market risks on the bank's performance such as earnings efficiency. The time-line of the study is essential because it helps us to determine the financial performance of Spanish commercial banks before the banking reforms during the financial crisis and an important set in terms of mergers and acquisition in the banking industry. The empirical results have found strong and positive evidence that Capital Adequacy, Management Capacity, Liquidity and Sensitivity to Market Risk are useful predictors of banks performance (earnings efficiency), thus, any reform pilot toward this banking indicators will eventually have a positive impact on banking performance. Base on the present study, the Spanish reform was so vital for better banking performance. Therefore, this study serves not only to academics but also to policy makers.

Keywords: Bank's Performance, Commercial Banks, CAMELS, Spanish Financial System, Financial Crisis

* *Department of Financial Economic and Accounting, University of Vigo, Pontevedra, Spain*

Email: pison@uvigo.es

** *Department of Financial Economic and Accounting, University of Vigo, Pontevedra, Spain*

Email: pcibrán@uvigo.es

****Department of Financial Economic and Accounting, University of Vigo, Pontevedra, Spain*

Email: lagbortabotntoug@alumnos.uvigo.es

1. Introduction

After the 2008 financial crisis, the performance of financial service has become the number one priority of most government officials. It is because banks and other financial institutions are known as the most important activity since their strategies affect economic development, employment, prices and national income (IMF, 2014). Thus, any positive or negative events encountered in this sector, is possible to impose threat to the entire economy. In other word, financial crisis encountered by countries primarily have its effect on the banking sector which is later being spread on the others sectors in the economy (Cibrán et al., 2008).

According to the recent financial crisis which causes bankruptcy around the world, Spain was placed at the top list because of the crucial state of its banking system which makes its economy vulnerable (Carbó-Valverde, 2011), unsustainable fiscal deficits,

rising borrowing cost, rapid job loss and severe financial turmoil (IMF, 2014). Before the crisis, the presentation of the income statements of Spanish banks 2007 reveal more traditional banking crisis, consisting of excess leverage and excess mismatch of the timing of assets and liabilities which was materialized under the shadow of an unregulated and unsupervised banking system.

Following the diagnosis of financial stability forum, evidence shows that low real interest rates and abundant liquidity; and a wave of financial innovation with little or no supervision by the authorities in charged were the core stimulus of the Spanish banking crisis. Thus, the spin off effect of the global financial crisis on Spanish banking sector makes Spain in collaboration with the European Financial Stability Facility (EFSF) developed a supported program aimed to gear the financial sector's participation to these forces by requiring weak banks

to more decisively clean their balance sheet and by reforming the sector's policy framework (FSF,2008).

Further, to know how effective and efficient banking system is, efficient use of credits, and all the guidelines stipulated by the reform's authority on Spanish banks, it is vital to assess the financial performance of the banking sector before and after the reforms. Financial performance indicates how the banks and other financial institutions use the available stipulated guidelines to protect the banking operating against continue risk or due to gambling incentive related to capital market (Tekler et al. (2011).

Even though performance measurement entails identifying criteria and features that have crucial role in reaching the goal of a bank, Atkinson, (1997) illustrates criteria for evaluating firm's performance: measurement must be significant and understandable from the viewpoint of user; measurement method must be reliable and stable; and must be reviewed and generally be accepted by all people from difference perspectives. Nevertheless, banks and other financial service firms pose a special challenge appraising them for some reasons: difficulty in cash flow estimation; heavily regulated and changes in regulatory requirement; and assets being marked to market more frequently (Damodaran, 2009).

In this paper, we focus on bank's performance before/after the reform was adopted by the Spanish banking sector. We shall argue in this paper that reforms in the financial sector have been the core factor for the overall increase in net gain in the sector. Reforms in this sector have been well sequenced; taking the state of the market in the other segments or has large externality and formed the key institutions maintaining the payment system of an economy. Therefore, we employ CAMELS technique used in measuring bank performance which consists of six components: capital adequacy, asset quality, management, earning, liquidity and sensitivity to market risks. The dataset of this study consists of 19 commercial operating Spanish banks during 2006 to 2013. The timing period reveals very important set in terms of mergers and acquisition in the banking industry after the reform legislation was passed.

In the second section, we provide a brief insight of the existing literature covering: the Spanish financial system; banking sector reforms; and a summary of studies using the CAMELS rating system

in order to achieve financial performance in the banking sectors. Research design and the variable measurement employed in assessing the hypothesis of the present study will be discussed in third section. In the fourth section, we present and interpret the result obtained from third section. Lessons emerging from the Spanish experience for issues of topical relevance for the monetary authorities are considered in the final section.

2. Literature Review

2.1. Spanish financial sector

In broad term, financial service firm refers to any firm that is able to produce financial products or services. In Spain especially, when referring to financial service firms, more reference can be seen from the evolution of the Cajas de Ahorros Españoles (Pison Fernández, & Feijóo Souto, 2003). In fact, financial sector has been one of the most innovation and dynamic in the last 20 or 30 years (Huarte et al., 1989). It was precisely this intense innovation alone side with under-regulated financial system which incubated the 2008 financial crisis. Speaking of Spanish banks, creditable legislation was passed even though the separation between banks, insurance companies, investment banks and firms was always seemed artificial.

According Real Decreto-Ley11/2010, banks were giving a wide range of choosing the legal form they wish to develop specific financial activity. Recently, even though the financial crisis has marked a decline in the Spanish financial system, it is certain that is only part of the European financial system and as such demonstrate the continue need for external funding, integration and unification of the European financial system. Thus, the financial service sector has been the foundation of the Spanish economy (Pisón Fernández, 1980); banks providing much of the capital for growth and foreshadow both equity and bond markets as pioneers in risking sharing. Table 1 below summarizes the market capitalization of publicly traded banks, insurance companies, brokerage houses, investment firms and thrift in Spain after the reforms in the financial sector.

