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Risk management in the banking industry

Tesis Doctoral

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Table of Contents

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Part I – Doctoral thesis objectives, structure and methodology

Chapter 1 - Introduction

Chapter 1 - Introduction

1.1 Background

The last global financial crisis casted doubt on the level of understanding the financial markets' stakeholders have on financial institutions risks and complexities. The economic recession, which began in 2008, resulted in the crash of some financial institutions that led to the development of new procedures and guidelines in the banking industry.

A proof that banks are too clever for regulators was evident in Q4 2012 when the European Banking Authority (EBA) conducted a study to understand how banks measured the riskiness of their assets. The EBA concluded there were "material differences" in the way risks are measured across 89 banks in 16 countries. Andrea Enria, chairman of the EBA, said some of the differences could be accounted for by more explanation about the methodology being used. *"But this is not enough. The remaining dispersion is significant and calls for further investigations and possibly policy solutions"*, he added [1].

In this line, former British prime minister Tony Blair has accepted some responsibility for the state of Britain's economy after admitting his government failed to understand the complexity of the financial sector or foresee that it was on the brink of crisis, *"I think what happened – and this is really important for people to understand – this global financial crisis was the product of a whole new way that the financial and banking sector has been working in this past 20 or 30 years, where you have got this deep integration of the global economy and where you have a lot of financial instruments that were created whose*

[1] The Guardian, 2013. Banks still too clever for regulators.
http://www.theguardian.com/business/blog/2013/feb/26/banks-regulators-risk-measurement-europe-eba
Accessed: 14/12/15

impact people didn't properly understand", he said[2].

The banking business is highly regulated because depositary financial institutions capture public savings and have specific risks and complexities that make their financial statements opaque and difficult to analyze by the general public (Petrella and Resti, 2013; Morgan, 2001). So, it is difficult to understand that in a sector with such a strict regulatory environment nothing could be done to foresee and prevent the last global financial crisis. The characteristics that make financial institutions different from other type of companies were, at the end of the day, the causes of their collapse.

To understand and monitor the specific risks in the financial sector firms, the US regulator designed the CAMELS rating system, which is commonly used by regulators worldwide to assess the strength of financial institutions and to evaluate the level of bank risks (Office of the Comptroller of the Currency, 2013). The risks that this approach assesses are the specific risks of financial institutions: capital risk, assets quality, management skills, earning and profitability, liquidity risk and sensitivity to market risk. The CAMELS approach is not only used in the US as it is the approach used by regulators worldwide. One example is the supervisory method used by the Banco de España (the Spanish regulator) which is called Risk-Based Supervisory Methodology Approach and it is based on the CAMELS rating system. This method helps to assess which institutions are more likely to develop problems in the future, in order to dedicate additional supervisory resources and to prevent future crises (Banco de España, 2011).

One of the main characteristics of the financial sector is that it is filled with firms that are too big, complex, and "systemically important" to manage, govern, or allow to fail. Professor Simon Johnson and several other important

[2] The Guardian, 2012. Tony Blair admits Labour didn't fully understand complex financial sector. http://www.theguardian.com/politics/2012/jul/22/tony-blair-labour-financial-crisis Accessed: 14/12/15

scholars argue that the best way to prevent future financial disasters at the expense of society is to break-up the largest financial institutions. The rationale behind this is that with smaller financial institutions, a potential collapse of some of them would not bring the international finance system into turmoil (Johnson, 2011). Johnson admits that smaller financial institutions would not be sufficient to ensure financial stability, but they would ensure more efficient supervision and will reduce systemic risks in cases of financial turmoil. In an attempt to end "too big to fail" and protect the American taxpayer by ending bailouts, the US Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act as a response to the 2008 financial crisis. But, according to Sen. Richard Shelby, chairman of the Senate Committee on Banking, Housing, and Urban Affairs, "Dodd-Frank has actually encouraged the biggest banks to become larger and more concentrated".

To add complexity to the "too big to fail" problem, another factor that distinguishes banks with other firms is that only the former use deposits to finance themselves. Deposits, in the form of bank accounts, are not only held by households but also by businesses that use them for transaction purposes and reserves. Banks finance themselves with deposits and equity capital and invest in risky assets. Archarya et al. (2014) show that "leverage must be high enough to induce the discipline imposed by creditors, but low enough to ensure that the bank's risk taking is not excessive". They argue that this optimal capital structure can be broken by the presence of regulatory safety nets such as deposit insurance, bailouts or central banks acting as lender of last resort. These safety nets are used by regulators to avoid the intermediation services collapse that could impact on the financial stability of the economy. But the safety nets could encourage banks to increase the leverage and at the same time, depositors face lower risk that could lead them to be less involved in the monitoring of bank's management performance.

Considering this, setting an optimal capital requirement is the desire of every financial services sector regulator because it will help them to comply with their mandate of keeping financial stability. In order to address and monitor the banking business risks, regulators use risk management tools to achieve regulatory objectives. Such supervisory efforts increase during periods of financial turmoil because bank opacity tends to increase (Flannery et al., 2010) and hence, regulators use stress tests to assess not only the vulnerability of individual banks but also of the entire banking system (Drehmann et al., 2010; Sorge and Virolainen, 2006). As the main concerns of regulators is financial failure, they design a supervisory system that allows them to prevent institutional failure that could lead to the breakdown of the main financial functions in the economy such as the payment system, savings transformation and the monetary policy transmission mechanism (Weber, 2014).

The European Banking Authority (EBA) was established in January 2011 in the wake of the financial crisis as part of the European System of Financial Supervision (ESFS) and took over all existing responsibilities and tasks of the Committee of European Banking Supervisors (CEBS). The EBA describes itself on its website as follows: *"The main task of the EBA is to contribute to the creation of the European Single Rulebook in banking whose objective is to provide a single set of harmonised prudential rules for financial institutions throughout the EU. The authority also plays an important role in promoting convergence of supervisory practices and is mandated to assess risks and vulnerabilities in the EU banking sector."* The use of stress testing after the financial crisis by the EBA is consistent with Basel III requirements that move towards a system of banking supervision more risk-oriented, especially generating measures or models that can anticipate or show vulnerabilities of financial institutions.

In May 2009, the CEBS carried out an EU-wide forward-looking stress test of the banking system, building on common guidelines and scenarios, for a

sample of 22 major European cross-border banking groups. Under the baseline scenario, which reflects the macro-economic projections, the banks' aggregate Tier 1 capital ratio (a measure of banks' financial health) was estimated above 9%, compared to the Basel minimum requirement of 4% in force in 2009. The aggregate Tier 1 ratio for the banks in the sample was estimated to remain above 8% and no bank was supposed to see its Tier 1 ratio falling under 6% as a result of the adverse scenario.

The 2010 stress testing exercise included a sample of 91 European banks, representing 65% of the European market in terms of total assets, in coordination with 20 national supervisory authorities. It was conducted over a 2 years horizon, until the end of 2011, under severe assumptions. The stress test focused mainly on credit and market risks, including the exposures to European sovereign debt. As a result of the adverse scenario after a sovereign shock, 7 banks were supposed to see their Tier 1 capital ratio fall below 6%. The threshold of 6% was used as a benchmark solely for the purpose of the stress test exercise. All banks that were supervised in the EU needed to have at least a regulatory minimum of 4% Tier 1 capital ratio by that time. For the institutions that failed to meet the threshold in the stress test exercise, the competent national authorities were required to be in close contact with these banks to assess the results of the test and their implications, in particular in terms of need for recapitalization.

In 2011, the EBA conducted a EU-wide stress test that targeted 90 banks in 21 countries. The aim of the 2011 EU-wide stress test is to assess the resilience of the banks involved in the exercise against an adverse but plausible scenario. Eight banks fell below the capital threshold of 5% Tier 1 Capital Ratio over the two -year time horizon. Sixteen banks showed a Tier 1 Capital Ratio of between 5% and 6%. On the basis of these results, the EBA had also issued its first formal recommendation stating that national supervisory authorities

should require banks whose Tier 1 Capital Ratio falls below the 5% threshold to promptly remedy their capital shortfall.

The 2014 stress test included 123 banking groups across the EU and including Norway with a total of EUR 28,000 bn of assets covering more than 70% of total EU banking assets. The impact of the stress test was assessed in terms of the Tier 1 Capital Ratio for which a 5.5% and 8.0% hurdle rate were defined for the adverse and the baseline scenario respectively. Over the three-year horizon of the exercise, 24 banks would fall below the 5.5% Tier 1 Capital Ratio threshold and the overall shortfall would total EUR 24.6 bn.

In July 2015 the EBA announced the 2016 EU-wide stress test exercise is expected to be launched in the first quarter of 2016, with the release of the detailed scenario and methodology. The assessment and quality checks are expected to be concluded by the third quarter of 2016, when EU banks' individual results will be released.

Stress tests are also used by individual banks as a risk management tool to assess their own weaknesses and exposure to risk, following the guidelines and recommendations set by regulators that aim to identify how much capital the bank needs to be prepared against shocks that could impact on its current capital and to the minimum capital requirements (Basel Committee on Banking Supervision, 2006; Peura and Jokivuolle, 2004). The similarity of stress testing used at a macro level with the techniques used by individual banks as an integral part of the risk management system (see Summer, 2008), together with the recommendation of supervisors about the use of stress tests as risk management tools for banks (Basel Committee on Banking Supervision, 2006; Financial Stability Forum, 2008), suggest that stress testing is becoming very important for regulators (Drehmann et al., 2010).

Recent studies discuss the informational role of stress testing to bank management and financial markets. Goldstein and Sapra (2013) discuss

whether the stress testing results should be disclosed or not. Based on the argument that stress tests are not able to tests scenarios that are extreme enough to simulate a true scenario, Das (2011) argues that the disclosure of stress testing results is inherently flawed. In a recent study related to the disclosure of 2011 EU stress test results, Petrella and Resti (2013) find evidence of prices drop for tested banks on pre-results date (dilution effect) showing the concern of investors about the possibility that these banks could be under-capitalized. Their research shows that the stress tests produce "valuable information for market participants". The release of bad results by regulators should call the industry attention and lead bank managers to improve the quality of the risk management tools used to assess the entity strength (D'Cruz and Crippa, 2012).

As financial institutions are vital for financial stability, governments have to avoid their collapse at all costs and hence, devote a significant amount of resources to rescuing the banks. The bankruptcy of a bank has immediate social costs on depositors as well as an impact on other banks, on the payment system, and can destabilize the entire banking sector. This is why, by the end of February 2009, the financial rescue schemes which involved capital injections, bank asset purchases, guarantees and the issuance of banking securities, swaps and other guarantees amounted to a total government commitment of 22 % of GDP for the European Union and 29 % of GDP for the United States. The US banks had to write down more than $600 billion in assets and accounted losses for more than $1 trillion in market capitalization after 2007-2008. In the United Kingdom the situation was quite similar. Haldane (2010) estimated that the 'social wealth transfer' in saving 'too big to fail' banks in the UK amounted to approximately £50 bn in 2009, on top of approximately £140 bn of lost GDP generated by the crisis.

As a consequence of the effort that the society as a whole made to rescue the financial system, financial institutions were viewed by the society as profit

maximizing companies that did not look after their clients' interests but for their own managers' interests (Dow 2011). Moral hazard in the financial sector has been analyzed in relation to loans granted to clients that were not creditworthy, high risk sophisticated financial products offered to financially unsophisticated clients and also because the states provided unlimited support to banks in the form of deposit insurance and lender-of-last-resort (Dow, 2011). The main discussion around moral hazard relates to the fact that depositary financial institutions are tempted to take on higher risks because of the protection they have from central banks through the lender-of-last-resort facility or depositor protection through state-sponsored deposit insurance (Calomiris, 1998; Önder and Özyildirim, 2008; Ratnosvski and Huang, 2009).

According to a survey conducted among banking executives at 225 companies done for PR and communications firm Makovsky by market researcher Ebiquity by mid-2014, more than 80% of financial institutions' communications, marketing and investor relations managers said that they think the financial crisis of 2008 is still having a negative impact on their companies. Banking executives concede it will take several more years for banks to regain the trust they lost[3].

Baker et al. (2013) find that customers experiencing negative emotions with a service failure usually respond non-verbally and may file a third party complaint. Then, the FI can appear in a public complaint report that the agency issues. This fact will affect future profits of the FI because reputation will decrease (Rose & Thomsen, 2004).

[3] Money.cnn.com, 2014. Banks know that customers hate them. http://money.cnn.com/2014/06/17/investing/banks-crisis-reputation/ Accessed: 14/12/15

Financial institutions can show customers they care about them by handling the complaints they file about the services they provide timely and efficiently. To make sure this is the case, regulators require financial institutions to design and implement a complaint handling process.

In the United Kingdom, the Financial Conduct Authority (FCA) policies require financial services firms to informally resolve customers' complaints within the end of the next business day. Failing that, the complaint becomes formal and recordable. After an eight-week period from being made formal, the customer can refer the complaint to the Financial Ombudsman Service (FOS) for an independent final resolution. The FCA has proposed extending this resolution period from one to three business days while also allowing customers to immediately refer any dispute to the FOS. This new rules will be in force by 2016.

Banco de España, the Spanish banking regulator, publishes information on customers' complaints to increase financial services sector transparency. Users must file the complaint directly with the FI's Complaints Service (CS) or Ombudsman. If the FI does not reply within two months or replies negatively, the user can file the complaint with the BE's CS. Reports of the BE's CS are not binding for FI, so they can: a) ignore the decision; b) be proactive and amend the error before the BE issues the report; or c) be reactive and rectify after the report issuance. If the FI takes remedial actions during that process, the BE closes the file. The BE Governor, Luis María Linde said *"We will talk to the banks. We are going to provide the resources we can, but the banks have to pay more interest and be more involved in this area of customer care. We will talk to banks and credit institutions to make this happen"* [4].

[4] Eldia.es, 2014. Linde pedirá a la banca atender las reclamaciones de consumidores. http://web.eldia.es/economia/2014-06-18/1-Linde-pedira-banca-atender-reclamaciones-consumidores.htm Accessed: 14/12/15

The new approach of complaints handling aims to meet the growing relevance and social impact of financial institutions relationship with customers, which is a component of great importance for the sound functioning of the financial services sector and is a matter that regulators is considering as relevant. An efficient complaints' handling process is part of a firm's Corporate Social Responsibility policies. BBVA includes in its 2014 Corporate Social Responsibility Report a chapter title "Responsible client management - Claims and Complaints management" where it is stated *"The customer experience and the service quality are the key levers to attract and retain customers in the new competitive environment. Claims, as a source of the voice of the customer, allow us to identify the causes behind the complaints and activate action plans. Undoubtedly, they represent a moment of truth, which provide relevant information to management about the reasons of customer dissatisfaction"* (BBVA, 2014).

The concept of corporate social responsibility (CSR) in the financial services sector not only refers to firm's responsibility for the impact that their actions have on their stakeholders, but also to their role as financial intermediaries (Prior and Argandoña 2009). De la Cuesta-González et al. (2006) argue that the CSR concept affects the financial sector from a two-pronged perspective: a) in the internal dimension which implies the implementation of environmental and socially responsible initiatives within the entity's internal management procedures and b) in the external dimension, which implies the incorporation of CSR into the entity's business of financial intermediation and investment in the financial markets. This should lead to incorporating environmental and social considerations in the design of the financial products, in the credit policies and investment strategies. Consequently, the business strategy and the risk management should take CSR into account.

The idea of the inclusion of CSR in risk management programs in the financial sector has been taken into account by Bangladesh Bank (the Central Bank of

Bangladesh) in recent policies issued (Bangladesh Bank 2011). In this policy, the Bangladeshi authority requires the environmental risk to be incorporated in the Core Risk Management (CRM) that mandates considering environmental risk in the overall credit risk assessment methodology applied by banks. Additionally, this will have an impact in the computation of Risk-Adjusted Capital Ratio and the CAMELS rating of the institution.

Considering this, the Global Reporting Initiative has issued the GRI Financial Services Sector disclosures, a sector supplement that addresses specific industry issues that are not contemplated in the general GRI guidelines. The external dimension of CSR in financial institutions mentioned by de la Cuesta-González et al. (2006) is contemplated in the "Product and service impact" section of the GRI Financial Services Sector supplement (Global Reporting Initiative 2013). It requires the firm to design and implement procedures for assessing and screening environmental and social risks in business lines, process and monitor clients' implementation of and compliance with environmental and social requirements included in agreements, transactions and initiatives to mitigate environmental impacts of products and services (Global Reporting Initiative, 2013).

The Financial Services Sector disclosures contains a set of disclosures for use by all financial institutions that cover key aspects of sustainability performance that are relevant to the Financial Services Sector and which are not sufficiently covered in the general GRI guidelines:

- FS1 Policies with specific environmental and social components applied to business lines
- FS2 Procedures for assessing and screening environmental and social risks in business lines

- FS3 Processes for monitoring clients' implementation of and compliance with environmental and social requirements included in agreements or transactions
- FS4 Processes for improving staff competency to implement the environmental and social policies and procedures as applied to business lines
- FS5 Interactions with clients/investees/business partners regarding environmental and social risks and opportunities
- FS6 Percentage of the portfolio for business lines by specific region, size (e.g. micro/SME/large) and by sector
- FS7 Monetary value of products and services designed to deliver a specific social benefit for each business line broken down by purpose
- FS8 Monetary value of products and services designed to deliver a specific environmental benefit for each business line broken down by purpose
- FS9 Coverage and frequency of audits to assess implementation of environmental and social policies and risk assessment procedures
- FS10 Percentage and number of companies held in the institution's portfolio with which the reporting organization has interacted on environmental or social issues
- FS11 Percentage of assets subject to positive and negative environmental or social screening.
- FS12 Voting policies applied to environmental or social issues for shares over which the reporting organization holds the right to vote shares or advises on voting
- FS13 Access points in low-populated or economically disadvantaged areas by type
- FS14 Initiatives to improve access to financial services for disadvantaged people

- FS15 Policies for the fair design and sale of financial products and services
- FS16 Initiatives to enhance financial literacy by type of beneficiary

Whilst the Financial Services Sector Supplement became operational in 2008, its use become obligatory for reporters to be recognized as a GRI A-Level reporter as of 1 January 2010.

1.2 Motivations of this research

The recent global financial crisis made clear the lack of understanding the financial institutions' stakeholders had about the level of risk and complexities these institutions have. Governments and regulators realized they were not achieving the objectives of monitoring financial institutions to make sure they are healthy to constitute a stable financial system. Bank management realized they were not identifying new risks and complexities in the industry and hence, they were not addressing and mitigating them appropriately. And financial services users lost trust in banks in the wake of the crisis.

In this new financial services sector scenario, governments and regulators implement new regulatory risk management tools such as stress tests that help to identify financial institutions weaknesses timely. Financial institutions also incorporate these regulatory tools as part of their risk management system to be aligned with the regulator. This regulatory tool is not commonly used in emerging markets and this adds to the opacity of these markets. Additionally, to regain the trust of their more demanding customers, financial institutions get involved in corporate social responsibility activities. Customers require banks to manage their complaints timely and proactively and dissatisfied customers tend to switch bank and this translates in a profit reduction of the financial institution.

These changes in the financial services sector are recent, so research is needed to understand what are the characteristics of the banks that are incorporating the information provided by the regulatory stress testing exercise to adapt their risk profile and adjust their capital ratio, whether this attitude differs between emerging and developed markets, what are the characteristics of the banks that get involved in corporate social responsibility activities to be closer to their customers and what are the characteristics of the banks with higher reputation.

The need to understand the changes in this new global financial services sector is the main motivation of this thesis.

The results of this study will be useful for regulators, to better understand the effect of the new regulatory tools used, how the supervised institutions react to them and to adapt regulations and policies; for financial institutions, to understand the usefulness of stress testing as a component of their risk management system; for customers, to better understand the behavior of the financial institutions to which they trust their savings and for researchers, to build on the banking research and to identify future research avenues.

1.3 Structure of this thesis

This thesis is presented in six chapters. The structure and content of each chapter is as follows:

Chapter 1 introduces the research topic, motivation, objectives and the importance of the thesis. The first chapter also articulates the main research questions and the context of the study.

Chapter 2 presents the literature review, research design and methodology, results and conclusions related to stress test and bank risk profile: does stress testing play a disciplinary and informational role to adjust the capital ratio? Under the theory that individual financial institutions and regulators use stress tests as a risk management tool, results show that financial institutions with

certain risk profile receive a more negative impact in the stress test performed by the regulator and modify their capital ratio through risk shifting. The findings also show evidence that regulatory stress tests play a disciplinary role in determining bank's target capital ratio.

Chapter 3 presents the literature review, research design and methodology, results and conclusions related to capital structure adjustment and risk shifting moral hazard: the bank opacity effect in emerging markets. Results show that Latin America & The Caribbean (LAC) banks adjust different sets of accounting indicators, which are determined following central bank and accounting policies, to compute their Tier 1 Capital Ratio (T1CR) and Total Capital Ratio (TCR) because there is no other available information to consider in the calculation due to the higher opacity in emerging markets. On the contrary, EU banks count with additional information in a more transparent market and adjust their capital ratios according to additional information and not on accounting information. We also find stronger evidence of risk shifting moral hazard in LAC banks than in EU banks, because even though in both markets some banks' specific characteristics determine the risk level, only in LAC the T1CR adjusts differently than TCR. Finally, the results also provide evidence that even though LAC banks have larger capital buffers, they are much riskier than EU banks.

Chapter 4 presents the literature review, research design and methodology, results and conclusions related to corporate social responsibility and bank risk profile: Evidence from Europe. Financial institutions with lower capital risk, higher liquidity risk, higher profitability in the banking business and higher sensitivity to market risk tend to issue a corporate social responsibility report (CSR). Among the financial institutions that issue a CSR report, the ones with lower profitability in the banking business disclose higher quality CSR financial services sector specific information while the ones that get their CSR

report assured by PwC and EY or that do not get the report assured do the opposite.

Chapter 5 presents the literature review, research design and methodology, results and conclusions related to complaints management and bank risk profile. The main results show that financial institutions usually "amending" errors have a different risk profile from those usually "rectifying" errors. This research may help regulators monitor financial institutions.

Chapter 6 presents the literature review, research design and methodology, results and conclusions related to reputation loss and risk management in the banking industry. Results show that financial institutions with large and complex business structures, with significant amounts of loans and liquid assets booked, with low capitalization level, that are highly profitable in the banking business and that issue a sustainability report, are at risk of losing reputation if they are not able to have an appropriate risk management system.

Chapter 7 presents the general conclusions of the thesis.

Figure 1.1 – The rationale behind the thesis' chapters

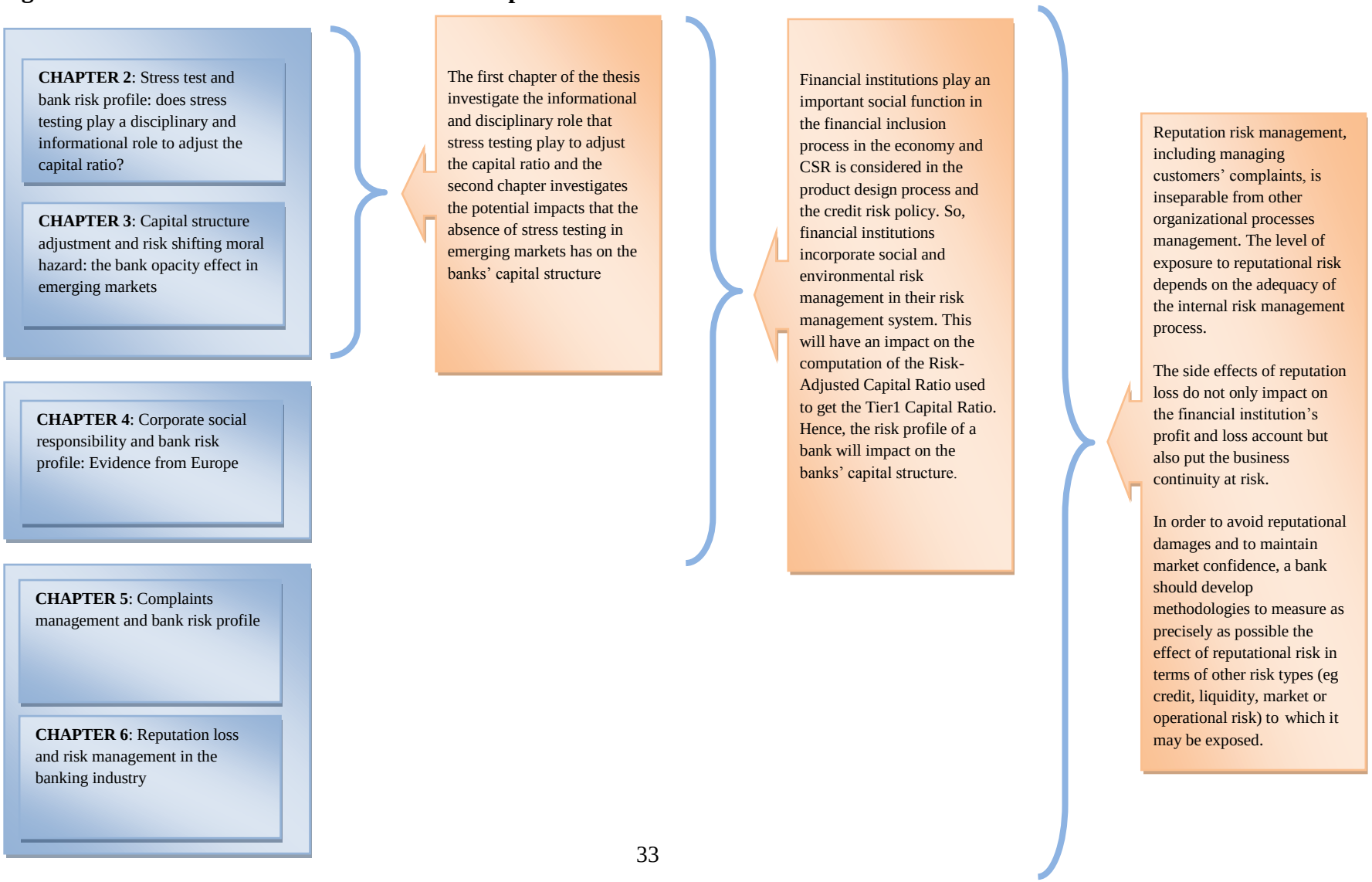


Figure 1.2 – Panel A – Chapters' objectives and hypotheses

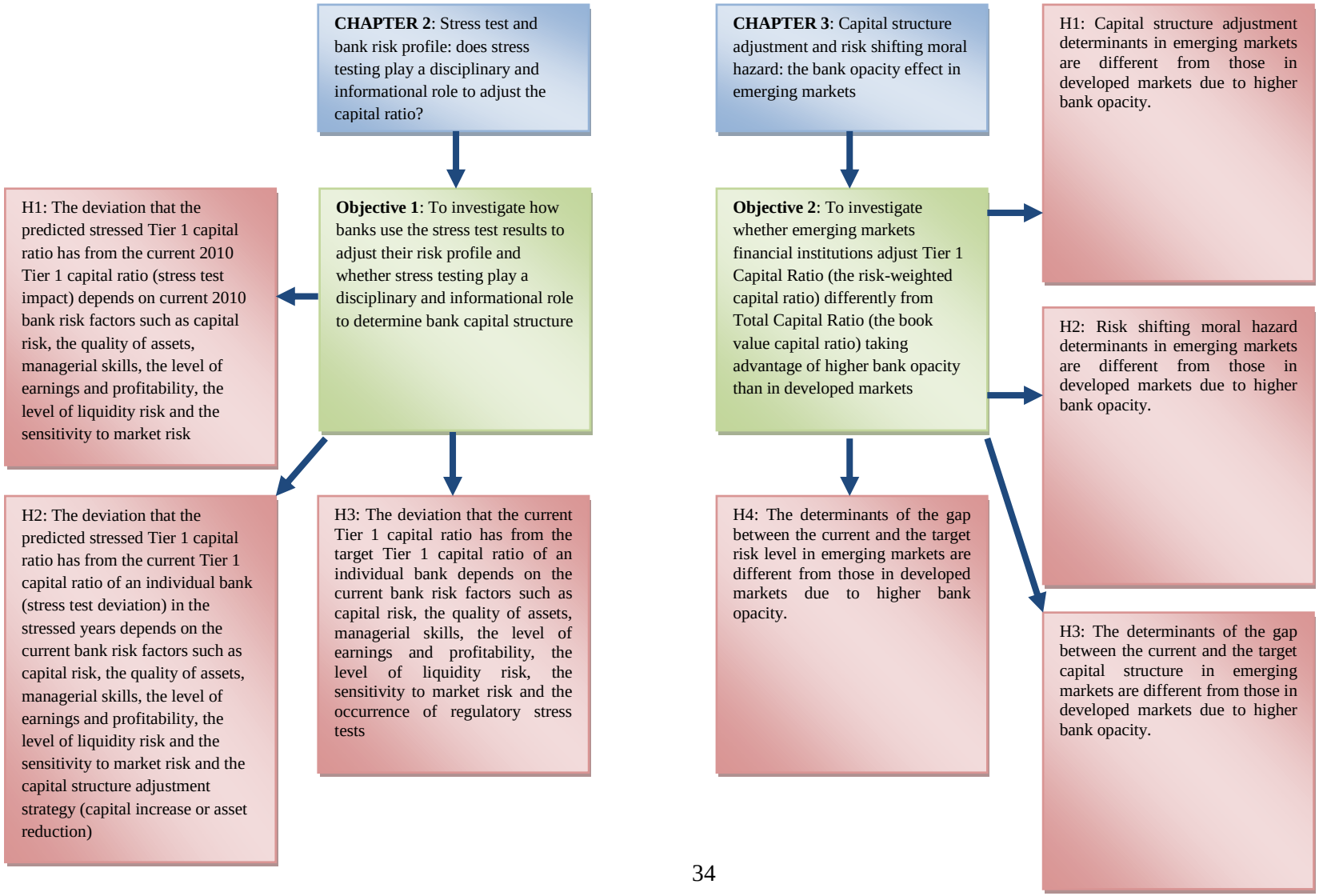
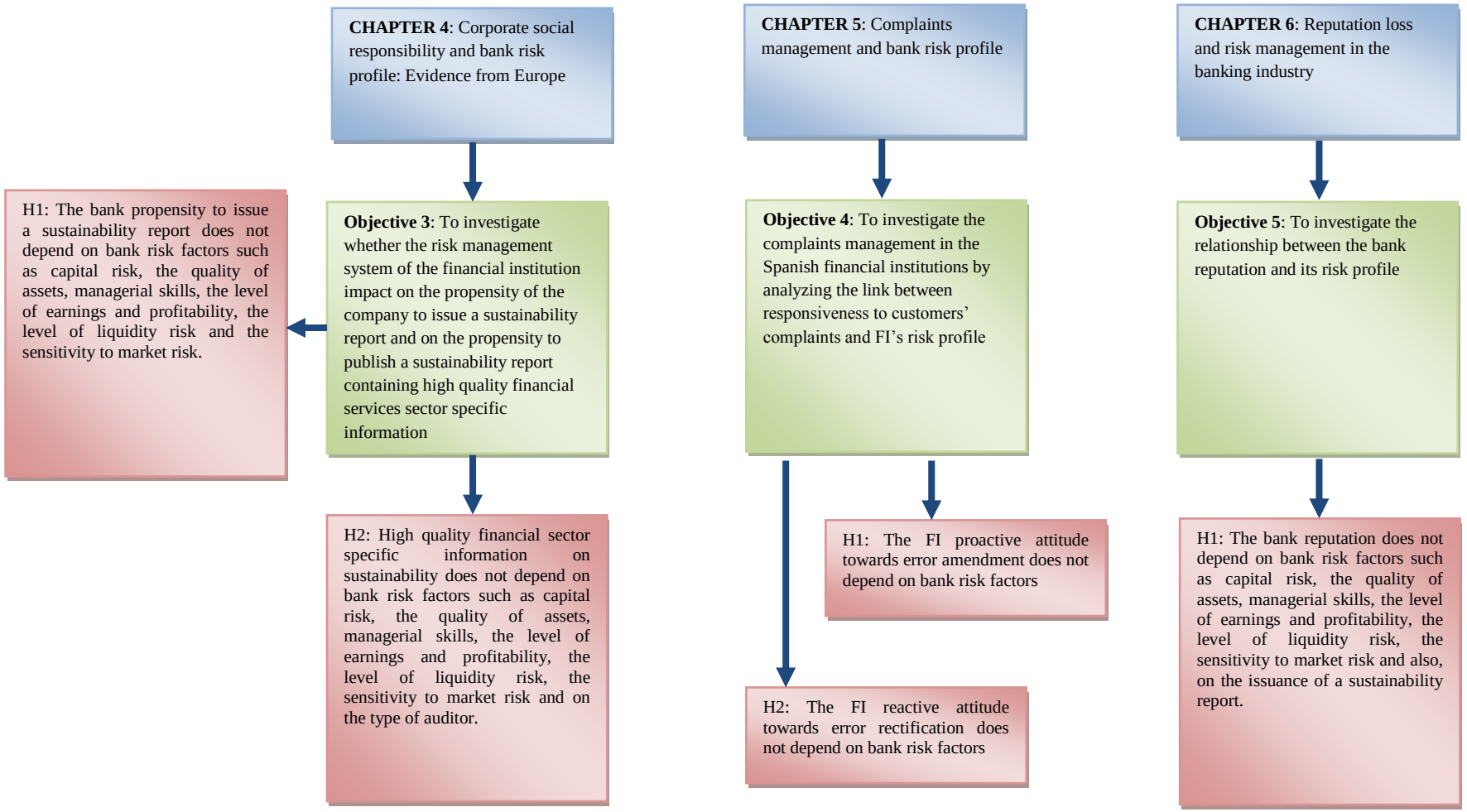


Figure 1.2 – Panel B – Chapters' objectives and hypotheses



1.4 Objectives of the study

The global financial crisis brought a new scenario in the financial services sector, showing regulators implementing risk management tools such as stress tests to monitor the strength of financial institutions and hence, the financial system stability, and also the financial institutions incorporating stress testing as part of their risk management system to be aligned with the regulator's practices.