Table 1. List of 19 commercial banks in Spain used in the study

Commercial Banks	Global Vantage Key (GV Key)
Banco de Sabadella SA	245436
Banco Popular Español	15522
Banco Santander SA	14140
BFA Bankia	297957
BBVA Umim	15181
Caixabanco SA	286879
Unicaja Cesis	16307
Banco Valencia	281571
NCG Banco	243431
Grupo Catalana SA	212641
Liberbanco SA	281232
Libercaja SA	30875
BMN	286879
Kutxabanco-cajarsur	287851
Soixa Sicav SA	284815
Sotogrande SA	208183
Union Europea	16307
Urbas Grupo SA	104955

Source: Key (GV Key) of Spanish Banks extracted from the Global Vantage (Standard and Poor) database

2.2. Banking Sector Reform

The main objective of the banking sector reforms was to ensure adequate bank capitalization and reduce uncertainty regarding the strength of their balance sheets; legal framework for a swift and orderly process of financial sector restructuring and sound operating environment with the ultimate goal of improving the allocative efficiency of resources through operational flexibility, improved financial viability and institutional strengthening (RGS, 2012). Furthermore, the reforms have focussed to re-establish its access to the market, ensuring credit starts to flow into the real economy, removing financial repression through reductions in statutory pre-emption, while stepping up prudential regulations at the same time (RGS, 2012). The banking sector reform was strategized in two approaches.

First, clean up and protecting order of the balance sheets of financial entities (IMF, 2014) was approved under an initiative from the government, with two separate external assessment reports. In particular, a special emphasis was placed on improving credibility of the Spanish financial system and clarifies any doubts regarding the bank's balance sheets, thus creating flexibility for recapitalisation of about 100 billion Euros from its European partners with a proportion of 16 and 26 billion Euros at best and of between 51 and 62 billion Euros at worst (RGS, 2012).

Second, active step were taken by the Spanish government to established legislation assumed under the *memorandum of understanding* for the recapitalisation of the banking sector and strengthens the crisis resolution instruments available to credit entities, thus, reducing the probability and seriousness of future economic crises. Also, the supervisory

system was revamped in view of the crucial role of supervision in the creation of an efficient banking system as in table 2 (see appendix).

Measures to improve the performance of the Spanish banking system have included (i) early stage risks are identify and address through continued proactive monitoring and supervision in order to ensure adequate provisioning; (ii) banks are encourage bolster capital in ways that do not irritate already - tight credit condition; (iii) restructuring corporate debt and reducing impediments to assets disposal; (iv) the use of more complete banking union and more monetary easing by the ECB to further reduce funding cost and easing of credit condition through swift progress; (v) institutionalisation of a mechanism facilitating greater coordination for regulation and supervision of financial conglomerates; and (vi) mitigation of conflict of interest through enhance of FROB's checks and balances as well as maintaining corporate governance and internal control strategy for the loss of control over saving and commercial banks (RGS, 2012 & IMF, 2014).

2.3. The History of CAMEL

The determination of financial performance of commercial banks using the application of CAMEL rating system have been growing both local and internationally. Initially, CAMEL was developed in the US by regulating bodies administering commercial banks in order to detect the financial distress of a saving bank (CBRE, 2013). As regard to the history of introducing CAMEL, it was originally implemented by the US banking institution which consists of five areas of bank performance, namely, capital adequacy, asset quality, management quality, earnings efficiency, and liquidity. CAMEL rating

system was aimed at appraising the performance of commercial banks during the early 1970s. Since then, the application of CAMELS has spread up globally in respect of evaluating the financial performance in the banking sector (Abassgholi, 2010).

With respect to the predicting bank failure in recent years, several academic studies have illustrated the extent to which private supervisory measures are useful in controlling bank's deficiency. The emergency of the banking crisis during the 1990 have stipulated the provision of another component to the CAMEL rating system called *Sensitivity to Market Risk* (S). Thus, the criteria for evaluating the performance of the banks under the CAMELS became capital adequacy, asset quality, management quality, earnings efficiency, liquidity and sensitivity to market risk. Consistent with this measurement,

International Monetary Fund 2014 research illustrated CAMELS ratios as the most efficient measurement in term of preserving financial stability.

In Spain, Banco de España as a regulatory body in joint collaboration with European Financial Stability Facility (EFSF) have found the CAMELS rating system useful in the assessment of the financial soundness of commercial banks after the great reforms in the sector. In recent research, the CAMELS rating system have been found very interesting in the measurement of financial performance of state, private and foreign banks after the global financial crisis (Dincer et al., 2011). Finally, table 3 below illustrates several studies using the CAMELS ratio in order to achieve performance measurement of banking sector during the financial crisis.

Table 3. Research conducted using the CAMELS rating system

Research Title	Authors	Year
The Future of Community Banks: Lessons from Banks That Thrived During the Recent Financial Crisis	Gilbert R. Alton, Andrew P. Meyer, & James W. Fuchs	2013
The Effects of Board Size of Financial Performance of Banks	Uwuigbe, O. R. & Fakile, A. S.	2012
Relative Performance of Commercial Banks in India Using CAMEL Approach	Sriharsha Reddy Kambhammettu	2012
Measuring the financial performance of banks using CAMEL model; comparing traditional combined and Islamic banks of Pakistan	Kouser & Saba	2012
The CAMEL rating system in banking supervision. A case study	Uyen Dang	2011
Risk Management, Corporate Governance and Banks Performance in the Financial Crisis.	Aebi Vincent, Sabata, G & Schmid, M	2011
A Performance Evaluation of the Turkish banking Sector after the Global Crisis via CAMELS ratios.	Dincer, H., Gencer, G., Orhan, N. & Shabinbas, K	2011
Efficiency ratio and bank performance (Using the CAMEL approach)	Hays et al.,	2010
A Comparison of Financial performance in the Jordanian Commercial banks	Al-Taleb, G. & Al-Shubiri, F. N.	2010
Financial Crisis	Anderson, R. G. & Gascon, C.	2009
Los modelos de control de gestión de la actividad bancaria: capacidad predictiva para el cumplimiento de objetivos en los proceso de crisis	Pilar Cibrán, F., Huarte, C. G. & Beltrán, V. J. L	2008
Is the Internet Delivery Channel Changing Banks 'Performance?	Harnando, I. & Nieto, M. J.	2007