Prior studies focus on different aspects of stress testing such as: a) the different types of stress test, sensitivity stress test and stress test scenarios (Fender et al., 2001), b) the selection of the scenarios to use in the stress test excercise that according to the Bank for International Settlements (BIS) must be "severe but plausible" (Alfaro and Drechman, 2009; Breuer et al., 2009) and c) whether the stress testing results should be disclosed or not (Petrella and Resti 2013; Goldstein and Sapra 2013; D'Cruz and Crippa, 2012). Prior studies find that stress tests as part of a bank risk management system are useful to determine the sufficient capital buffer size (Peura & Jokivuolle, 2004), to evaluate the bank's reaction to different adverse scenarios, its credit portfolio quality (Worrell, 2008) and to identify the level of capital required to support the current level of risk taking (Kuritzkes et al., 2002).

The general objective of this thesis is to understand the risk profile of financial institutions that: a) use the regulatory stress test results to adjust its capital ratio and how the stress test exercise impacts on this ratio, b) tend to issue a sustainability report and the quality of the information disclosed, c) react proactively or reactively to the customers' complaints and d) have higher reputation.

Little is known about how banks use the stress test results to adjust their risk profile and whether stress testing play a disciplinary and informational role to determine bank capital structure, so, this study aims to investigate it and this is

its first objective (Objective 1). In the view that stress tests are part of the risk management system of banks, we aim to identify the risk profile of banks (following the CAMELS approach as in Kerstein and Kozbeg, 2013; Jin et al., 2011, Jin et al., 2013a, Jin et al., 2013b) that tend to receive a more negative impact in the stress testing exercise. We also investigate the risk profile of banks that use the information provided by the stress test results to modify their Tier 1 Capital ratio and how this modified capital ratio relates to the capital ratio the bank had in the year targeted by the stress test exercise. In the study, we also aim to identify the risk profile of banks that show a smaller gap between the current and the target capital ratio, how they adjust their current capital ratio to the target before and after the stress test results are released, and whether the target Tier 1 capital ratio is related to the stressed capital ratio resulting from the stress test exercise.

It is important to note that stress testing is not yet a common practice among regulators in emerging markets. This is due to the existence of severe deficiencies in the accounting and regulatory framework and lack of liquid markets for bank shares, subordinated debt and other bank liabilities and assets needed to validate the real worth of a bank as opposed to its accounting value (Rojas-Suarez, 2002a). It is also relevant to recall that although the Basel Accords state that its positions are not recommended for application in emerging markets, emerging markets financial institutions use the Accords as appropriate banking standards (Balin, 2008). This includes the Tier 1 Capital Ratio that it is not subject to a standard stress testing exercise throughout these emerging markets.

Additionally, taking into account Petrella and Resti (2013) findings that show that stress tests results reduce bank opacity because they provide investors with relevant information, the second objective of this study is to investigate whether emerging markets financial institutions adjust Tier 1 Capital Ratio (the risk-weighted capital ratio) differently from Total Capital Ratio (the book value

capital ratio) taking advantage of higher bank opacity than in developed markets (Objective 2). This study also investigates whether banks in emerging and developed markets adjust their risk level differently. This is of special interest because there is no consensus on the measure of capital that banks use internally to make decisions (Jokipii and Milne, 2011). This study provides evidence whether banks in emerging and developed markets use total capital ratio (based on accounting standards) or Tier 1 Capital Ratio (based on Basel Accords) to make decisions and the bank's characteristics that impact on the capital structure. This study also looks for evidence of higher risk shifting moral hazard in emerging markets than in developed markets as a consequence of higher emerging markets' bank opacity. In addition, the study explores whether emerging markets financial institutions align their actual Tier 1 and Total Capital Ratio to the corresponding targets and whether their risk profile over time is related to such deviation considering the higher market opacity than in developed markets. Finally, this study investigates the deviation between the current and the target risk level of banks in both markets. It is of special interest to know whether the 2008/09 financial crisis has an impact on such deviations (Teixeira et al., 2014).

The first two objectives of this study investigate the informational and disciplinary role that stress testing play to adjust the capital ratio and the potential impacts that the absence of stress testing in emerging markets has on the banks' capital structure.

The remaining objectives of this study are related to the relationship between bank corporate social responsibility, bank reputation and bank risk profile.

Integrating CSR into corporate risk management not only helps the company to get information about the current risks that threaten the company but also offers an effective mean to mitigate them (Mengze and Wei 2013; de la Cuesta-González et al. 2006; Kytle and Ruggie 2005). Considering this, we argue that the financial institution risk profile (following the CAMELS

approach will influence the propensity to issue a CSR report and also the propensity to publish a sustainability report containing high quality financial sector specific information. Under a theory that financial institutions play an important social role in the financial inclusion process in the economy and that CSR is considered in the product design process and the credit policy, financial institutions incorporate social and environmental risk management in their risk management system. The third objective of this study is to investigate whether the risk management system of the financial institution impacts on the propensity of the company to issue a sustainability report and on the propensity to publish a sustainability report containing high quality financial services sector specific information (Objective 3).

This study contributes to the extant literature by finding a relationship between Corporate Social Reporting (CSRR) and GRI Financial Services Sector disclosures -using a Financial Services Sector disclosure Index (FSSI) we developed- with the type of risk and complexity of financial institutions. Moreover, we shed some light in understanding the profile of the financial institutions that incorporate CSR into their risk management systems.

The fourth objective of this study is to contribute to the extant literature by investigating complaints management in the Spanish financial institutions and by analyzing the link between responsiveness to customers' complaints and FI's risk profile (Objective 4). The study provides a novel insight into Spanish financial institutions motivations to react proactively or reactively to customers' complaints. Finally, the fifth objective of the study is to investigate the relationship between the bank reputation and its risk profile (Objective 5).

1.5 Research questions

Building on the main objectives of the study that were described earlier in Section 1.4, this study proposes the following specific research questions to correspond with the five objectives:

Objective 1: To investigate how banks use the stress test results to adjust their risk profile and whether stress testing play a disciplinary and informational role to determine bank capital structure:

1) What is the risk profile of banks that tend to receive a more negative impact in the EU-wide stress testing exercise?
2) What is the risk profile of banks that use the information provided by the EU-wide stress test results disclosed to modify their Tier 1 Capital ratio? How does this modified capital ratio relate to the capital ratio the bank had in the year targeted by the stress test exercise?
3) What is the risk profile of banks that show a smaller gap between the current and the target capital ratio? How they adjust their current capital ratio to the target before and after the stress test results are released? Is the target Tier 1 capital ratio related to the stressed capital ratio resulting from the stress test exercise?

Objective 2: To investigate whether emerging markets financial institutions adjust Tier 1 Capital Ratio (the risk-weighted capital ratio) differently from Total Capital Ratio (the book value capital ratio) taking advantage of higher bank opacity than in developed markets:

4) Do emerging markets banks take advantage of higher bank opacity in that markets to adjust their Tier 1 Capital Ratio?
5) Do banks in emerging and developed markets adjust their risk level differently?
6) Is risk shifting moral hazard in emerging markets higher than in developed markets as a consequence of higher emerging markets' bank opacity?
7) Do emerging markets financial institutions align their actual Tier 1 and Total Capital Ratio to the corresponding targets? Is their risk profile, considering the higher market opacity than in developed markets, related to such deviation?

8) Is the deviation between the current and the target risk level of banks similar in emerging and developed markets?

Objective 3: To investigate whether the risk management of the financial institution impact on the propensity of the company to issue a sustainability report and on the propensity to publish a sustainability report containing high quality financial services sector specific information:

9) Does the risk profile of the financial institution impact on the propensity of the company to issue a sustainability report?
10) Does the risk profile of the financial institution impact on the propensity to publish a sustainability report containing high quality financial services sector specific information?

Objective 4: To investigate the complaints management in the Spanish financial institutions by analyzing the link between responsiveness to customers' complaints and FI's risk profile:

11) What is the risk profile of banks that react proactively to customers' complaints?
12) What is the risk profile of banks that react reactively to customers' complaints?

Objective 5: To investigate the relationship between the bank reputation and its risk profile:

13) What is the risk profile of banks with higher reputation?

1.6 Research design and methodology

Chapter 2 of the research empirically investigates the risk profile of banks that receive a more negative impact in the EU-wide stress testing exercise, the risk profile of banks that use the information provided by the EU-wide stress test results to modify their Tier 1 Capital ratio and the risk profile of banks that show a smaller gap between the current and the target capital ratio. The results

of this chapter provide answers to Research Questions 1, 2 and 3 (H1, H2 and H3, respectively) that match the Research Objective 1. The findings of this chapter bridge the gap in the literature associated with the financial institutions risk profile and the impact that stress test results has on the financial institution capital ratio adjustment.

The bank risk profile is proxied by the CAMELS multifaceted risk approach. The sample includes banks targeted by the 2011 European Union (EU) stress test carried out by the European Banking Authority (EBA) with available financial data for the 2010, 2011 and 2012 year-end. Using the 2010 year-end financial data, the stress test simulation covered two years, 2011 and 2012. To test H1 and H2 the study uses linear regression models and to test H3 the study uses the Generalized Method of Moments estimator (GMM).

Chapter 3 empirically examines how banks in developed and emerging markets adjust their capital structure, the capital ratio banks use in these markets to make decisions, the risk shifting moral hazard in these markets and the determinants of the gap between the target and the current capital ratios and risk levels and what are the corresponding speeds of adjustment in both markets, associated with Research Questions 4 to 8 (H1, H2, H3 and H4, respectively) and Research Objectives 2.

The bank risk profile is proxied by the CAMELS multifaceted risk approach. The sample includes emerging and developed markets banks with available financial data for the period 2008-2013. The sample of emerging markets banks includes banks from Latin America (LAC) while the sample of developed markets banks includes banks from the European Union (EU). To test H1 and H2 the study uses the Generalized Method of Moments estimator and to test H3 and H4 the study uses linear regression models.

Chapter 4 of the research empirically investigates the impact that banks' risk profile has on the propensity of sustainability reporting and this reporting quality in the European banks targeted by the 2014 EU-wide stress test. The results of this chapter provide answers to Research Questions 9 and 10 (H1 and H2, respectively) that match the Research Objectives 3. The findings of this chapter bridge the gap in the literature associated with the financial institutions risk profile and the financial institution propensity to CSR reporting and the quality of this report.

The bank risk profile is proxied by the CAMELS multifaceted risk approach. The CSR reporting quality if proxied by the Financial Service Sector disclosures Index (FSSI). we develop using content analysis, an approach commonly used in CSR reporting. The FSSI is developed using the sixteen Global Reporting Initiative (GRI) Financial Services Sector disclosures indicators. The empirical research is conducted on a sample of 2014 EU-wide stress test sample of banks with available public information from 2011 through 2013. To test H1 and H2 the study uses linear regression models.

Chapter 5 of the research empirically investigates Spanish financial institutions' propensity to amend errors deriving from complaints by financial services' users within the Spanish regulator Complaints Service and how this propensity affects the financial institution risk profile. The results of this chapter provide answers to Research Questions 11 and 12 (H1 and H2, respectively) that match the Research Objectives 4. The findings of this chapter bridge the gap in the literature associated with the financial institutions risk profile and the financial institution propensity to react proactively or reactively to customers' complaints.

The bank risk profile is proxied by the CAMELS multifaceted risk approach. The sample includes the Spanish depositary institutions with available public information from 2005 to 2012 receiving more than fifteen reports in favor of

its customers in the yearly report that the Banco de España's Complaint Services issues. To test H1 and H2 the study uses linear regression models.

Chapter 6 of the research empirically investigates the impact that risk management has on corporate reputation in the financial sector. The results of this chapter provide answers to Research Question 13 (H1) that match the Research Objective 5. The findings of this chapter bridge the gap in the literature associated with the financial institutions risk profile and the financial institution reputation.

The bank risk profile is proxied by the CAMELS multifaceted risk approach. The sample includes the Spanish depositary institutions regulated by the Banco de España with available public information from 2005 through 2012. Based on the information published by the Banco de España regarding claims and complaints filed by financial institutions' customers, we define bad reputation banks as the financial institutions that are among the top ten companies that received the largest number of claims and complaint during the year. To test H1 and H2 the study uses linear regression models.

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Part II – Theoretical development and empirical analysis of the informational and disciplinary role of stress testing in developed and emerging markets

Chapter 2 - Stress test and bank risk profile: does stress testing play a disciplinary and informational role to adjust the capital ratio?

Chapter 2 - Stress test and bank risk profile: does stress testing play a disciplinary and informational role to adjust the capital ratio?

2.1 Introduction

The development of the financial system is crucial for the development of the economy as a whole and the banking system is a key element in a country's financial architecture. The economic recession, which began in 2008, resulted in the crash of some financial institutions that led to the development of new procedures and guidelines in the banking industry.

During a period of financial crisis, regulators increase their supervisory efforts using different supervisory tools to comply with their mandate of keeping financial stability. Research shows that bank opacity tends to increase in a context of financial turmoil (Flannery et al., 2010) and hence, regulators use stress tests to assess the strength and vulnerability of the banking system (Sorge and Virolainen, 2006).

Since 2007, the European Banking Authority (EBA) has carried out EU-wide stress tests *"to assess the resilience of financial institutions to adverse market developments, as well as contribute to the overall assessment of systemic risk in the EU financial system"* (EBA, 2013). In 2011 EBA decided to undertake the stress testing exercise as a tool that should *"deliver additional information as to the resilience of the banking system without raising unnecessary doubts on the continued progress shown by the industry on the way to stability"* (EBA, 2013).

Regulators and individual banks use stress tests as a risk management tool to assess how much capital the bank needs to be prepared against shocks that could impact on its current capital ratio (Basel Committee on Banking Supervision, 2006; Peura and Jokivuolle, 2004).

In the view that stress tests are part of the risk management system of banks, one of the objectives of this paper is to identify the risk profile of banks (following the CAMELS approach as in Kerstein and Kozbeg, 2013; Jin et al., 2013a; Jin et al., 2013b; Jin et al., 2011) that tend to receive a more negative impact in the stress testing exercise. Our second objective is to find the risk profile of banks that use the information provided by the stress test results disclosed to modify their Tier 1 Capital ratio and how this modified capital ratio relates to the capital ratio the bank had in the year targeted by the stress test exercise. Finally, our third objective is to identify the risk profile of banks that have a smaller gap between the current and the target capital ratio, how they adjust their current capital ratio to the target before and after the stress test results are released, and whether the target Tier 1 capital ratio is related to the stressed capital ratio resulting from the stress test exercise. The objective of this paper is to investigate whether stress testing plays a disciplinary and informational role in determining bank capital structure.

Our empirical research is conducted on a sample of banks targeted by the 2011 European Union (EU) stress test carried out by the European Banking Authority (EBA). Using the 2010 year-end financial data the regulator stressed Tier 1 Capital Ratio for 2011 and 2012 in a baseline and an adverse scenario. In this paper we use the results released for the adverse scenario.

Our results show strong evidence that banks with higher level of liquid assets, low levels of loan loss provisions and that are efficient get better results in the stress testing exercise in the more negative 2012 adverse scenario. These results show that banks with this risk profile are prepared to face severe scenarios and avoid negative impact on the Tier 1 Capital Ratio.

The results also indicate that financial institutions with higher ROA but lower profitability in the banking business, with higher capital ratio, with higher level of loan loss provisions and with higher cost to income ratio manage to have a

higher Tier 1 Capital Ratio than the stressed Tier 1 Capital Ratio resulting from the stress test exercise. Additionally, the results provide evidence of capital structure adjustment through equity increase and assets decrease in the year the stress test results are disclosed (2011) and we also find evidence that banks revert in 2012 this potentially excessive adjustment, by shifting to riskier assets and increasing, as a result, the risk-weighted assets because they do not show higher current Tier 1 Capital ratio even though they increase equity. The results also show that the EBA Capital Exercise has no impact on the difference between the current and the stressed Tier 1 capital ratio, meaning that banks that were required to capitalize by the EBA adjust their Tier 1 capital ratio similarly to banks that had surplus in the Capital Exercise.

We also show that banks align the current Tier 1 capital ratio to the target Tier 1 capital ratio after the stress test results are disclosed and that they almost completely close the gap between the current and the target capital ratio in three years which is, in fact, the window period between stress tests in the European Union.

The results as a whole give support to the disciplinary and informational role stress testing plays with banks in determining their capital structure.

After this introduction that highlights the interests of research, the remainder of this paper is organized as follows: the second section explains the theoretical framework analyzing the use of stress testing as a regulatory tool and the role of stress tests in an individual bank risk management system. In the third section we develop the hypothesis; in the fourth section of this paper we explain the empirical research, the sample, the methodology. We show the results in section five and we show our conclusions in section six.

2.2 Theoretical Framework

2.2.1 Stress testing as a regulatory tool

The banking business is highly regulated because depositary financial institutions capture public savings and have specific risks and complexities that make their financial statements opaque and difficult to analyze by the general public (Petrella and Resti, 2013). The distinctive characteristic of these entities are mainly determined by: a) the assets composition, which includes loans granted to third parties and the general public lacks the necessary information to evaluate the credit risk attached to these loans, b) the highly liquid assets that are commonly booked in their financial statements which produce a constant change in the asset composition that is difficult to be followed by financial information users (Petrella and Resti, 2013) and c) the maturity mismatch caused because they borrow short from depositors and lend long to creditors, being this situation a source of interest rate risk in the banking book (IFRI-CRO, 2007; Diamond and Dybvig, 1983).

In order to address and monitor the banking business risks, regulators use risk management tools to achieve regulatory objectives. Such supervisory efforts are increased during periods of financial turmoil (Flannery et al., 2010) and hence, regulators use stress tests to assess not only the vulnerability of individual banks but also of the entire banking system (Drehmann et al., 2010, Sorge and Virolainen, 2006). As the main concern of regulators is a financial failure, they design a supervisory system that allows them to prevent institutional failure that could lead to the breakdown of the main financial functions in the economy such as the payment system, savings transformation and the monetary policy transmission mechanism (Weber, 2014). Regulators use two different approaches to measure capital adequacy: stress testing and Basel III capital requirements. Wall (2014) explains the difference between these two approaches. In the case of Basel III, it provides an unconditional static measure with the risk adjustment occurring in the risk weighting of assets

(the denominator of the capital adequacy ratio). In contrast, the stress tests measure the individual bank capital adequacy using conditional, dynamic measures with the risk adjustment occurring via reductions in capital (the numerator of the capital adequacy ratio). The Basel III ratios use data on past performance to estimate the loss distributions associated with various portfolio positions, which are then used to calculate the expected losses in the extreme tail of the distribution.

In the case of the stress tests, they are dynamic because they simulate how these regulatory ratios would evolve over time and are conditional because the results are calculated for a specific adverse scenario. The stress test is to estimate changes in accounting capital following a certain accounting framework. The estimates of the change in accounting capital are based in part on estimates of each bank's losses in each portfolio in each period.

While Basel III cannot be used to say what may happen in any particular scenario, individual stress test can do it. If the model used in the stress test exercise is correct, the stress test can provide a good estimate of what happens in a particular scenario.

In this context, there are mainly two types of stress tests that can be used by regulators: a) sensitivity stress tests that measure the impact that a large change in an asset price has on a portfolio's value and b) stress tests scenarios that measure the effect on a portfolio of simultaneous significant moves in several asset prices (for example, interest rate, exchange rates, equity prices) and can be done based on a historical scenario or a hypothetical one (Fender et al., 2001).

One of the most important elements of a stress test is the selection of the scenarios to be used that according to the Bank for International Settlements (BIS) must be "severe but plausible" (Alfaro and Drechman, 2009; Breuer et al., 2009). The complexity of this subject is such that the 2008 market collapse

was driven by systemic events difficult to predict and that could have been dismissed ex-ante as implausible (Flood and Korenko, 2013; Breuer and Csiszár, 2013). To add to this complexity, the market collapse occurred when the system appeared to be stable (Borio et al., 2012).

Goldstein and Sapra (2013) discuss whether the stress testing results should be disclosed or not. Based on the argument that stress tests are not able to tests scenarios that are extreme enough to simulate a true scenario, Das (2011) argues that the disclosure of stress testing results is inherently flawed. Notwithstanding that, the results of the 2011 EU stress test performed by EBA were released for the 91 participant financial institutions. The results suggested that at the end of 2010, twenty banks in the sample would fall below the 5% Core Tier 1 Ratio (the Tier 1 Capital Ratio is, from a regulatory point of view, a measure of the financial strength of a bank).

In a recent study related to the disclosure of 2011 EU stress test results, Petrella and Resti (2013) find evidence of prices drop for tested banks on pre-results date (dilution effect) showing the concern of investors about the possibility that these banks could be under-capitalized. Their research shows that the stress tests produce *"valuable information for market participants"*. On the result publication date, they find price reaction for the tested banks. This shows the relevance of disclosing the results and the informational role of the stress test.

The release of bad results by regulators should call the industry attention and lead bank managers to improve the quality of the risk management tools used to assess the entity strength (D'Cruz and Crippa, 2012).

2.2.2 Risk management and stress tests

Stress tests are also used by individual banks as a risk management tool to assess their own weaknesses and exposure to risk. This is done following the guidelines and recommendations set by regulators that aim to identify how

much capital the bank needs to be prepared against shocks that could impact on its current capital and to the minimum capital requirements (see Basel Committee on Banking Supervision, 2006; Peura and Jokivuolle, 2004). The similarity of stress testing used at a macro level, together with the techniques used by individual banks as an integral part of the risk management system (see Summer, 2008), and the recommendation of supervisors about the use of stress tests as risk management tools for banks (Basel Committee on Banking Supervision, 2006; Financial Stability Forum, 2008), suggest that stress testing is becoming very important for regulators (Drehmann et al., 2010).

In a survey conducted in 2000 by central banks' representatives from the Group of 10 (G-10) countries, results show that banks rely on stress tests to assess exposure where illiquid conditions and poor historical data make the use of other risk management tools difficult and also find that risk managers use stress testing results as an effective mean to communicate risks to bank senior management (CGFS, 2001). Regulators learnt that due to the variety and complexity of the risks affecting the banking business, the only way to achieve their statutory mandate of keeping financial stability depends on the quality of each bank risk management system (Tarullo, 2008).

The Bank for International Settlements, through the Pillar 1 (minimum capital requirements) of the Basel II framework *"requires banks using the Internal Models Approach to determine market risk capital to have in place a rigorous programme of stress testing. Similarly, banks using the advanced and foundation internal ratings-based (IRB) approaches for credit risk are required to conduct credit risk stress tests to assess the robustness of their internal capital assessments and the capital cushions above the regulatory minimum. Basel II also requires that, at a minimum, banks subject their credit portfolios in the banking book to stress tests"* (Basel Committee on Banking Supervision, 2006).

Stress tests are the evaluation of the financial position of a bank under a severe but plausible scenario to assist in decision making within the bank. The Basel Committee on Banking Supervision (2006) indicates that *"board and senior management involvement is critical in ensuring the appropriate use of stress testing in banks' risk governance and capital planning. This includes setting stress testing objectives, defining scenarios, discussing the results of stress tests, assessing potential actions and decision making".* Taking this into account, stress testing should form an integral part of the overall governance and risk management culture of the bank. The objective of bank internal stress testing is to promote the identification of risks, complement other risk management tools and improve capital management.

Stress tests as part of a bank risk management system are useful to determine the sufficient capital buffer size (Peura & Jokivuolle, 2004), to evaluate the bank's reaction to different adverse scenarios, its credit portfolio quality (Worrell, 2008) and to identify the level of capital required to support the current level of risk taking (Kuritzkes et al., 2002).

Peura and Jokivuolle (2004) analyze the bank's capital buffer (defined as the difference between the current capital ratio and the minimum capital requirement) for G-10 banks from 1997-2001 and found that rating sensitive capital requirements necessitate higher bank capital buffers at least for high and average loan portfolios because the capital requirement is volatile.

Using a hypothetical but realistic group of six banks, Worrell (2008) shows that if a rapid credit growth causes a sharp increase of non-performing loans (NPL), banks may become insolvent in a relatively short time, but if credit quality is not affected, the group of banks remains well capitalized even with severe shocks. Worrell (2008) argues that *"regulators would be advised to pay special attention to credit quality indicators, and to intensify scrutiny of any bank which appeared to be weak in this area, or any bank where the NPL migration pattern was worse than average".*

Kuritzkes et al. (2002) discuss that the amount of capital that is required to support the level of risk taking is a concern for two group of stakeholders: a) debtors, policyholders, regulators and rating agencies who want the bank to hold sufficient capital to absorb risk under the most extreme scenarios because their main concern is bank solvency, and b) shareholders and investment analyst who are focused on the return the bank gets on the capital invested that will be useful to support risk taking because their main concern is profitability. They conclude that while both groups are concerned on capital level, their interests go in different directions, because a lower capital level for a certain degree of risk taking will make the bank less solvent but more profitable, and vice versa. To reach an optimal capital strcuture, banks may either increase their own capital or reduce its assets (Admati et. al., 2013).

2.2.3 Dynamic adjustment of bank capital towards its target

Banks are subject to regulatory capital requirements. However, these institutions often hold additional capital for many reasons (Berger et al., 2008), for example, as a hedge against having to raise new equity in the short term, to avoid the effect of volatile earnings and to be prepared in case some investment opportunities arise. As previously discussed in section *2.1*, regulators use stress testing as a regulatory tool, which are mainly focused on assessing the compliance of minimum regulatory capital requirements.

The line of research that studies bank capital regulation has also focused on the existence of determinants of optimal bank capital ratios (Francis and Osborne, 2012; Allen et. al., 2011; Flannery and Rangan, 2006; Diamond and Rajan, 2000). In an ideal situation, banks would keep their optimal capital structure, but the existence of adjustment costs may prevent a quick adjustment to this target (Kuritzkes et al., 2002). In a cost-benefit analysis, the financial institutions evaluate the adjustment costs and the costs of operating with a suboptimal capital structure (Flannery and Rangan, 2006). There is a line of studies in banking research that investigates how banks set the target capital

ratio according to their specific characteristics and the speed of adjustment of their capital structures towards the target capital ratio (De Jonghe and Öztekin, 2010; Berger et at., 2008; Flannery and Rangan, 2006).

Theoretical studies (e.g. Myers and Rajan, 1998; Diamond and Rajan, 2000; Allen et al., 2011) and empirical studies (Marcus, 1983; Flannery and Rangan, 2008) show that banks have target capital ratios and that they adjust to their target quicker than non-financial firms. Flannery and Rangan (2006) analyze a sample of US firms and investigate whether a target capital level for firms exists and how quickly firms close the gap between the current and the target debt ratio. The study finds that a target level exists and that the firms close approximately one third of the gap in one year.

Banks on average tend to reach their optimal capital ratios over time since they have incentives to maximize their profit. The optimal capital ratio can be proxied by the long-run target (optimal) capital ratio.

If the bank is over-capitalized (the current capital ratio is higher than its target) the bank faces an opportunity cost. The bank can reduce its total funding costs by reducing its capital level. If the bank is under-capitalized (the current capital ratio is higher than its target), the bank is exposed to regulatory intervention and market constraints. If this is the case, the bank may want to raise its capital level. Cost of adjusting capital may be an important explanation why banks hold capital ratios above the regulatory minimum.

Banks usually hold additional capital to the minimum capital ratios set by the banking regulator, as they maintain an additional capital buffer that in addition to the regulatory capital constitutes the banks' own internal capital target. This target, which is a desired capital ratio, is not observable to the general public.

2.3 Hypothesis development

The inclusion of stress tests as an integral part of the risk management system of banks suggests the following hypotheses about the impact that stress testing has on the current capital ratio of a bank with a certain risk profile and the use

of risk management by individual banks to determine the current capital ratio in the stressed years following the disclosure of the macro stress test results:

H1: The deviation that the predicted stressed Tier 1 capital ratio has from the current 2010 Tier 1 capital ratio (stress test impact) depends on current 2010 bank risk factors such as capital risk, the quality of assets, managerial skills, the level of earnings and profitability, the level of liquidity risk and the sensitivity to market risk.

H2: The deviation that the predicted stressed Tier 1 capital ratio has from the current Tier 1 capital ratio of an individual bank (stress test deviation) in the stressed years depends on the current bank risk factors such as capital risk, the quality of assets, managerial skills, the level of earnings and profitability, the level of liquidity risk and the sensitivity to market risk.and the capital structure adjustment strategy (capital increase or asset reduction).

Considering that regulation plays a significant role in the determination of the target Tier 1 capital ratio and that stress tests are regulatory tools and also are part of the risk management system of banks, we posit the following hypothesis about the deviation the current Tier 1 capital ratio has from the target Tier 1 capital ratio and the risk profile of a bank:

H3: The deviation that the current Tier 1 capital ratio has from the target Tier 1 capital ratio of an individual bank depends on the current bank risk factors such as capital risk, the quality of assets, managerial skills, the level of earnings and profitability, the level of liquidity risk, the sensitivity to market risk and the occurrence of regulatory stress tests.

With these three hypotheses we will show the risk profile of financial institutions that get a more negative result from the stress testing exercise (H1), the risk profile of financial institutions that take advantage of the informational role of the stress testing results disclosure to adjust their Tier 1 capital ratio via an increase in capital or a reduction of assets (H2) and the risk profile of

financial institutions that show a smaller gap between the current and the target Tier 1 capital ratio and the speed of such adjustment (H3).

2.4 Research Design

2.4.1 Data sources and sample selection

The 2011 EU-wide stress test exercise is carried out on a group of banks covering over 65% of the EU banking system total assets, and at least 50% of the national banking sectors in each EU Member State, as expressed in terms of total consolidated assets as of end of 2010.

The sample includes banks targeted by the 2011 European Union (EU) stress test carried out by the European Banking Authority (EBA) with available financial data for the 2010, 2011 and 2012 year-end. Using the 2010 year-end financial data, the stress test simulation covered two years, 2011 and 2012.

Banks financial data are gathered from the Orbis Database. The stress test targeted 91 banks for two years, 2011 and 2012. However, due to missing data in the Orbis database, a total of 122 bank-year are included in the sample to test hypothesis 1 (61 entities in 2011 and 2012), a total of 102 bank-year are included in the sample to test hypothesis 2 (53 for 2011 and 49 for 2012) and a total of 148 bank-year are included in the sample to test hypothesis 3 (37 entities per year in the period 2011-2008). Details of the sample coverage by country are shown in Table 2.1.

INSERT TABLE 2.1 HERE

The total assets of the 91 banks targeted by the EU-wide stress test amounts to 27,472 million Euros. The sample to test hypothesis 1 and the sample to test hypothesis 2 represent 84% of the stress test targeted banks while the sample to test hypothesis 3 represents 67%. All the banks included in our sample are from the EU-region except for one Swiss bank.

2.4.2 Methodology and empirical model to test H1 and H2

Our hypothesis 1 is tested using a regression model on stress test impact (STI). In order to obtain the impact the stress test has on the bank Tier 1 Capital Ratio in each stressed year (STI), we calculate the difference between the stressed Tier 1 Capital Ratio for 2011 and 2012 with the current Tier 1 Capital Ratio in 2010 taken from 2010 year-end financial statements. The data of stressed Tier 1 Capital Ratio for 2011 and 2012 was obtained from the stress testing results disclosed in the EBA website.

Hypothesis 2 is tested using a regression model on stress test deviation (STD). In order to obtain the deviation of the estimated 2011 and 2012 Tier 1 Capital Ratio from the current Tier 1 Capital Ratio in 2011 and 2012, we calculate the difference between the current Tier 1 Capital Ratio in 2011 and 2012 taken from the corresponding year-end financial statements with the stressed Tier 1 Capital Ratio for 2011 and 2012. The data of stressed Tier 1 Capital Ratio for 2011 and 2012 was obtained from the stress testing results disclosed in the EBA website.

2.4.3 Target capital ratio and the speed of adjustment – Hypothesis 3

Following the extant literature (Daher et al., 2015; De Jonghe and Öztekin,2010; Berger et at.,2008; Flannery and Rangan,2006), we assume that at a certain point in time each bank has a Tier1 Capital Ratio, $Tier1CR_{i,t}$, that is a weighted average of the target Tier1 Capital Ratio, $Tier1CR^*_{i,t}$, and the lagged Tier1 Capital Ratio, $Tier1CR_{i,t-1}$:

$$Tier1CR_{i,t} = \lambda Tier1CR^*_{i,t}, + (1-\lambda)Tier1CR_{i,t-1} \quad (1)$$

The higher lambda is, the higher the speed of capital-adjustment towards its target and the less rigid bank capital is. This variable speed of adjustment model estimates the bank´s characteristics that determine a specific target

capital ratio. To proxy for these bank characteristics we use the different risk areas covered by the CAMELS rating system.

We model $Tier1CR^*_{i,t}$, as a function of these bank's characteristics (X):

$$Tier1CR^*_{i,t}, = \beta X_{i,t-1} \quad (2)$$

Substituting the equation of target Tier 1 Capital Ratio (2) in equation (1) we obtain the following equation:

$$Tier1CR_{i,t} = \lambda\beta X_{i,t-1} + (1-\lambda)Tier1CR_{i,t-1} \quad (3)$$

We estimate equation (3) following the Blundell and Bond (1998) Generalized Method of Moments estimator. From this equation we got an estimate of the average speed of adjustment (λ) for all banks and the set of coefficients β that we use to estimate the target Tier1 Capital Ratio for each bank in each year using equation (2).

We finally calculate for each bank the deviation the current capital ratio has from its target Tier1 Capital Ratio:

$$D\hat{E}V_{i,t} = Tier1CR^*_{i,t} - Tier1CR_{i,t-1} \quad (4)$$

Using panel data of banks targeted by 2010 stress tests with available financial information in the Orbis database for the period 2008-2012, we ended up with a sample of 148 bank-year. In the first step, we run equation (3) using panel data for the years 2011, 2010, 2009 and 2008 from where we obtained the average λ for all banks and the set of coefficients β. In the second step, we calculate the target capital ratio for each bank in each year (2012-2009) using equation (2) and finally, using equation (4), we calculate each bank deviation from its target capital ratio in each year (2012-2009).

Hypothesis 3 is tested using a regression model on target deviation ($D\hat{E}V$) which is estimated on the sample of banks described in this section.