Source: Developed by researcher purposely for this study

3. Research Design

This study used secondary data drawn from Global Vantage research database (Standard and Poor's), of 19 Spanish commercial banks during 2006 to 2012 (see table 1 above), and the time frame is chosen because it was during the last quarter of 2007 that the Spanish Financial Crisis began. All banks have available yearly data for the CAMELS rating system except for the year 2013 that the data were drawn directly from the annual report of each bank using the variable measurement process as stipulated below. Each bank has its own code, called Global Vantage Key (GV Key).

The time-line of the study is essential because it helps us to determine the financial performance of Spanish commercial banks before the banking reforms during the financial crisis. It further expands

the year to 2012 to 2013 as to identify the banking performance after the reforms of the financial sectors using simple regression. The timing period reveals very important set in terms of mergers and acquisition in the banking industry.

Since this study aims to examine the relationship between the variables, it used a correlation method to test the assumptions of the multivariable regression. Thus, it is consistent with Gilbert et al., (2013); O & A, (2011); Coleman & Biekpe, (2005); and Hays et al., (2010). The equation becomes:

$$\text{Bank Performance} = f(\text{Capital adequacy, Assets quality, Management capacity, Liquidity, Market risk})$$

$$ROE = f(CAP, ASS, MGE, LIQ, MRISK) \quad (1)$$

The regression equation becomes:

$$ROE_{it} = \beta_0 + \beta_1 CAP_{it} + \beta_2 ASS_{it} + \beta_3 MGE_{it} + \beta_4 LIQ_{it} + \beta_5 MRISK_{it} + \mu_{it} \quad (2)$$

Where;

- ROE_{it} represents *Return on Equity* for bank i at time t
- CAP_{it} represents *Capital Adequacy* for bank i at time t
- ASS_{it} represents *Asset Quality* for bank i at time t
- MGE_{it} represent *Management Capacity* for bank i at time t
- LIQ_{it} represent *Liquidity* for bank i at time t
- $MRISK_{it}$ represent *Sensitivity to Market Risk* for bank i at time t
- μ_{it} = Error term

- β_i represent the *coefficients* of the independent variables
- $i = 1$ to 19 banks
- $t = 2006$ to 2013

3.1. Variable Measurement

Capital adequacy ratio expresses in percentage the amount of a bank's capital to its risk weighted credit exposures. According the international standard, banks must maintain a minimum capital adequacy ratio to ensure that it can absorb a reasonable level of losses before becoming insolvent (BS2A, 2013; FRBSF, 1999; NCUA, 2013 and AIA, 1996).

$$\text{Capital adequacy ratio} = \frac{(\text{Tier 1 capital} - \text{goodwill}) + \text{Tier 2 capital}}{\text{risk-weighted assets}} \geq 8\%$$

$$\text{Equity capital to total assets} = \frac{\text{Total capital}}{\text{Total assets}} \geq 4 - 6\%$$

Asset quality is very important because it is allows evaluation of the quality of loan portfolio using trend analysis and peer comparison. Thus, the greatest risk face by bank is the risk of loan losses derived from the delinquent loans. According to the

European Central Bank (ECB), asset quality enhances the level of transparency of the balance sheet of significant banks and rebuilds investor confidence (ECB, 2014 & AIA, 1996).

$$NPLs \text{ to total equity} = \frac{NPLs}{\text{Total Equity}} \leq 1\%$$

$$\text{Provision for loan loss ratio} = \frac{\text{Provision for loan loss}}{\text{Total Loans}} \geq 100\%$$

Management capacity: The AIA approach stipulated that the management capacity plays the most important role in a bank's success. This can be attributed to operating ratio, profit per employee, expenses per employee, and gross earning assets to

total assets. Bank's board size reveals an outstanding financial performance and reduces the problem of free-rider in Nigeria (Uwuigbe & Fakile, 2012; AIA, 1996).

$$\text{Management capacity ratio} = \frac{\text{General expenses}}{\text{Total Assets}}$$

Earning quality: The capacity of profitability has contributed greatly in maintain the financial health of financial sector in Spain. For the purpose of

appraising the impact of earnings on banks, this paper has taken in to consideration the following accounting ratio below (Cibrán et al., 1997).

$$\text{Earning quality ratio} = \frac{\text{Net profit before Taxes}}{\frac{\text{Total Assets}}{\text{Net profit}}}$$

$$\text{Earning quality ratio} = \frac{\text{Net profit before Taxes}}{\text{Total Equity}}$$

Liquidity expresses the degree to which bank is capable of mobilizing short-term deposits at lower interest rate, and investing these funds in long-term at higher rates, thus maintain the level of liquidity

sufficiently to meet its financial obligation in a timely manner with minimal loss (BS2A, 2013; FRBSF, 1999; UFIRS, 2013; NCUA, 2013 and AIA, 1996).

$$\text{Customer deposits to total assets} = \frac{\text{Total customer deposits}}{\text{Total Assets}} \geq 75\%$$

Market risk addresses the changes in interest rates and foreign exchange rates. It reflects the capital and earnings exposures that stem from changes in interest rates for banks that operate in credit card lending. Thus, changes in interest rates affect earnings by changing net interest income and the level of other interest-sensitivity income and operating capital. For purpose of this study, we consider the gross domestic product (GDP), consumer price index (INF) and market capitalization (MC) to reflect the market risk (BS2A, 2013; FRBSF, 1999; UFIRS, 2013; NCUA, 2013 and AIA, 1996).