2.4.4 CAMELS measurement and variables selection

The experimental variables of the models are taken from prior studies that have identified proxies for the different risk areas covered by the CAMELS rating system (Gambetta et al., 2015; Martínez-Campillo et al., 2013; de Claro, 2013; Kerstein and Kozberg, 2013; Jin et al., 2013a, Jin et al., 2013b; Jin et al., 2011 and Fields et al., 2004).

The CAMELS rating system is commonly used by regulators to assess the strength of financial institutions and to evaluate the level of bank risks (Office of the Comptroller of the Currency, 2013). The CAMELS approach is not only used in the US as it is the approach used by regulators worldwide. One example is the supervisory method used by the Banco de España (the Spanish regulator) which is called Risk-Based Supervisory Methodology Approach and it is based on the CAMELS rating system. This method helps to assess which institutions are more likely to develop problems in the future, in order to dedicate additional supervisory resources and to prevent future crises (BE, 2011). In this line, Gambetta et al. (2015) use the CAMELS approach to identify the risk factors of Spanish Financial institutions that are related to the attitude of these entities towards users' complaints.

To proxy for capital adequacy, we use the capitalization ratio (CAPRATIO) which is defined as total equity to total assets (Jin et al., 2013a, Jin et al., 2013b; Jin et al., 2011). De Jonghe and Öztekin (2015) distinguish between internal and external sources of capital. External capital is the outcome of issuances and/or repurchases of preference and/or common shares. Internal capital represents changes in retained earnings, minority interests, and other equity reserves and constitutes a cheaper source of bank financing. Following De Jonghe and Öztekin (2015) that find that undercapitalized banks mainly use equity issuances to recapitalize, we predict a positive relationship between CAPRATIO and STI (a financial institution with a higher CAPRATIO will

have a less negative impact on the stressed Tier 1 Capital Ratio), a positive relationship with STD (a financial institution with a higher CAPRATIO will have a higher current Tier 1 Capital Ratio than the stressed Tier 1 Capital Ratio resulting from the stress test exercise) and a negative relationship between CAPRATIO and DÊV (a financial institution with a higher CAPRATIO will have a smaller gap between its target and current capital ratio).

Provision for loan losses (PLL) is used to capture asset quality as this measure will capture the change in the allowance for loan losses in the current period (Jin et al., 2011; Kerstein and Kozberg, 2013). The higher the PLL the lower the asset quality. It can also be the case that companies with higher PLL are conservative and record provision for doubtful debtors more timely than other financial institutions. The provision for loan losses will have an impact on the risk level of a bank because a bank with a higher level of loan losses has low quality loans, and hence, higher risk-adjusted assets. We predict a negative relationship between PLL and STI because banks with higher PLL will have a lower stressed Tier 1 Capital Ratio resulting from the stress test exercise. We predict a positive relationship between PLL and STD because banks with higher LLP will show a lower stressed Tier 1 Capital Ratio. The effect of PLL on DÊV is expected to be positive since banks with greater expected PLL can be assumed to raise their capital levels in order to comply with regulatory requirement and to mitigate solvency risk (Jokipii and Milne, 2011).

We use the efficiency ratio (EFF) defined as cost to income ratio to proxy for management skills (De Jonghe and Öztekin, 2015). The higher the efficiency ratio (i.e., the lower the efficiency for the bank), the more difficult it is for the bank to earn a profit and thus, to increase its capital. Considering this, we predict a positive relationship between EFF and DÊV because the gap between the target and the current Tier 1 Capital Ratio will be larger. A high efficiency ratio means a company needs to incur in high costs to get a certain income level. These costs are usually related to non-interest expenses such as

personnel, branches, and data processing expenses that are associated with large volumes of transactions accounts and with a geographically diverse branch system. Considering this, a high efficiency ratio could also be used as a proxy for the complexity of bank operations (Fields et al., 2004). We predict that banks with higher EFF will show a lower stressed Tier 1 Capital Ratio and thus, the relationship of EFF with STI will be negative and the relationship with STD will be positive.

We also include corporate social responsibility reporting (CSRR) as a proxy for management skills (European Commission, 2009), which is a dummy variable coded one if the financial institution issues a CSR report and zero otherwise. Corporate Social Responsibility reports are gathered from the Global Reporting Initiative (GRI) database. The idea of the inclusion of corporate social responsibility in risk management programs in the financial sector has been taken into account by Bangladesh Bank (the Central Bank of Bangladesh) in recent policies issued (Bangladesh Bank, 2011). In this policy, the Bangladeshi authority requires the environmental risk to be incorporated in the Core Risk Management (CRM) that mandates considering environmental risk in the overall credit risk assessment methodology applied by banks. Additionally, this will have an impact in the computation of Risk-Adjusted Capital Ratio. van Gelder and Vander (2011) argue that *"banks should be required to integrate social and environmental sustainability criteria in their credit risk assessment system. Banks using the internal rating based approaches should differentiate risk weighting factors for various categories of borrowers according to their level of sustainability. As sustainable borrowers have a lower probability of default, their risk weighting factor should be lower. Non-sustainable categories with a higher probability of default should have higher risk weighting factors"*. Financial institutions that issue a CSR report tend to be involved in sustainable lending and this translates in loans with a lower risk weighting factor and hence, in a higher Tier 1 Capital Ratio. We predict that banks with higher CSRR will show a higher stressed Tier 1 Capital

Ratio and thus, the relationship between CSRR with STI will be positive and the relationship with STD will be negative. Additionally, we predict a negative relationship between CSRR and DÊV because the gap between the target and the current Tier 1 Capital Ratio will be smaller for banks that issue a CSR report.

To proxy for earnings and profitability we use the ratio of operating income to total assets (OPINC) (Fields et al., 2004). Operating profit captures the impact on net profit of the transactions that are closely related to the business of the firm. Following de Claro (2013) and Martínez-Campillo (2013) we also use the ratios Return on Assets (ROA) as a proxy for earnings and profitability. If the bank prefers to increase capital through retained earnings rather than through equity issues, bank profitability may have a positive effect on bank capital (Shim, 2013, Jokipii and Milne, 2011). The expected sign on the coefficient of both variables in STI is positive since the stressed Tier 1 Capital Ratio would be higher, moving in line with the level of bank profitability. The relationship between the profitability variables with STD and DÊV will be the opposite.

We use total loans (LOANS) as a proxy for bank liquidity as the main factor in the financial crisis is a loss in liquidity and an increase in the default risk of loans from interest rate resets (Kerstein and Kozberg, 2013). We also use total liquid assets as a proxy for liquidity (LIQ). Banks that show higher level of liquid assets that can readily be converted into cash when necessary may have less incentive to engage in riskier lending activities making risk-weighted assets lower (Shim, 2013) and hence, the stressed Tier 1 Capital Ratio will be higher. The expected sign on this variable is positive (negative) in STI (STD) equations. The higher LIQ the lower DÊV we expect because banks will be able to reach the target capital ratio easier. We expect the opposite relationships in the case of LOANS.

Usually banks tend to grant loans for longer terms than the deposits they received from customers. As a consequence, interest rate resets will impact deposits in first instance and this will reduce the interest rate spread. To proxy for this risk we use the level of other interest bearing liabilities to total assets (INTBEAR) (Kerstein and Kozberg, 2013). According to de Claro (2013) a bank with liquidity problems will increase the interest rate to retain the level of deposits or to capture new deposits in the market. The higher this ratio the higher the sensitivity of the financial institutions to the impact of liquidity issues on interest expense and hence in the firm profitability. The expected sign on the coefficient of INTBEAR in STI is negative since the higher INTBEAR the lower the stressed Tier 1 Capital Ratio would be. The relationship between INTBEAR with STD and DÊV will be the opposite.

We use the control variable year (YEAR) to control for any specific year effect to test H1 and H2 and we use the control variable stress test (ST) to control for any stress test effect to test H3. We define YEAR as a dummy variable set to zero for 2011 and one for 2012. The adverse scenarios defined by EBA for 2012 is more negative than the 2011 adverse scenario, so we expect a negative sign for YEAR in the STI model and a positive sign in STD. ST is a dummy variable set to one for the years following the stress test and zero otherwise. We expect a negative sign for ST in the DÊV model since the stress test will play a disciplinary role with the banks in closing the gap between the target and current Tier 1 Capital Ratio as they are used by regulators to monitor the bank strength.

To test H2 we control for equity and assets variation using ΔEQUITY and ΔASSETS control variables. ΔEQUITY is defined as the equity variation between the current and the previous year while ΔASSETS is defined as the assets variation between the current and the previous year. We expect a positive relationship between ΔEQUITY and STD as an equity increase will imply a higher current Tier 1 Capital Ratio and we expect a negative

relationship between ΔASSETS and STD a an asset decrease will imply a higher current Tier 1 Capital Ratio (Admati et al., 2013). Additionally, we control for the EBA recapitalization plan using the variavle CEXERCISE. In December 2011, EBA launched a recapitalization plan of the European financial sector called the "Capital exercise". This was a formal recommendation related to banks' recapitalization needs and it recommended building up an exceptional and temporary buffer by the end of June 2012. Of the 71 EEA banks involved in the EU 2011 capital exercise, 37 banks showed an initial shortfall. These 37 banks included 10 banks that were identified as undergoing a deep restructuring or the shortfall was already being monitored by the relevant local authority. The remaining 27 banks were required to recapitalize. CEXERCISE is defined as a dummy variable set to one if the bank showed a capital shortfall in the EBA Capital exercise and zero otherwise. We expect a positive relationship between CEXERCISE and STD as banks with shortfall were required to capitalize.

2.4.5 Descriptive statistics

Table 2.2 provides the descriptive statistics for the sample to test H1.

INSERT TABLE 2.2 HERE

The data reveal that the average impact of the stress test on current 2010 Tier 1 Capital Ratio for the 61 banks in the sample was -0.81% points and -1.57% points for 2011 and 2012 respectively. This shows that the negative impact of the stress test on Tier 1 Capital Ratio for 2012 doubled the negative impact for 2011, what is consistent with the more negative adverse scenario defined by the EBA foe 2012. The bank that shows the highest negative impact in 2011 was Commerzbank AG (-2.75% points) and in 2012 Allied Irish Banks Plc (-5.17% points). The banks that shows the strongest position in the stress test for both years is OTP Bank Plc (1.25% points in 2011 and 1.31% in 2012 points).

The average capital ratio (total equity to total assets) of the sample according to the 2010 year-end financial statements is 6.47%, the average ROA is 0.34% and the average cost to income ratio is 57.81%. The average total loans in the sample amounts to USD 241.154 million with an average loan loss provisions of USD 2.375 million. The average liquid assets of the sample represent a 22.43% of the average total assets.

Table 2.3 shows the descriptive statistics for the sample to test H2.

INSERT TABLE 2.3 HERE

The data reveals that the average deviation of the 2011 current T1 Capital Ratio from the stressed ratio in 2011 is 2.85% points while the deviation is 4.65% points in the case of 2012. This shows that the average current capital ratio in 2011 and 2012 are higher than the Tier 1 capital ratio resulting from the stress testing exercise. When we compare these results with the results in Table 2, we see that the gap between the current Tier 1 Capital ratio in 2011 and 2012 with the stressed Tier 1 Capital Ratio for each year is three times larger than the gap between the 2010 current Tier 1 Capital Ratio and the stressed Tier 1 Capital Ratio for each year. This provides evidence that the disclosure of the stress test results paly an informational role to bank managers.

The bank for which the current capital ratio was higher in both years is the Allied Irish Banks Plc, showing a deviation of 16.72% points and 16.56% points in 2011 and 2012 respectively. The bank for which the current capital ratio was lower in both years is the National Bank of Greece SA, showing a deviation of -13.84% points and -14.37% points in 2011 and 2012 respectively.

The data shows that the average capital ratio of the sample remains stable at 5.20% in both years, the average ROA went up from -0.93% to -0.33% and the average cost to income ratio went up from 66.90% to 69.86% in 2012. The average total loans in the sample increased from USD 264.157 million to USD

281.335 million, showing a 6.5% increase, while the average loan loss provisions increased a 38.7%, going up from USD 2.569 million to USD 3.562 million. Finally, the average total liquid assets proportion in total assets went up from 21.47% in 2011 to 22.78% in 2012.

In Table 2.4 we show the distribution by country of the financial institutions included in the samples to test H1 (Panel A) and H2 (Panel B). Spain was the country that had the highest number of financial institutions in both samples followed by Italy. This is in line with the large amount of Spanish banks included in the EU-wide stress test exercise.

INSERT TABLE 2.4 HERE

We discuss the descriptive statistics for the sample we use to test H3 in section 2.*5.2*.

2.5 Results

2.5.1 Stress test impact on and deviation from the current capital ratio

We present in Table 2.5 the stress test impact (STI) regression model estimation results. The regression model has a significant F value. The adjusted R-square is 30.20%.

Multicollinearity test show that the mean Tolerance level of the independent variables is less than 0.01 and the mean VIF value is below 5. Therefore, multicollinearity is not a concern in our model (Cohen et al. ,2003).

INSERT TABLE 2.5 HERE

The results indicate that the variable YEAR is negative and significant at 1% level, showing that the stress testing results had a more negative impact on the current 2010 Tier 1 Capital Ratio when the 2012 ratio was stressed, as compared to the stressed 2011 ratio. The sign is consistent with our prediction

as the 2012 adverse scenario is more negative than the 2011 scenario.

Financial institutions that in 2010 showed higher loan loss provisions and higher efficiency ratio (cost to income ratio) show, as predicted, a more negative impact in the stressed Tier 1 Capital Ratio. The variables LLP and EFF are negative and significant at 5% level.

On the contrary, the variables LIQ and INTBEAR are positively significant at the 5% and the 10% level respectively showing that financial institutions with higher level of liquid assets and with a higher ratio of other interest bearing liabilities to total assets receive a less negative impact on the stressed Tier 1 Capital Ratio. The sign of LIQ is consistent with our prediction as banks with higher level of liquid assets show higher Tier 1 Capital Ratio and the effects of the stress test are less negative. The variable INTBEAR shows a positive sign as opposed to our prediction. This could imply that the adverse scenario does not contemplate the bank reaction to liquidity problems through deposits interest rate adjustment, so higher levels of interest bearing liabilities result in higher levels of loans granted and hence higher profitability.

The results as a whole indicate that financial institutions that are inefficient or complex, with high loans loss provisions booked, with low level of liquid assets and low level of other interest bearing liabilities to total assets received a more negative impact in the 2011 EU stress test.

In Table 5 we also report the regression model results for each individual stressed year. The sign of the independent variables is consistent with the sign we got in the pooled sample but for 2011 none of the independent variables is significant. For 2012, all the variables that are statistically significant in the pooled sample are also significant in 2012 except for INTBEAR. These results are consistent with the negative sign of YEAR in the pooled sample: banks with higher level of liquid assets, low levels of loan loss provisions and that are efficient get better results in the stress testing exercise in the more negative

2012 adverse scenario. These results provide evidence that banks with this risk profile are prepared to face severe scenarios and avoid negative impact on the Tier 1 Capital Ratio.

We report in Table 2.6 the stress test deviation (STD) regression model estimation results. The regression model has a significant F value with an adjusted R-square is 45.46%.

Multicollinearity test show that the mean Tolerance level of the independent variables is less than 0.01 and the mean VIF value is below 5. Therefore, multicollinearity is not a concern in our model (Cohen et al , 2003).

INSERT TABLE 2.6 HERE

The results indicate that the variable YEAR has a positive and significant relationship at 1% level with STD, showing that the gap between the stress testing results and the current Tier 1 capital ratio was bigger for 2012 than for 2011. The sign is consistent with our prediction and it is reasonable because the conditions of the adverse scenario simulated were registered neither in 2012 nor in 2011 and, for 2012 the predicted scenario was more negative than the one predicted for 2011. Additionally, the EBA Capital exercise was concluded by June 2012. The variable CAPRATIO is positively significant at the 1% level showing that financial institutions with higher capital ratio (equity to total assets) have a better current Tier 1 Capital Ratio than the resulting in the stress test. The sign is also consistent with our prediction.

The results also show that the variables ROA and EFF are positive and significant at the 1% and 5% level respectively, meaning that financial institutions with higher return on assets and higher efficiency ratio have a higher current Tier 1 Capital Ratio than the stressed ratio and this is also the case for companies that have a lower ratio of operating income to total assets (the variable OPINC is negative and significant at the 1% level). The variables

OPINC and EFF show the expected sign, but this is not the case with ROA. Banks with higher ROA are not able to show higher Tier 1 Capital Ratios as banks with higher OPINC do. This shows that only banks that are profitable in the banking business increase capital through total earnings.

The variable LLP is positive and significant at the 10% level as predicted, implying that financial institutions with higher levels of loan loss provisions have a higher Tier 1 Capital Ratio than the resulting from the stress test. This is because the stress test impact on the stressed Tier 1 Capital Ratio was highly negative in these banks.

Finally, the variable ΔEQUITY is negative and significant at the 1% level while ΔASSETS is negative but not significant. This result indicates that banks with an equity increase in the current year show a smaller gap between the current and the stressed Tier 1 Capital ratio, not being able to get a higher current Tier 1 Capital ratio even though they increase equity. The variable CEXERCISE shows, as predicted, a positive sign but it is not significant. This means that CEXERCISE has no impact on DEV.