3.2. Hypotheses

The main aim is to illustrate the predictability chain in which changes in the banking performance may be assess through the exploitation of CAMELS rating system before/after the reforms of the banking sectors using multivariable regression method. Based on the above measurement, the present study seeks to test the following hypotheses:

H₁₀: $\beta = 0$ (*Capital Adequacy* is not a useful predictor of *banks performance*)

H_{1a}: $\beta \neq 0$ (*Capital Adequacy* is a useful predictor of *banks performance*)

H₂₀: $\beta = 0$ (*Asset Quality* is not a useful predictor of *banks performance*)

H_{2a}: $\beta \neq 0$ (*Asset Quality* is a useful predictor of *banks performance*)

H₃₀: $\beta = 0$ (*Management Capacity* is not a useful predictor of *banks performance*)

H_{3a}: $\beta \neq 0$ (*Management Capacity* is a useful predictor of *banks performance*)

H₄₀: $\beta = 0$ (*Liquidity* is not a useful predictor of *banks performance*)

H_{4a}: $\beta \neq 0$ (*Liquidity* is a useful predictor of *banks performance*)

H₅₀: $\beta = 0$ (*Sensitivity to market risk* is not a useful predictor of *banks performance*)

H_{5a}: $\beta \neq 0$ (*Sensitivity to market risk* is a useful predictor of *banks performance*)

4. Results

4.1. Descriptive Statistics

In table 4.1 below, the mean and the standard deviation revealed the best measure of the central tendency for the 19 financial banks in Spain before the financial reforms. Our samples on average shown that the banks were able to generate Return on Equity (ROE) of about 1,36% and standard deviation of 0,04%, with our coefficient of variation (CV) of about 2,9%; CAP of about 1%; ASS of about 9%; MGE of about -10,18; LIQ of about 6%; and MRISK of about 15%. Statistically, this shows the fitness of our model in terms of the relative sizes of the squared residuals and outcome values.

Table 4.1. Before the financial banking reforms (2006-2011)

	N	Minimum	Maximum	Mean	St. Deviation	Coefficient of Variation
ROE	19	-5,30	7,42	1,36	0,04	2,9%
CAP	19	0,00	88,52	19,99	1,22	1%
ASS	19	0,00	69,03	18,75	1,69	9%
MGE	19	-149	19,11	-4,44	4,52	-10,18%
LIQ	19	0,00	78,51	16,33	1,05	6%
MRISK	19	-9,17	10,47	2,52	3,85	15%

Source: Computed by researchers using data of banks extracted from the Global Vantage (Standard and Poor) database

Table 4.2 below, illustrated the relative variability of 19 commercial banks in Spain after the financial reform was implemented. Our samples on average shown that the banks were able to generate Return on Equity (ROE) of about -16,85% and

standard deviation of 5,56%, with our coefficient of variation (CV) of about 33%; CAP of about 1,6%; ASS of about 2%; MGE of about -22,9; LIQ of about 4%; and MRISK of about 26,4%.

Table 4.2. After the financial banking reforms (2012-2013)

	N	Minimum	Maximum	Mean	St. Deviation	Coefficient of Variation
ROE	19	239,73	2,14	-16,85	5,56	-33%
CAP	19	-26,03	53,38	11,14	0,73	1,6%
ASS	19	0,00	114,99	25,271	0,48	2%
MGE	19	-86,79	15,51	-9,73	2,230	-22,9%
LIQ	19	-272,72	35,40	3,15	0,14	4%
MRISK	19	-5,00	2,30	-2,36	6,24	-264%

Source: Computed by researchers using data of banks extracted from the Global Vantage (Standard and Poor) database

Unlike in table 4.3 below, where the coefficient of variation (CV) were less than a 100% but had the most recorded high values with -5% for ROE; CAP of about 11%; ASS of about 49%; MGE of about 28%; LIQ of about 1,4%; and MRISK of about 91%

before and after the Spain financial reform. Thus, it shows the fitness of our model in terms of the relative sizes of the squared residuals and outcome values which is consistent with (George et al., 2003).

Table 4.3. The financial banking reforms (2006-2013)

	N	Minimum	Maximum	Mean	St. Deviation	Coefficient of Variation
ROE	19	-59,11	5,84	-3,65	0,2	-5%
CAP	19	-2,95	77,81	20,31	2,23	11%
ASS	19	0,00	80,52	23,27	2,07	49%
MGE	19	-128,5	16,83	6,60	1,83	28%
LIQ	19	-48,59	58,05	12,92	0,18	1,4%
MRISK	19	-10,63	7,85	1,49	1,35	91%

Source: Computed by researcher using data of banks extracted from the Global Vantage (Standard and Poor) database

4.2 Pearson Correlation Coefficients

Table 5.1 below ascertained the correlation between the dependent (ROE) and the predictors (CAP, ASS, MGE and MRISK) before the financial sector reform during the period 2006 to 2011. It was also used to check the existent of multicollarity between predictors in each of the regression models with a benchmark of 0,9 (Field, 2009).

Analysing table 5.1 revealed that most of the correlation between ROE, CAP, ASS, MGE and MRISK were highly significant ($p < 0,01$), ranged between 0,583 and 0,821. Return on Equity (ROE) was highly significantly and positively correlated with Capital Adequacy (CAP) Management quality (MGE) and Sensitivity to Market Risk (MRISK). Return on Equity (ROE) was highly significantly and negatively correlated with Assets quality (ASS) and Liquidity (LIQ).

Table 5.1. Correlation Results before the Financial Sector Reform (2006-2011)

		ROE	CAP	ASS	MGE	LIQ	MRISK
ROE	Correlation de Pearson	1	,583**	-,573*	,654**	-,542*	,821**
	Sig. (bilateral)		,009	,010	,002	,017	,000
CAP	Correlation de Pearson	,583**	1	-,070	-,005	-,446	,474*
	Sig. (bilateral)	,009		,776	,983	,056	,040
ASS	Correlation de Pearson	-,573*	-,070	1	-,740**	,688**	-,592**
	Sig. (bilateral)	,010	,776		,000	,001	,008
MGE	Correlation de Pearson	,654**	-,005	-,740**	1	-,458*	,590**
	Sig. (bilateral)	,002	,983	,000		,049	,008
LIQ	Correlation de Pearson	-,542*	-,446	,688**	-,458*	1	-,733**
	Sig. (bilateral)	,017	,056	,001	,049		,000
MRISK	Correlation de Pearson	,821**	,474*	-,592**	,590**	-,733**	1
	Sig. (bilateral)	,000	,040	,008	,008	,000	

** Correlation is significant at the level 0,01 (2- tailed).

* Correlation is significant at the level 0,05 (2- tailed).

Source: Computed by researchers using SPSS 22 (2014).

Table 5.2 below summarised the correlation results between return on equity and capital adequacy, assets quality, management capacity, liquidity and sensitivity to market risk after the Spanish financial reforms during the year 2012 to 2013. Analysing table 5.2 revealed that return on

equity (ROE) have significant and positive correlation with capital adequacy (CAP), assets quality (ASS), liquidity (LIQ) and sensitivity to market risk (MRISK) at $p < 0,05$, ranged between 0,519 and 0,792 but no significant correlation with management capacity (MGE) at $p > 0,05$.

Table 5.2. Correlation Results after the Financial Sector Reform (2012-2013)

		ROE	CAP	ASS	MGE	LIQ	MRISK
ROE	Correlation de Pearson	1	,519	,792	,002	,986**	,660**
	Sig. (bilateral)		,027**	,005**	,994	,000	,006
CAP	Correlation de Pearson	,519	1	-,540	-,188	,501	-,213
	Sig. (bilateral)	,027**		,005**	,442	,000*	,382
ASS	Correlation de Pearson	,792	-,540	1	-,185	,651**	-,625**
	Sig. (bilateral)	,005**	,005**		,449	,007	,004
MGE	Correlation de Pearson	,002	-,188	-,185	1	-,095	,525*
	Sig. (bilateral)	,994	,442	,449		,697	,021
LIQ	Correlation de Pearson	,986**	,501	,651**	-,095	1	,614**
	Sig. (bilateral)	,000	,000*	,007	,697		,005
MRISK	Correlation de Pearson	,660**	-,213	-,625**	,525*	,614**	1
	Sig. (bilateral)	,006	,382	,004	,021	,005	

** Correlation is significant at the level 0,01 (2- tailed).

* Correlation is significant at the level 0,05 (2- tailed).

Source: Computed by researchers using SPSS 22 (2014).

Like in table 5.3 below, which illustrated the correlation results between the dependent (ROE) and the predictors (CAP, ASS, MGE and MRISK) before/after the financial sector reform during the period 2006 to 2013. Analysing table 5.3 shown that return on equity (ROE) have significant and positive correlation with capital adequacy (CAP), assets quality (ASS), liquidity (LIQ) and sensitivity to market risk (MRISK) at $p < 0,05$, ranged between 0,377 and 0,643 but no significant correlation with management capacity (MGE) at $p > 0,05$.

Finally, there were evidence of significant correlation between the dependent variable (ROE)

and the predictors (ROE, CAP, ASS, MGE and MRISK) across the difference periods. However, the result revealed that before the reforms in the financial sector, management capacity exhibited exponential power on the banking performance unlike after the financial reforms from 2012 to 2013. The predictors were also significantly autocorrelated with each other which was acceptable since there were no substantial correlation ($r < 0,9$) between the predictor (MGE) that could cause multicollinearity issues in the studied banks in Spain.

Table 5.3. Correlation Results before/after the Financial Sector Reform (2006-2013)

		ROE	CAP	ASS	MGE	LIQ	MRISK
ROE	Correlation de Pearson	1	,643**	,433**	,024	,597*	-,377**
	Sig. (bilateral)		,007	,002	,923	,01	,002
CAP	Correlation de Pearson	,643**	1	-,732**	-,733**	-,003	,613**
	Sig. (bilateral)	,007		,000	,000	,991	,005
ASS	Correlation de Pearson	,433**	-,732**	1	,717**	,726**	-,393
	Sig. (bilateral)	,002	,000		,001	,003	,096
MGE	Correlation de Pearson	,024	-,733**	,717**	1	,652**	-,256
	Sig. (bilateral)	,923	,000	,001		,004	,291
LIQ	Correlation de Pearson	,597*	-,003	,726**	,652**	1	,625**
	Sig. (bilateral)	,01	,991	,003	,004		,004
MRISK	Correlation de Pearson	-,377**	,613**	-,393	-,256	,625**	1
	Sig. (bilateral)	,002	,005	,096	,291	,004	

** Correlation is significant at the level 0,01 (2- tailed).

* Correlation is significant at the level 0,05 (2- tailed).

Source: Computed by researchers using SPSS 22 (2014).

4.3 Regression Analysis

Table 6 below, summarised the regression statistics from the estimating models 1, 2 and 3 to test the banking performance before/after the Banking reforms in the Spanish economy during a long chain period of financial crisis. The results revealed that all three ROE models (Model 1, Model 2 and Model 3) were highly significant in explaining variations in the banking performance (F statistics, $p < 0.01$). The adjusted R^2 result in Model 1 shows that a unit change in predictors (*CAP, ASS, MGE and MRISK*) let to about 82% change in ROE ($F=17,62$, $p < 0.01$).

After the banking reforms was implemented, the adjusted R^2 result in Model 2 shown that a unit

change in predictors (*CAP, ASS, MGE and MRISK*) let to about 44% change in ROE ($F=3,79$, $p < 0.05$). However, we noticed that the explanatory power decreased in the adjusted R^2 from 82% to 44% after the banking reforms was implemented. In contrast, the adjusted R^2 result in Model 3 shown that a unit change in predictors (*CAP, ASS, MGE and MRISK*) let to about 78% change in ROE ($F=13,23$, $p < 0.01$).