To further investigate this result and considering that YEAR is significant, we run our model separately for each individual year. Table 6 shows the results. OPINC, LLP and CAPRATIO are not significant in the individual years as they are in the pooled sample. ROA and EFF are also significant in each year as they are in the pooled sample and keep the same sign. The variable CEXERCISE shows a positive sign but it is not significant. This shows no effect of the EBA Capital Exercise in the capital ratio level, neither in 2011 nor in 2012. The variable ΔEQUITY is negative and significant in 2012 as it is in the pooled sample. But in 2011, ΔEQUITY is positive and significant and now ΔASSETS is negative and significant, while it was non-significant neither in the pooled sample nor in 2012. This result is interesting considering that stress tests produce valuable information for market participants and the velocity of

reaction may be influenced by the level and moment of disclosure of the results. The release of bad results may impact banks differently and lead bank managers to different actions to improve the quality of the risk management tools. Therefore, our results show that banks that in 2011 increase their equity and shrink their assets manage to increase their current Tier 1 Capital Ratio, while in 2012 banks that increase their equity decrease their current Tier 1 Capital Ratio. As ΔASSETS is not significant in 2012, this means that banks decrease the current Tier 1 Capital Ratio by taking more risk and managing the risk-weight of their assets. Once the stress test results are announced, banks adjust their 2011 financial statements increasing equity and shrinking assets to get a higher Tier 1 Capital Ratio. Banks revert in 2012 this potentially excessive adjustment, by shifting to riskier assets and increasing, as a result, the risk-weighted assets because they are not able to get higher current Tier 1 Capital ratio even though they increase equity. This is evidence of risk-shifting moral hazard according to Jensen and Meckling (1976) and shows recapitalization or assets reduction strategy to comply with capital requirements (Admati et al. 2013). These results give support to risk-weight manipulation theories. In a study about Basel risk-weights manipulation, Mariathasan and Marrouhe (2014) find that the decline in risk weights is particularly pronounced among weakly capitalized banks. Mariathasan and Marrouhe (2014) identify four mechanisms to reduce the average risk-weights: portfolio re-allocation (the bank changes resources from assets that require more capital to assets that require less capital), improved risk-measurement (more precise risk measurement can reduce capital requirements), faulty risk-modeling (financial models with flawed assumptions) and strategic risk-modeling (internal models that banks use are complex and difficult to supervise). Duran and Lozano-Vivas (2015) find risk shifting evidence in European banks in the 2002-2009 period and argue that incentives to shift risk seem to be weaker in banks with a capital buffer.

Hence, our results indicate that financial institutions with higher ROA but lower profitability in the banking business, with higher capital ratio, with higher level of loan loss provisions and with higher cost to income ratio manage to have a higher Tier 1 Capital Ratio than the stressed Tier 1 Capital Ratio resulting from the stress test exercise. The variables that are consistently significant in the pooled and in each separate year are ROA and EFF showing that banks with higher ROA and that are complex manage to get higher current Tier 1 Capital Ratios. The results also provide evidence of capital structure adjustment through equity increase and assets decrease in the year the stress test results are disclosed and a reversion of this adjustment in the following year. These results provide additional evidence to the risk-shifting moral hazard theory and are in line with Archarya and Steffen (2015) findings. They find evidence for bank moral hazard in large and undercapitalized European banks and argue that this could lead undercapitalized banks to subsequent problems through excess risk taking.

2.5.2 Target capital ratio and the speed of adjustment

In Table 7 we report the descriptive statistics of the sample we use to test H3. We also use this sample to calculate the average speed of adjustment and the average target capital ratio following the methodology described in section *2.4*.

INSERT TABLE 2.7 HERE

We obtained an annual average speed of adjustment of 64.16% and an average target Tier 1 capital ratio of 11.66% for all the banks included in the sample. With this speed of adjustment, banks need on average three years to close 95% of the gap between current Tier 1 capital ratio and the target Tier 1 capital ratio $(1-(1-0.6416)^3 = 0.95)$. When we compare our results with prior studies' findings we notice that the EU banks targeted by the stress test show a high speed of adjustment, a result which is consistent with financial markets with low adjustment costs. Some studies show that US banks close its gap at the rate

of more than 30% per year (Jokipii and Milne, 2011; Flannery and Ranjan, 2006) and De Jonghe and Öztekin (2015) find a speed of adjustment of 29% for a sample of 64 countries during the 1994–2010 period. The study finds that the speed of capital structure adjustment is heterogeneous across countries and shows that banks make faster capital structure adjustments in countries with more stringent capital requirements, better supervisory monitoring, more developed capital markets, and high inflation. Additionally, in times of crises, banks adjust their capital structure significantly more quickly. Other studies find a speed of adjustment of 40% for large U.S. banks (Berger et al., 2008), 47% for banks in the United States and 15 European countries (Gropp and Heider , 2010) and also in emerging markets banks in Panamá (74.6%), México (61.10%) and Paraguay (61.4%) (Carvallo et al., 2015). Banks that show highest capital adjustment have easier access to capital replenishment (Carvallo et al., 2015). The speed of adjustment we find in our sample of European banks is consistent with these previous findings.

Using the average speed of adjustment and the set of β coefficients we got from the equation (3) described in section *2.4.3*, we use equation (2) to calculate the target Tier 1capital ratio for each bank of the sample in each year and finally, using equation (4), we calculate the deviation of the current Tier 1capital ratio from the target Tier 1 capital ratio. We then form four quartiles in each year based on this average deviation and calculate the average variation between the current year Tier 1 Capital Ratio and previous year Capital Ratio for each quartile each year. We report the results in Figure 2.1.

INSERT FIGURE 2.1 HERE

In Figure 1 we include one graph for each year in the sample (2012-2009). Banks to the left on the horizontal axis have the current Tier 1 Capital Ratio higher than the target Tier 1 Capital Ratio and should be acting to reduce the former to meet the target. On the other hand, banks to the right have current

Tier 1 Capital Ratio lower than the target and should be acting to meet the target. Interestingly, the results reported in Figure 1 show that only in the year following the year subject to the stress test, the behavior of the banks is consistent with this expected course of action (see graph 2). Banks that in 2010 were on average 9.13% points short of their target increase their Tier 1 Capital Ratio in 2.70% points in 2011 in order to close the gap (Q4) and banks that were on average 1.74% points short of the target increased their Tier 1 Capital Ratio in 0.52% points in 2011 in order to close the gap (Q3). On the other hand, banks that were high above their target (8.49% points, Q1) reduced their Tier 1 Capital Ratio in 0.23% points in 2011 and banks that were on average 2.57% points above their target reduced their target in 1.31% points (Q2) in 2011. These results suggest that after the stress test results are released by the end of 2011, banks adjust their Tier 1 Capital Ratio in a more rational manner according to the cost-benefit trade-off. This also shows that stress testing plays a disciplinary role with banks and that the stress test results released provide useful information to banks that is incorporated in the decision making process (Petrella and Resti, 2013). These results are consistent with our findings of STI and STD models, providing additional support for the informational and disciplinary role of stress test results disclosure. In the results we provide for the STD model we also show risk-shifting moral hazard behavior.

We also note that in the years prior to the stress test, the banks that have Tier 1 Capital Ratio higher than the target tend to increase the Tier 1 Capital Ratio in the following year instead of reducing it (see graphs 3 and 4). This could imply that the banks with strong capital structure continue to increase the additional capital for the reasons described in Berger et al. (2008) and to face the regulatory stress test in a stronger position. This behavior is also seen in the year following the stress test (see graph 1).

In order to analyze these results in the aggregate for each year, we report in Table 2.8 the average target Tier 1 Capital Ratio ($Tier1CR^*_{i,t}$), the average Tier

1 Capital Ratio for t and t-1 ($Tier1CR_{i,t}$,and $Tier1CR_{i,t-1}$) and the deviation of average Tier 1 Capital Ratio in t-1 from the average target Tier 1 Capital ratio for the subsequent year ($D\hat{E}V_{i,t}$).

INSERT TABLE 2.8 HERE

It is interesting to note the significant average deviation that 2008 current Tier 1 Capital Ratio has from the average target Tier 1 Capital Ratio for 2009 (3.13% points) for all the banks included in the sample and the way in which this deviation almost disappear by 2012, remaining a gap of only 0.05% points. The deviation radically changed by 2010, the year in which the stress test targeted these banks. This is also consistent with the average speed of adjustment of 64.16% per year, showing that in 3 years the sample banks almost completely close the gap between target and current Tier 1 Capital Ratio (during the period 2010-2012).

Finally, we report in Table 2.9 the deviation from target ($D\hat{E}V$) regression model estimation results. The regression model has a significant F value. The adjusted R-square is 86.21%.

INSERT TABLE 2.9 HERE

The results indicate that banks whose current Tier 1 capital ratio is lower than the target Tier 1 capital ratio tend to have large loan portfolios, are profitable in the banking business but get lower return on assets, have lower level of liquid assets, lower capital ratio and lower level of other interest bearing liabilities to total assets, are inefficient and are not involved in CSR reporting. The sign of the coefficients are consistent with our prediction except for INTBEAR and OPINC. The results also show that the quality of the loan portfolio is not related to the deviation the current capital ratio has from the target capital ratio. The explanatory variable ST is negative and significant at the 1% level, suggesting that in the years following the stress tests, the deviation the current

Tier 1 capital ratio has from the target is lower. This is consistent with the speed of adjustment we find in our analysis.

2.6 Conclusions

This study investigates the impact that the 2011 EU Stress Test performed by the EBA had on the current 2010 Tier 1 Capital Ratio when it was stressed in the adverse scenario for 2011 and 2012 and how the magnitude of this impact relates to the risk profile of the targeted financial institutions.

Under the theory that individual banks and regulators use stress tests as a risk management tool, and moreover, that stress testing is a crucial component of the risk management system of financial institutions, we find that an efficient risk management system will help the financial institution to mitigate the impact of the stress testing performed by the regulator. The purpose of this paper is to look into the connection between the macro stress testing impact and bank risk factors under the CAMELS multifaceted risk approach.

We also look into the gap between the stress testing results for 2011 and 2012 and the current Tier 1 Capital Ratio of the targeted financial institutions and analyze the relationship with their risk profile, also using the CAMELS approach. We do this with the purpose of looking into the banks' risk management strategy to modify its capital structure after the stress test results are disclosed.

Our findings show strong evidence that banks with higher level of liquid assets, low levels of loan loss provisions and that are efficient get better results in the stress testing exercise in the more negative 2012 adverse scenario. These results show that banks with this risk profile are prepared to face severe scenarios and avoid negative impact on the Tier 1 Capital Ratio.

We also look into the gap between the current Tier 1 capital ratio and the stressed Tier 1 capital ratio resulting from the stress testing exercise for each

year. We find that the distance between the current with the stressed ratio in each year is on average three times bigger than the distance between the stressed ratio for each year and the current ratio in 2010 (the targeted year in the stress test exercise). The results provide evidence of capital structure adjustment through equity increase and assets decrease in the year the stress test results are disclosed (2011) and we also find evidence that banks revert in 2012 this potentially excessive adjustment, by shifting to riskier assets and increasing, as a result, the risk-weighted assets because they do not show higher current Tier 1 Capital ratio even though they increase equity. The results also show that the EBA Capital Exercise has no impact on the difference between the current and the stressed Tier 1 capital ratio, meaning that banks that were required to capitalize by the EBA adjust their Tier 1 capital ratio similarly to banks that had surplus in the Capital Exercise. These results give support to the informational role of stress tests because all banks targeted by the EU-wide stress test adjust their Tier 1 capital ratio irrespective of the EBA capitalization requirement in the Capital Exercise.

Finally, we find the risk profile of banks that tend to have the current Tier 1 capital ratio with a lower deviation from the target Tier 1 capital ratio. Interestingly, this risk profile has some similarities to the profile of banks that manage to get higher capital ratios than the stress test result. We also show that banks align the current Tier 1 capital ratio to the target Tier 1 capital ratio after the stress test results are disclosed and that they almost completely close the gap between the current and the target capital ratio in three years which is, in fact, the window period between stress tests in the European Union. These results are consistent with the idea that banks align their target capital ratio with the regulatory requirements because they also use regulatory stress testing as part of their capital risk management strategy. This also shows that stress testing plays a disciplinary role with banks and that the stress test results released provide useful information to banks that is incorporated in the decision making process.

Our findings contribute to the literature and regulatory debate on the disciplinary role that macro stress testing play in the risk management of individual banks and also on the informational role that stress test results play to management. In fact, the results obtained shed some light on the relationship between the risk profile of a financial institution and the impact a macro stress testing has on Tier 1 Capital Ratio in an adverse scenario and how risk management can be used by individual banks to improve the capital ratio through risk-weighting shifting strategies after the stress test results are disclosed. Our findings also show that stress tests also play a disciplinary role in leading banks to meet their target capital ratio and we find the risk profile of banks that close the gap between the current and the target Tier 1 capital ratio faster. Our results also adds evidence to the debate about the weak severity of the adverse stress test scenario used by the EBA in the 2011 European stress test according to Archarya et al. (2014), as we find that the gap between the current Tier 1 Capital ratio in 2011 and 2012 with the stressed Tier 1 Capital Ratio for each year is three times larger than the gap between the 2010 current Tier 1 Capital Ratio and the stressed Tier 1 Capital Ratio for each year.

This study helps regulators to focus their regulatory efforts on banks that show risk profiles that tend to receive more negative results in this type of stress testing exercise and also help to understand the risk profile of banks that use risk management strategies to modify their capital structure after the stress test results are disclosed. The results also give support to stress tests as an effective regulatory tool and show that the target capital ratio of a bank is consistent with the stressed capital ratio derived from the stress test exercise.

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Table 2.1 – Samples coverage of EU-wide stress test banks total assets (in million Euros)

	AT	BE	CY	DE	DK	ES	FI	FR	GB	GR	HU
EU-wide sample	381,856	824,858	84,576	4,872,189	631,433	3,354,365	74,722	5,553,796	5,122,341	377,200	35,190
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
H1 2011 - Sample	381,856	276,723	41,996	3,018,099	631,433	2,823,808	74,722	5,553,796	5,122,341	329,196	35,190
	100%	34%	50%	62%	100%	84%	100%	100%	100%	87%	100%
H1 2012 - Sample	381,856	276,723	41,996	3,018,099	631,433	2,823,808	74,722	5,553,796	5,122,341	329,196	35,190
	100%	34%	50%	62%	100%	84%	100%	100%	100%	87%	100%
H2 2011 - Sample	250,683	276,723	-	3,018,099	631,433	2,743,340	74,722	5,553,796	5,122,341	329,196	35,190
	66%	34%	0%	62%	100%	82%	100%	100%	100%	87%	100%
H2 2012 - Sample	250,683	276,723	-	3,018,099	631,433	2,690,068	74,722	5,553,796	5,122,341	204,717	35,190
	66%	34%	0%	62%	100%	80%	100%	100%	100%	54%	100%
H3 - Sample	-	276,723	-	2,676,831	631,433	2,232,954	-	3,049,480	5,122,341	204,717	35,190
	0%	34%	0%	55%	100%	67%	0%	55%	100%	54%	100%

Table 2.1 (cont.) – Samples coverage of EU-wide stress test banks total assets (in million Euros)

	IE	IT	LU	MT	NL	NO	PL	PT	SE	SI	Total
EU-wide sample	334,766	2,021,330	-	6,382	1,999,073	209,954	35,540	348,799	1,186,659	17,969	27,472,998
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
H1 2011 - Sample	288,023	2,021,330	-	-	1,619,474	-	35,540	304,972	643,806	4,830	23,207,136
	86%	100%	0%	0%	81%	0%	100%	87%	54%	27%	84%
H1 2012 - Sample	288,023	2,021,330	-	-	1,619,474	-	35,540	304,972	643,806	4,830	23,207,136
	86%	100%	0%	0%	81%	0%	100%	87%	54%	27%	84%
H2 2011 - Sample	288,023	2,021,330	-	-	1,619,474	-	35,540	304,972	643,806	4,830	22,953,499
	86%	100%	0%	0%	81%	0%	100%	87%	54%	27%	84%
H2 2012 - Sample	288,023	2,021,330	-	-	1,619,474	-	35,540	304,972	643,806	4,830	22,775,749
	86%	100%	0%	0%	81%	0%	100%	87%	54%	27%	83%
H3 - Sample	288,023	1,750,728	-	-	1,011,991	-	35,540	304,972	643,806	4,830	18,269,560
	86%	87%	0%	0%	51%	0%	100%	87%	54%	27%	67%

Table 2.2 – Sample descriptive statistics corresponding to 2010 year-end financial statements for H1 sample

(N=61)	Minimum	Maximum	Mean	Std. Deviation
Stress Test Impact 2011 %	-2.75%	1.25%	-0.81%	0.98%
Stress Test Impact 2012 %	-5.17%	1.31%	-1.57%	1.78%
Loans th USD	375,935.84	959,876,907.82	241,154,205.83	282,198,464.71
Total assets th USD	468,716.60	2,671,334,325.23	516,431,283.12	708,230,271.51
Other Int bearing liabilities to total assets	0.00	0.69	0.25	0.15
Liquid Assets th USD	8,689.84	863,178,400.46	115,881,546.40	203,299,273.77
Operating income to total assets	0.00	0.04	0.01	0.01
Loan Loss Provisions th USD	1,203.21	16,787,167.39	2,375,844.69	3,664,913.88
Equity / Total assets %	2.33	26.81	6.47	3.65
ROA using P/L before tax %	-8.30	2.88	0.34	1.23
Cost to Income Ratio %	29.65	77.68	57.81	9.09