Comparing the adjusted R^2 of the three models, Model 1 and Model 3 have stronger explanatory powers with $R^2=0,82$ and $0,78$ respectively while Model 2 exhibits weaker explanatory power with $R^2=0,44$.

Table 6. Regression coefficients

	2006-2011		2012-2013		2006-2013	
Independent Variables	ROE					
	-,698**	(0,018)	7,015*	(0,060)	-10,188**	(0,01)
CAP	4,058**	(0,002)	2,938**	(0,03)	0,223**	(0,011)
ASS	-0,039	(0,241)	0,471	(0,126)	-0,411**	(0,004)
MGE	2,406**	(0,011)	3,125**	(0,029)	1,236*	(0,097)
LIQ	0,023*	(0,056)	-1,387**	(0,011)	-0,087	(0,259)
MRISK	0,063*	(0,058)	1,612**	(0,014)	2,820***	(0,000)
R^2	0,871		0,593		0,836	
Adjusted R^2	0,822		0,436		0,773	
F – Statistics	17,622		3,785		13,230	
Significant	(0,000)***		(0,025)**		(0,000)***	

Source: Computed by researchers using SPSS 22 (2014)

The values of the Dubin-Watson statistics ranged between 1,5 and 2,5 which were within the statistic rules of thumb, indicating the residuals of the regression models are uncorrelated and independent. Also, the variance inflation factor (VIF) checked the

present of multicollinearity (O'Brien, 2007 & Belsey et al., 2004) and concluded that there was no multicollinearity problem with the model as in table 6 below.

Table 7. Valibility, Reliability and Objectivity

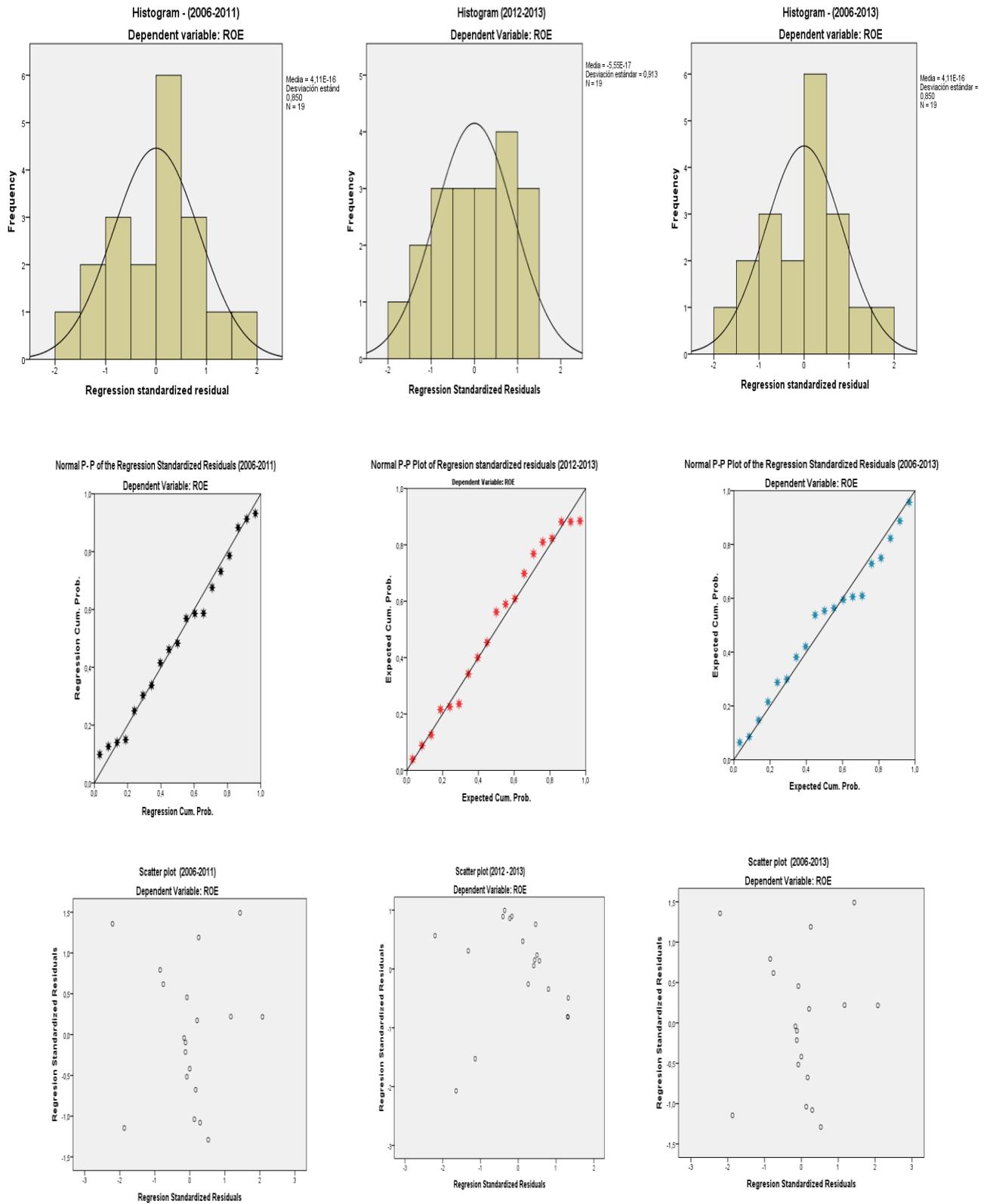
	2006-2011		2012-2013		2006-2013	
	Durbin –Watson (1,5-2,5)					
	2,009		2,175		1,771	
	Collinearity Statistics (<5)					
	<i>Tolerance</i>	<i>VIF</i>	<i>Tolerance</i>	<i>VIF</i>	<i>Tolerance</i>	<i>VIF</i>
CAP	0,592	1,688	0,527	1,896	0,860	1,163
ASS	0,676	2,619	0,808	1,246	0,639	3,179
MGE	0,518	2,147	0,574	2,651	0,567	2,724
LIQ	0,757	1,802	0,660	1,514	0,638	2,959
MRISK	0,696	2,273	0,835	1,198	0,817	1,933

Source: Computed by researchers using SPSS 22 (2014)

Histograms and scatter-plot graphs were further developed from the residuals to check the existence of normality with the distribution and the adhered of

the assumptions of homoscedasticity (Tabachnick, 2001) and linearity figure 1 below.