Source: Orbis database

Table 2.3 – Sample descriptive statistics corresponding to 2011 and 2012 year-end financial statements for H2 sample

Year		Stress Test Deviation	Loans th USD	Total assets th USD	Other Int bearing liabilities to total assets	Liquid Assets th USD	Operatin income to total assets	Loan Loss Provisions th USD	Equity / Total assets %	ROA using P/L before tax %	Cost to Income Ratio %
2011	N	53	53	53	53	53	53	53	53	53	53
	Mean	2.85%	264,157,230.67	594,759,073.38	0.28	127,723,649.42	0.01	2,569,574.69	5.20	-0.93	66.90
	Minimum	-13.84%	4,973,882.41	7,521,572.24	0.01	374,454.66	-0.01	-247,397.54	-3.93	-15.15	-175.77
	Maximum	16.72%	964,832,773.87	2,800,133,673.71	0.69	849,128,587.71	0.02	14,284,656.14	13.90	2.51	346.19
	Std. Dev.	4.14%	281,272,182.41	758,132,989.35	0.14	200,139,705.19	0.00	3,315,168.18	2.88	3.22	54.51
2012	N	49	49	49	49	49	49	49	49	49	49
	Mean	4.65%	281,334,812.36	644,310,694.34	0.28	146,815,543.73	0.01	3,562,108.26	5.20	-0.33	69.86
	Minimum	-14.37%	4,483,189.10	7,021,582.67	0.02	353,863.07	-0.01	2,111.04	-2.15	-7.86	33.52
	Maximum	16.56%	947,573,597.62	2,655,067,747.35	0.67	845,095,766.25	0.02	24,473,549.73	14.98	2.40	346.82
	Std. Dev.	4.03%	278,906,455.99	764,128,801.89	0.13	217,690,841.19	0.00	5,138,321.07	2.92	1.63	42.81
Total	N	102	102	102	102	102	102	102	102	102	102
	Mean	3.72%	272,409,206.19	618,563,283.45	0.28	136,895,245.71	0.01	3,046,380.03	5.20	-0.64	68.32
	Minimum	-14.37%	4,483,189.10	7,021,582.67	0.01	353,863.07	-0.01	-247,397.54	-3.93	-15.15	-175.77
	Maximum	16.72%	964,832,773.87	2,800,133,673.71	0.69	849,128,587.71	0.02	24,473,549.73	14.98	2.51	346.82
	Std. Dev.	4.16%	278,882,241.10	757,648,680.63	0.14	207,933,582.83	0.00	4,295,855.90	2.89	2.59	49.02

Source: Orbis database

Table 2.4 – Panel A : Banks per country in sample to test H1

Country	Banks
AT	3
BE	1
CY	1
DE	4
DK	4
ES	15
FI	1
FR	4
GB	4
GR	4
HU	1
IE	2
IT	5
LU	1
NL	3
PL	1
PT	3
SE	3
SI	1
Total	61

Table 2.4 – Panel B : Banks per country in sample to test H2

Country	2011 Banks	2012 Banks	Total
AT	2	2	4
BE	1	1	2
DE	4	4	8
DK	4	4	8
ES	10	8	18
FI	1	1	2
FR	4	4	8
GB	4	4	8
GR	4	2	6
HU	1	1	2
IE	2	2	4
IT	5	5	10
NL	3	3	6
PL	1	1	2
PT	3	3	6
SE	3	3	6
SI	1	1	2
Total	53	49	102

Source: Orbis database

Table 2.5 - Stress Test Impact (STI) model

	Pooled Sample			2011 Sample			2012 Sample		
Variable	**Standardized Coefficients Beta**	**t-stat.**		**Standardized Coefficients Beta**	**t-stat.**		**Standardized Coefficients Beta**	**t-stat.**	
CSRR	0.028	0.335		0.038	0.289		0.027	0.219	
LOANS	0.043	0.15		0.090	0.205		0.021	0.052	
INTBEAR	0.176	1.738	*	0.133	0.848		0.222	1.527	
LIQ	0.451	2.056	**	0.273	0.805		0.603	1.921	*
OPINC	0.18	1.368		0.076	0.375		0.257	1.366	
LLP	-0.438	-2.314	**	-0.423	-1.446		-0.499	-1.840	*
CAPRATIO	0.159	1.102		0.255	1.148		0.125	0.608	
ROA	0.1	0.955		0.121	0.748		0.101	0.671	
EFF	-0.211	-2.229	**	-0.220	-1.499		-0.233	-1.715	*
YEAR	-0.257	-3.385	***						
N	122			61			61		
F Value	6.243		***	2.412		***	3.748		***
Adjusted R^2	30.20%			17.50%			29.20%		
Mean Tolerance	0.449			0.387			0.387		
Mean VIF	4.257			4.619			4.619		

Reported are the coefficients and t-stat of the regression on STI.
The dependent variable is STI defined as the difference between the
stressed Tier 1 Capital Ratio for 2011 and 2012 with the current Tier 1
Capital Ratio in 2010 taken from 2010 year-end financial statements.
The independent variables are defined as follows:
CSRR, a dummy variable that equals one if the financial institutions
issues a sustainability report, and zero otherwise
LOANS is the financial institution's natural log of total loans
INTBEAR is the financial institution's other interest bearing deposits to total assets ratio
LIQ is the financial institution's natural log of total liquid assets
OPINC is the financial institution's operating income to total assets ratio
LLP is the financial institution's natural log of loan loss provisions
CAPRATIO is the financial institution's equity to total assets ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
EFF is the financial institution's cost to income ratio
YEAR is set to zero for 2011 and one for 2012
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 2.6 - Stress Test Deviation (STD) model

	Pooled Sample		2011 Sample		2012 Sample	
Variable	**Standardized Coefficients Beta**	**t-stat.**	**Standardized Coefficients Beta**	**t-stat.**	**Standardized Coefficients Beta**	**t-stat.**
CSRR	-0.054	-0.680	-0.049	-0.590	0.124	1.270
LOANS	0.005	0.020	0.198	0.690	-0.042	-0.170
INTBEAR	0.143	1.420	0.173	1.410	0.118	1.050
LIQ	-0.088	-0.470	-0.286	-1.350	-0.132	-0.520
OPINC	-0.436	-3.940***	-0.142	-0.960	-0.118	-0.790
LLP	0.255	1.800*	0.061	0.270	0.107	0.710
CAPRATIO	0.378	3.060***	-0.057	-0.310	-0.106	-0.600
ROA	0.491	3.720***	0.372	2.030*	0.455	2.610**
EFF	0.178	2.090**	0.169	1.740*	0.586	4.150***
ΔASSETS	-0.100	-1.170	-0.154	-1.510*	0.043	0.420
ΔEQUITY	-0.316	-3.110***	0.674	5.100***	-0.700	-7.180***
CEXERCISE	0.506	0.590	0.107	1.100	0.095	0.960
YEAR	0.250	3.110***				
N	102		53		49	
F Value	7.350	***	9.960	***	8.840	***
Adjusted R^2	45.46%		68.25%		66.23%	
Mean Tolerance	0.526		0.367		0.401	
Mean VIF	2.906		4.588		3.68	

Reported are the coefficients and t-stat of the regression on STD.
The dependent variable is STD defined as the difference between the current Tier 1 Capital Ratio in 2011 and 2012 taken from the corresponding year-end financial statements with the stressed Tier 1 Capital Ratio for 2011 and 2012.
The independent variables are defined as follows:
CSRR, a dummy variable that equals one if the financial institutions issues a sustainability report, and zero otherwise
LOANS is the financial institution's natural log of total loans
INTBEAR is the financial institution's other interest bearing deposits to total assets ratio
LIQ is the financial institution's natural log of total liquid assets
OPINC is the financial institution's operating income to total assets ratio
LLP is the financial institution's natural log of loan loss provisions
CAPRATIO is the financial institution's equity to total assets ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
EFF is the financial institution's cost to income ratio
ΔASSETS is defined as the assets variation between the current and the previous year
ΔEQUITY is defined as the equity variation between the current and the previous year
CEXERCISE is defined as a dummy variable set to one if the bank showed a capital shortfall in the EBA Capital exercise and zero otherwise
YEAR is set to zero for 2011 and one for 2012
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 2.7 – Sample descriptive statistics corresponding to the sample of 37 financial institutions targeted by 2010 stress test for period 2012-2009

(N=148)	**Mean**
Speed of adjustment (λ)	0.641
Target Capital Ratio (Tier1CR*$_{i,t}$)	11.66%
Loans th USD	169,881,212
Operating income to total assets	0.017
Other Int bearing liabilities to total assets	0.305
Liquid Assets th USD	42.983.204
Loan Loss Provisions th USD	1.228.679
ROA using P/L before tax	10.70%
Cost to Income Ratio	62.00%
Equity / Total assets	5.47%
Tier 1 Capital Ratio	10.37%

Source: Orbis database

The first two rows of the table show the speed of adjustment we calculate using the equation $Tier1CR_{i,t} = \lambda\beta X_{i,t-1} + (1-\lambda)Tier1CR_{i,t-1}$ and the target capital ratio we calculate using the equation $Tier1CR^*_{i,t}, = \beta X_{i,t-1.}$
We estimate equation $Tier1CR_{i,t} = \lambda\beta X_{i,t-1} + (1-\lambda)Tier1CR_{i,t-1}$ following the Blundell and Bond (1998) Generalized Method of Moments estimator.

Table 2.8 – Deviation from target Tier 1 Capital Ratio and subsequent year's adjustment

	Average %				
t	$Tier1CR^*_{i,t}$	$D\hat{E}V_{i,t}$	$Tier1CR_{i,t}$	$Tier1CR_{i,t-1}$	$Tier1CR_{i,t} - Tier1CR_{i,t-1}$
2009	11.73	3.13	10.59	8.60	1.98
2010	10.90	0.31	10.92	10.59	0.33
2011	11.12	0.20	11.40	10.92	0.48
2012	11.45	0.05	12.03	11.40	0.63

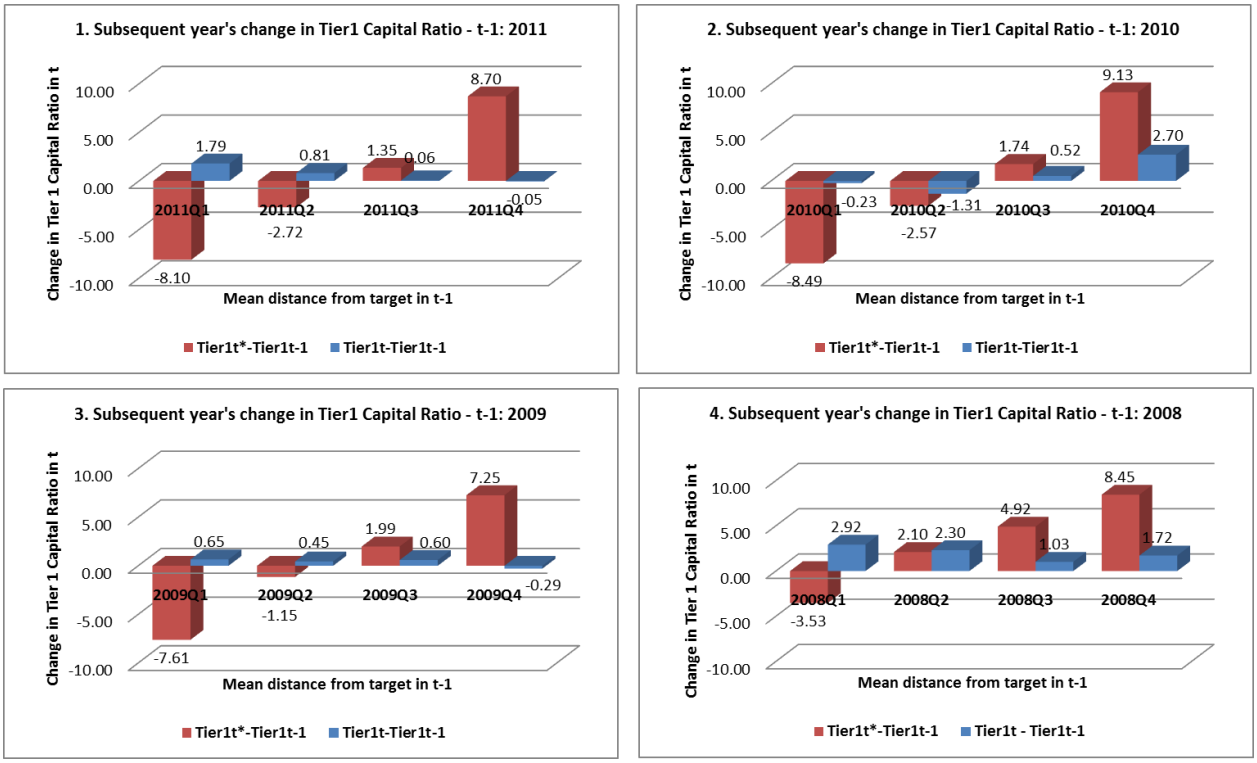
We calculate the average distance from target Tier 1 Capital Ratio in t from the current Tier 1 Capital Ratio in t-1 as follows: $D\hat{E}V_{i,t} = Tier1CR^*_{i,t} - Tier1CR_{i,t-1}$, where $Tier1CR^*_{i,t}, = \beta X_{i,t-1.}$ and $Tier1CR^*_{i,t}$, was estimated through the equation $Tier1CR_{i,t} = \lambda\beta X_{i,t-1} + (1-\lambda)Tier1CR_{i,t-1}$ following the Blundell and Bond (1998) Generalized Method of Moments estimator. The change in Tier 1 Capital Ratio in t was calculated as $Tier1CR_{i,t} - Tier1CR_{i,t-1}$

Table 2.9 - Target Tier 1 Capital Ratio deviation (DÊV) model

Variable	Standardized Coefficients		
	Beta	t-stat.	
CSRR	-2.318	-5.71	***
LOANS	7.292	17.59	***
INTBEAR	-6.281	-3.50	***
LIQ	-6.625	-23.03	***
OPINC	55.620	2.08	**
LLP	-.139	-1.23	
CAPRATIO	-.321	-2.44	**
ROA	-.659	-4.33	***
EFF	.032	2.52	**
ST	-1.614	-2.60	***
N	148		
F Value	92.88	***	
Adjusted R^2	86.21%		

Reported are the coefficients and t-stat of the regression.
The dependent variable is DÊV defined as the difference between the target Tier 1 Capital Ratio in t and the current Tier 1 Capital Ratio in t-1.
DÊV is calculated as follows: $D\hat{E}V_{i,t} = Tier1CR^*_{i,t} - Tier1CR_{i,t-1}$,
where $Tier1CR^*_{i,t}$, $= \beta X_{i,t-1.}$ and $Tier1CR^*_{i,t}$, was estimated through the equation $Tier1CR_{i,t} = \lambda\beta X_{i,t-1} + (1-\lambda)Tier1CR_{i,t-1}$ following the Blundell and Bond (1998) Generalized Method of Moments estimator. The change in Tier 1 Capital Ratio in t was calculated as $Tier1CR_{i,t} - Tier1CR_{i,t-1}$
The independent variables are defined as follows:
CSRR, a dummy variable that equals one if the financial institutions issues a sustainability report, and zero otherwise
LOANS is the financial institution's natural log of total loans
INTBEAR is the financial institution's other interest bearing deposits to total assets ratio
LIQ is the financial institution's natural log of total liquid assets
OPINC is the financial institution's operating income to total assets ratio
LLP is the financial institution's natural log of loan loss provisions
CAPRATIO is the financial institution's equity to total assets ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
EFF is the financial institution's cost to income ratio
ST is set to 1 for the years following the stress test and 0 otherwise
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Figure 2.1 – Subsequent year's change in Tier 1 Capital Ratio (figures in % points)



We calculate the mean distance from target Tier 1 Capital Ratio in t from the current Tier 1 Capital Ratio in t-1 as follows: $D\hat{E}V_{i,t} = Tier1CR^*_{i,t} - Tier1CR_{i,t-1}$, where $Tier1CR^*_{i,t}, = \beta X_{i,t-1.}$ and $Tier1CR^*_{i,t}$, was estimated through the equation $Tier1CR_{i,t} = \lambda\beta X_{i,t-1} + (1-\lambda)Tier1CR_{i,t-1}$ following the Blundell and Bond (1998) Generalized Method of Moments estimator. The change in Tier 1 Capital Ratio in t was calculated as $Tier1CR_{i,t} - Tier1CR_{i,t-1}$

Chapter 3 - Capital structure adjustment and risk shifting moral hazard: the bank opacity effect in emerging markets

Chapter 3 - Capital structure adjustment and risk shifting moral hazard: the bank opacity effect in emerging markets

3.1 Introduction

Setting an optimal capital requirement is the desire of every financial services sector regulator because it will help them to comply with their mandate of keeping financial stability. Banks finance themselves with households and business' deposits as well as with investors' equity capital that invest in risky assets (Allen et al., 2014). Depositors play a disciplinary role with bank management because if they suspect management is inefficient they can withdraw their deposits leading the bank to bankruptcy (Calomiris and Kahn, 1991). Considering this, banks hold a positive amount of capital to reduce bankruptcy cost and because bank's leverage should be high enough to play a management disciplinary role but not too high to create risk shifting moral hazard (Jensen and Meckling, 1976), risk that increases due to the opaqueness of banks' balance sheets (Morgan, 2001). A well-capitalized bank increases the bank's creditworthiness reducing costs of funding and lowering risk of bankruptcy, and also has more capability to develop business and deal with risks (Mirzaei et al., 2013).