Figure 1. Validity, reliability and objectivity of the Model



Source: Computed by researchers using SPSS 22 (2014)

5. Conclusion

In Spain, the banking services have been categorized as most important activity in the economy, thus banking performance remain at stake to many investors and governmental policies makers. Using the CAMELS rating system along side with multivariable regression have shown that the 19 Spanish banks can maintain high banking performance by increasing the Capital Adequacy, Management Capacity, Liquidity and Sensitivity to Market Risk. Since the reforms had as objective to ensure that transfer of assets does not affect management effectiveness, in Model 2, there was no correlation between assets quality and management capacity. The significant values of the F Statistics across the three models as shown above demonstrate that the models are not bias.

Therefore, in Model 1 (before the banking reforms), we reject the null hypotheses and accept the alternative hypotheses which states *Capital Adequacy, Management Capacity, Liquidity and Sensitivity to Market Risk* are useful predictors of *banks performance* while we do not reject the null hypothesis which *Assets Quality* is not a useful predictor of *banks performance* (see table 6 above). There is significant relationship found between *Capital Adequacy, Management Capacity, Liquidity and Sensitivity to Market Risk* and *Banks performance*.

In Model 2 (after the banking reforms were implemented), we reject the null hypotheses and accept the alternative hypotheses which states *Capital Adequacy, Management Capacity, Liquidity and Sensitivity to Market Risk* are useful predictors of *banks performance* while we do not reject the null hypothesis which *Assets Quality* is not a useful predictor of *banks performance* (see table 6 above).

In Model 3 (before/after the banking reforms), we reject the null hypotheses and accept the alternative hypotheses which states *Capital Adequacy, Management Capacity, Assets Quality and Sensitivity to Market Risk* are useful predictors of *banks performance* while we do not reject the null hypothesis which *Liquidity* is not a useful predictor of *banks performance* (see table 6 above). The non-significant relationship found between liquidity and Banks performance is consistent with the conclusion drawn by prior studies in table 3.

References:

- Abassgholi Pour, M, (2010), "Factors affecting the performance of banks", *Journal of banking and finance*, No.106, pp. 24-35.
- AIA Annual Report, (2010), Retrieved October 20, 2011. Available at: http://media.corporateir.net/Media_Files/IROL/23/238804/AIA_2010Annual_Report_End_Final.pdf
- Belsey, D. A., Kuh, E., & Welsch, R. E, (2004), *Regression diagnostics: Identifying influential data and sources of collinearity*. New York: Wiley
- C'M'S'Albiñana & Suárez de Lezo, (2012), *Saneamiento Del Sector Financiero*, Real Decreto-Ley 2/2012.
- Carbó-Valverde, S., Marques-Ibanez, D., & Fernandez, F. R, (2011), "Securitization, Risk transferring and Financial Instability: The Case of Spain", August 15,. Available at SSRN: <http://ssrn.com/abstract=1909751>
- Cecilio H. G., Pilar Cibrán F. M., & Garrido Valenzuela, I, (1989), "Análisis cuantitativo del proceso de transformación bancaria dentro del marco de la innovación financiera", *Revista de economía y empresa*, ISSN 0213-2834, Vol. 9, N° 23.
- Coleman, A., & Nicholas- Biekpe, N, (2005), "Does Board and CEO Matter for Bank Performance? A Comparative Analysis of Banks in Ghana", *Journal of Business Management*, University of Stellenbosch Business School (USB), Cape Town, South Africa Vol.13, Pp.46- 59.
- Collins, J. and Hussey, R 2003, *Business Research*, 2nd edn, Palgrave Macmillan, New York.
- Commercial Bank Report of Examination; Section 6000.1, *Banking Information and Regulation*, Federal Reserve Board, October, 2013.
- Damodaran A, (2009), "Valuation of Financial Service Firm", Stern School of Business, consulted at <http://people.stern.nyu.edu/adamodar/pdfiles/papers/finfirm09.pdf>
- Dinçer, H., Gencer, G., Orhan, N. & Şahinbaş, K, (2011), "A Performance Evaluation of the Turkish Banking Sector After the Global Crisis via CAMELS Ratios", *Procedia Social and Behavioral Sciences*, 24: 1530-1545.
- European Central Bank, (2014), *Makes progress with asset quality review, and confirms stress test parameters for comprehensive assessment*, EUROSISTEM, 3 February 2014.
- Field, A, (2009), *Discovering statistics using SPSS*, 3rd edn, Sage Publication, London.
- Financial Stability Forum, (2008), *Report on Financial Stability Forum on Enhancing Market and Institutional Resilience*, Publication Service Washington, D.C, 7th April, available at http://www.financialstabilityboard.org/publications/r_0804.pdf
- George F. R., Freyja L. & Bruce D. M, (2003), *Use of Coefficient of Variation in Assessing Variability of Quantitative Assays*, *Clin Diagn Lab Immunol*, November, 10 (6): 1162
- Gilbert, R. Alton, Andrew P. Meyer and James W. Fuchs (2013), *The Future of Community Banks: Lessons from Banks that Thrived during the Recent Financial Crisis*, Federal Reserve Bank of St. Louis Review, March/April 115-43.
- Hays, Fred H. & Lurgio, Stephen A. De & Gilbert, Jr. & Arthur H, (2010), "Efficiency Ratios and Community Bank Performance", *Journal of Finance and Accountancy*, pp.1-15.
- Ignacio Hernando and María J. Nieto, (2006), *IS THE INTERNET DELIVERY CHANNEL CHANGING BANKS' PERFORMANCE? THE CASE OF SPANISH BANKS* Banco de España Documentos de Trabajo N.º 0624.
- International Monetary Fund, (2014), *Spain: Financial Sector Reform – Final Progress Report* IMF Country

- Report No.14/59, Publication Service Washington, D.C, available at <http://www.imf.org/external/pubs/ft/scr/2014/cr1459.pdf>
20. Jose A. Lopez, (1999), *Using CAMELS Rating to Monitor Bank Condition* Federal Reserve Bank of San Francisco, Economic Letter Index, Issues 99-19.
 21. Kouser, Rehana & Saba, Irum, (2012), "Gauging the Financial Performance of Banking Sector using CAMEL Model: Comparison of Conventional, Mixed and Pure Islamic Banks in Pakistan", *International Research Journal of Finance and Economics*, Issue 82, pp.67-88.
 22. National Credits Union Administration Regulation 2013, CAMELS rating, NCUAR, 1775 Duke Street, Alexandria, VA 22314-3428.
 23. O'Brien, R.M, (2007), "A caution regarding rules of thumb for variance inflation" factors, *Quality & Quantity*, 41, 673-690.
 24. Pilar Cibrán, F. M., Crespo D. M. A., Huarte, G. C, (1997), "El Beneficio Por Acción", *Actualidad Financiera*, ISSN 0213-6929, Año nº 2, N° Extra 4.
 25. Pilar Cibrán, M. F., Huarte, C. G., & Beltrán Varandela, J. L, (2008), "Impacto de la crisis financiera sobre la gestión bancaria: análisis empírico del sistema financiero español", *Revistas de Economía y Empresas* ISBN 978-84-691-5667-4, páge. 113-124.
 26. Pison Fernández, I. C. & Feijóo Souto, B. F, (2003), "Las cajas de ahorro en Europa: valoración de las cajas de ahorro gallegas". *Universidad de Santiago de Compostela: Tórculo*, ISBN 84-8408-275-X.
 27. Pison Fernández, I. C, (1980), "El sistema financiero español y la financiación de la empresa en Galicia", *Universidad de Santiago de Compostela*, ISBN 84-7191-236-8.
 28. Reddy, Sriharsa , (2012) "Relative performance of commercial banks in India using CAMEL approach." *International Journal of Multidisciplinary Research* 2.
 29. Reforms by the Government of Spain, (2012), *Combating the Crisis with Determination*, Moncloa Palace. Available at http://www.kas.de/wf/doc/kas_8049-1442-1-30.pdf?121029115820
 30. Reserve Bank, (2013), "Capital Adequacy Framework: Standardised Approach", *Prudential Supervisory Department, Document BS2A*, Issued September, Ref # 3023654, New Zealand.
 31. Richard G. Anderson and Charles S. Gascon, (2009), *The Commercial Paper Market, the Fed, and the 2007-2009 Financial Crisis*, Federal Reserve Bank of St. Louis Review, November/December 2009, 91(6), pp. 589-612.
 32. Tabachnick. B. G., & Fidell, L. S, (2001),, *Using Multivariate Statistics*, 4th ed. Boston MA: Allyn and Bacon
 33. Teker, D., Teker, S., & Sönmez, M, (2011), "Economic value added performance of publicly owned Banks: Evidence from Turkey". *International Research Journal of Finance & Economics*, (75), 133-137.
 34. Uwuigbe, O. R., & Fakile, A. S, (2012), "The Effects of Board Size on Financial Performance of Banks: A Study of Listed Banks in Nigeria", *International Journal of Economics and Finance*, Vol. 4, No. 2.

APPENDIX

Table 1. Reform in the Spanish Banking Sector Outlines

<p>Box I</p> <p>Reform in the Spanish Banking Sector</p> <p>Bank restructuring and resolution</p> <ul style="list-style-type: none">• Promptly address capital shortfalls so that all capital needs are met by end-December.• Ensure that any aggregate downsizing of credit portfolios as part of banks' restructuring plans is consistent with an adequate supply of credit to the economy.• Apply burden-sharing powers to minimize the overall costs for taxpayers.• Avoid new mergers that do not clearly generate value.• Quickly wind down non-viable banks in an orderly manner.• Ensure no delay in the provision of ESM financing for recapitalization, with the ESM converting initial financing via ESM bonds into cash as quickly as feasible. <p>AMC</p> <ul style="list-style-type: none">• Avoid future expansions of the AMC's perimeter unless critical.• Develop incentive structures that focus the AMC's management exclusively on maximizing the value out of the sale and restructuring of its assets.• Ensure the transfer of assets does not affect their effective management.• Pursue vendor financing agreements with banks. <p>Legal and institutional framework for bank restructuring and resolution</p> <ul style="list-style-type: none">• Formalize a cooperation agreement between the Bank of Spain and the FROB to clarify respective responsibilities.• Enhance the FROB's checks and balances and internal controls to mitigate possible conflicts of interest.• Formulate clear and easy-to-monitor governance arrangements and ownership policies for nationalized banks, as well as an exit strategy from such banks.• Introduce depositor preference.• Adopt regulations implementing the RDL to clarify the criteria for the departure from the <i>pari passu</i> treatment of creditors in resolution, subject to the "no creditors worse off rule" and based on sound public policy principles. <p>Regulatory and supervisory framework</p> <ul style="list-style-type: none">• Enhance the corporate governance regime for savings banks, and design a strategy for their loss of control over commercial banks.

Source: Reforms by the Government of Spain, (2012); Spain: Financial Sector Reform – Final Progress Report, IMF (2014)