The capital structure theory suggests that the optimal capital requirement should have two components: a core capital requirement to limit bank leverage and a special capital account to act as a capital buffer (Archarya et al, 2014, Admati et al., 2013). Research has found that the capital buffer size depends on the economic cycle (Carvallo et al., 2015; Shim, 2013; Jokippi and Milne, 2009) and whether the financial institution operates in a developed or emerging economy (Carvallo et al., 2015; Fonseca and Gonzalez, 2010). Regarding the optimal core capital requirement, a way to find it is to estimate assets quality and risk appropriately through regulatory tools such as risk-weighted assets schemes and stress testing (Archarya et al., 2014).

The use of stress testing after the financial crisis by the European Banking Authority is consistent with Basel III requirements that move towards a system of banking supervision more risk-oriented, especially generating measures or models that can anticipate or show vulnerabilities of financial institutions.

In emerging markets, stress testing is not yet a common practice among regulators. This is due to the existence of severe deficiencies in the accounting and regulatory framework and lack of liquid markets for bank shares, subordinated debt and other bank liabilities and assets needed to validate the real worth of a bank as opposed to its accounting value (Rojas-Suarez, 2002a). It is also relevant to recall that although the Basel Accords state that its positions are not recommended for application in emerging markets, emerging markets financial institutions use the Accords as appropriate banking standards (Balin, 2008). This includes the Tier 1 Capital Ratio that it is not subject to a standard stress testing exercise throughout these emerging markets.

Taking into account Petrella and Resti (2013) findings that show that stress tests results reduce bank opacity because they provide investors with relevant information, we investigate whether emerging markets adjust Tier 1 Capital Ratio (the risk-weighted capital ratio) differently from Total Capital Ratio (the book value capital ratio) taking advantage of higher bank opacity than in developed markets. We investigate also whether banks in emerging and developed markets adjust their risk level differently. This is of special interest because there is no consensus on the measure of capital that banks use internally to make decisions (Jokipii and Milne, 2011). Following Jokipii and Milne (2011) we proxy risk level as the risk-weighted assets to total assets ratio. The severe deficiencies in the accounting and regulatory framework, the lack of liquid markets for bank shares (Rojas-Suarez 2002a) and considering the Basel Accords are not recommended for application in emerging markets, contribute to increase financial statements opacity in emerging markets. We investigate whether banks in emerging and developed markets use total capital

ratio (based on accounting standards) or Tier 1 Capital Ratio (based on Basel Accords) to make decisions and the bank's characteristics that impact on the capital structure. We also look for evidence of higher risk shifting moral hazard in emerging markets than in developed markets as a consequence of higher emerging markets' bank opacity. The higher the capital requirement the more risk shareholders assume. The incentives of shareholders to engage in risk shifting are stronger when the capital is lower (Duran & Lozano-Vivas, 2015). The moral hazard conflict between shareholders and creditors increases when investments are riskier and the capital to assets ratio decreases (Duran & Lozano-Vivas, 2015). Additionally, we control for the role that state owned banks play on the risk shifting moral hazard and risk-weighting manipulation in emerging markets as this type of banks are more prevalent in poorer countries and in countries with less efficient governments (Barth et al., 2001), are linked to political objectives and have weaker risk management rules (Dong et. al., 2014).

We also investigate whether emerging markets financial institutions align their actual Tier 1 and Total Capital Ratio to the corresponding targets and whether their risk profile over time is related to such deviation considering the higher market opacity than in developed markets. We also investigate the deviation between the current and the target risk level of banks in both markets. It is of special interest to know whether the 2008/09 financial crisis has an impact on such deviations (Teixeira et al., 2014).

The objectives of this study are novel as we aim to investigate: a) whether Latin American (emerging markets) and European Union (developed markets) banks adjust differently Tier 1 Capital Ratio, Total Capital Ratio and their risk level due to the effect of bank opacity in emerging markets, b) what capital ratio banks use to make decisions in both markets, c) the existence of risk-weighting manipulation and risk shifting moral hazard in emerging markets due to financial statements opacity and c) the deviation between target and

current Tier 1 Capital Ratio, Total Capital Ratio and Risk (risk-weighted assets to total assets ratio) in EU and LAC banks. We also investigate whether this behavior varies during the 2008/09 financial crisis in both markets.

The results provide strong evidence that EU banks do not differentiate between Tier 1 Capital Ratio and Total Capital Ratio to adjust their capital structure. This provides strong evidence of no manipulation on risk-weighting in EU banks and low risk-shifting moral hazard. We also find strong evidence that banks in the Latin American emerging market adjust their Tier 1 Capital Ratio and Total Capital Ratio differently. The absence of stress testing performed by a regional regulatory body in Latin America, together with the state owned banks characteristics in the region, the lack of liquid markets for banks shares and deficiencies in the accounting and regulatory framework increase bank opacity, providing incentives to banks to manipulate risk-weighting. The results also show that the speed of adjustment is almost the double in LAC banks (35.30%) than in EU banks (20.10%), showing that the funding access in the period under study (2008-2013) was easier in LAC than in EU. This is consistent with the more severe effect of the 2008/09 financial crisis in EU financial markets.

Finally, we find that the deviation of current Tier 1 Capital Ratio from the Target Tier 1 Capital Ratio is larger than the deviation of current Total Capital Ratio from the Target Total Capital Ratio, especially during the 2008/09 financial crisis. For both capital ratios, the target is larger than the current ratio in EU banks and smaller in LAC banks. In LAC banks the deviation of current Risk from Target Risk tend to zero after the financial crisis.

This study helps to understand the emerging markets' bank opacity effect on capital structure adjustment and risk shifting moral hazard and whether this behavior varies depending on the economic cycle. The findings will help regulators to identify risk-weighting manipulation in opaque markets and the risk profile of banks involved in such behavior.

After this introduction that highlights the interest of research, the remainder of this paper is organized as follows: the second section explains the theoretical framework analyzing the bank capital structure theory and its relationship with bank funding cost, the bank capital buffer size and risk-weighted assets manipulation, the effect of the financial crisis on banks' capital structure, the information role of stress testing and bank opacity in emerging markets.

In the third section we develop our hypotheses, in section four of this paper we explain the research design and in section five we analyze the results obtained. Finally, we present the conclusions of this research.

3.2 Literature review

3.2.1 Bank capital structure

One of the factors that distinguish the financing of banks with firms is that only the former use deposits. Allen et al. (2014) develop a model of bank financing and argue that while deposit financing is treated as another form of debt, the market for deposits is significantly segmented from other markets. Deposits, in the form of bank accounts, are not only held by households but also by businesses that use them for transaction purposes and reserves. In Allen et al. (2014)'s model, banks finance themselves with deposits and equity capital and invest in risky assets. In this context, equity capital providers can directly invest in the risky assets but as this option has a lower expected return they do not do that. Additionally, equity capital has a higher expected return than deposits because their return is below the return of risky assets.

Deposits play a disciplinary role with bank management. Calomiris and Kahn (1991) notice that uninsured depositors can withdraw their deposits if they suspect that management is inefficient or could commit fraud. Under the threat of possible bank liquidation, bank's management will behave properly. The downside of the disciplinary effect of high leverage is that bank managers could be tempted to invest on riskier assets (Jensen and Meckling, 1976). This

risk shifting moral hazard acts as a limit to high leverage. The bank's leverage should be high enough to play a management disciplinary role but not too high to create risk shifting moral hazard. Archarya et al. (2014) show that "leverage must be high enough to induce the discipline imposed by creditors, but low enough to ensure that the bank's risk taking is not excessive". They argue that this optimal capital structure can be broken by the presence of regulatory safety nets such as deposit insurance, bailouts or central banks acting as lender of last resort. These safety nets are used by regulators to avoid the intermediation services collapse that could impact on the financial stability of the economy. But the safety nets could encourage banks to increase the leverage and at the same time, depositors face lower risk that could lead them to be less involved in the monitoring of bank's management performance. As a consequence the pricing of bank debt becomes insensitive to the leverage level, encouraging banks to take more risk that could generate systemic risk in the case the risk taken is highly correlated among banks. Archarya et al. (2014) propose two measures to deal with this tension: to set a core capital requirement to limit the bank leverage and to set a special capital account built up through retained earnings. This special capital account acts as a countercyclical capital requirement because it will be available to shareholders when the bank is solvent and to the regulators when the bank fails. Additionally, this capital must be invested in liquid securities, eliminating bank manager discretion on it and will be transferred to core capital, and dividends restrictions will also be imposed, when certain regulatory rules are met.

Mehran and Thakor (2011) show that higher bank capital is good not only for the safety of the banking system but also for the bank itself. This is because banks will monitor borrowers and will develop long-term relationship with them which also generates economic value. Allen et al. (2014) argue that banks hold a positive amount of equity capital as a way to reduce bankruptcy cost when they finance risky investments. The rationale behind this is that when banks hold zero capital, their bankruptcy is aligned with those of firms because

there is no loans repayment to be transferred to depositors. On the other hand, when bankruptcy costs are insignificant, banks opt to finance themselves exclusively with deposits.

3.2.2 Bank funding cost

Van den Heuvel (2008) study the welfare cost of bank capital requirements. The paper argues that on the one hand, capital requirement impose a significant cost because it reduces the banks' ability to create liquidity by accepting deposits but on the other hand, it is useful to mitigate the moral hazard created by safety nets such as deposit insurance. As this must come together with supervision, it creates a trade-off between capital requirement and the cost of supervision. Using US data, Van den Heuvel (2008) find that the welfare cost of capital adequacy regulation represents a permanent loss in consumption of between 0.1% and 1%. But typically, banks hold a capital buffer above the minimum capital requirement in order to lower the risk of non-compliance and failure in the future.

Equity has a higher required return than debt because it is riskier, but this does not necessarily mean that the use of more equity in the funding mix increases the funding cost of a bank (Admati et al., 2013). In fact, better capitalized banks incur in lower costs when issuing additional capital and also, as higher capital indicates lower default risk, it improves the liquidity of debt securities that the bank issues.

Admati et al. (2013) notes that when the bank's capital ratio suffers a reduction in capital through losses, the bank must recapitalize or deleverage by selling assets. When banks sell assets, they put pressure on assets markets and prices fall. To avoid this, regulators increase capital requirements that will also imply the need of less support in case of a bailout.

An increase in capital will lower the shareholders' risk because the bank will invest in safer assets and hence, the shareholders will require a lower return on

equity (Admati et al., 2013). An additional effect of a capital increase is a lower default risk that will translate in a lower interest rate of the bank's debt. As a whole, an increase in capital will lower the bank funding cost.

Setting an optimal capital requirement is not an easy task. Regulatory capital requirements usually use the book value of equity that depends on the valuation of assets and liabilities that are accounted for using specific accounting principles and risk-weighted assets that follows the Basel rules. The rationale behind risk-weighted assets is in line with the idea that a better capitalized bank will invest in safer assets.

Kashyap, Stein and Hanson (2010) note that equity issuance may be costly if investor think that the bank issue new equity so as to comply with capital requirement after a non-compliance event. Admati et al. (2013), in line with Archarya et al. (2014), recommend that regulators should prohibit banks from paying dividends to shareholders until they have a decent capital buffer.

Finally, Admati et al. (2013) note that when different capital requirement coexist in different countries, banks operating in countries with higher capital requirements have a competitive disadvantage comparing to those that operate in countries with lower capital requirements.

Hellmann et al. (2000) argue that even though it is true that banks that are required to hold sufficient capital tend to invest prudently, banks are forced to hold an inefficiently high amount of capital. They argue that capital requirements are not enough to avoid moral hazard because with freely determined deposits rates banks are tempted to offer high interest rates to compete for deposits, and competition tends to promote gambling in the banking sector. This is because in a competitive market banks earning from prudent investments are low. When capital requirements are high enough to raise banks' cost significantly, the banks' willingness to pay higher interest rate decreases. In this context, Hellmann et al. (2000) consider two potential

instruments of prudential regulation: deposit-rate controls and capital requirements.

Koziol and Lawrenz (2009) present a framework which endogenizes the deposit volume of banks and its future adjustments. The findings of the study show that banks hold voluntary capital buffers and lower the deposits volume when the investment opportunities are less attractive. As a whole the results show that a capital-weighted regulation system is effective to discipline banks in regard to its incentive to take deposits.

3.2.3 Bank capital buffer and risk-weighted assets manipulation

Considering the high cost of capital, banks need to rationalize the size of the capital buffer they hold to make sure they do not run non-compliance risk during a financial turmoil.

Capital buffers are capital that banks hold in excess of regulatory minimum capital requirements. Banks hold capital buffers to avoid costly intervention, to show the market an adequate financial position, to take advantage of good market opportunities and to create a cushion against recessions (Carvallo et al., 2015). If banks do not accumulate capital buffers in times of economic boom, compliance with regulatory minimum capital requirements could be difficult in times of economic downturn, making it necessary to the bank to deleverage assets and reduce lending. This is because the cost of capital is higher when the bank is in a non-compliance position.

Using a sample of U.S. bank holding companies for the period between 1986 and 2008, Jokipii and Milne (2011) study the relationship between short-run capital and risk adjustment and find that the management of short-term adjustments in capital and risk are dependent on the size of the buffer. The study also finds that small-buffer banks adjust to their target capital level significantly faster than better capitalized banks. Jokipii and Milne (2011) proxy for the capital buffer as the difference between the capital the bank holds

in excess of that required by the regulators but acknowledge that the regulatory capital to risk-weighted assets ratio is not necessarily the ratio that banks use internally to make decisions. Other options that banks may consider are the market value of capital or an economic capital (targeting the level of either book or market equity the banks need to operate).

In a study about Basel risk-weights manipulation, Mariathasan and Marrouhe (2014) find that the decline in risk weights is particularly pronounced among weakly capitalized banks where the legal framework of supervision is weak and in countries where the regulator supervises many internal-rating based banks. These results give support to risk-weight manipulation theories. Mariathasan and Marrouhe (2014) identify four mechanisms to reduce the average risk-weights: portfolio re-allocation (the bank changes resources from assets that require more capital to assets that require less capital), improved risk-measurement (more precise risk measurement can reduce capital requirements), faulty risk-modeling (financial models with flawed assumptions) and strategic risk-modeling (internal models that banks use are complex and difficult to supervise). In this line, Le Lesle and Avramova (2012) discuss driving forces behind risk-weights and find decreasing risk-weights among European banks who were allowed more flexibility than U.S. banks. Archaya et al. (2013) find that guarantees are structured so as to reduce regulatory capital requirements and Huizinga and Laeven (2012) report the abuse of discretionary accounting practices, showing that banks tend to overvalue real estate-related assets.

Cathcart et al. (2015) analyse the impact of new regulation on capital ratios. After the introduction of Basel I (BCBS, 1988), banks found it difficult to meet the new risk-based requirements and shifted risky assets towards less risky assets, leading to credit contraction and to the 1990-1991 recession. On the contrary, with the introduction of Basel II (BCBS, 2006; BCBS, 2004), banks increased their capital ratio, as happened with the top 25 banks in Europe and

the U.S. in the early stages of the subprime crisis. The effect that capital requirement can have on credit growth and on risk incentives depends on the variable used to measure capital adequacy, either Tier 1 capital ratio or Total capital ratio (Demirguc-Kunt et. al., 2010).

Recent studies investigate the cyclical behavior of capital buffer and show inconclusive results. Jokipii and Milne (2011) results show that capital buffers of larger banks fluctuate counter-cyclically and in smaller banks fluctuate pro-cyclically while Shim (2013) find evidence of countercyclical fluctuation of capital buffers in developed economies. Fonseca and Gonzalez (2010) find different levels of capital buffers among developed and developing countries.

Using a sample of 13 Latin American and Caribbean banks for the period 2001-2012, Carvallo et al. (2015) examine capital buffer fluctuations over the business cycle and find that macroeconomic and banks' specific variables are significant determinants of bank capital buffers and they provide evidence that capital buffers tend to fluctuate pro-cyclically in countries with lower cost of adjustment and where capital regulation is less rigorous. The study also finds that the average adjustment cost of changing capital is higher for countries whose capital buffers fluctuate counter-cyclically compared to the countries with pro-cyclically behavior. This means that the higher the speed of adjustment, the more likely are the capital buffers to fluctuate pro-cyclically. In markets where access to capital is easier, the speed of adjustment cost of changing capital is higher.

Shim (2013) investigates, using a sample of U.S. bank holding companies for the period 1992 – 2011, whether banks' capital buffers behave anticyclically or procyclically over the business cycle. The study finds a negative relationship between the business cycle and capital buffer and reports that changes in capital buffer and risk are associated with certain bank characteristics such as size, liquidity, profitability, loan loss reserve and asset growth. They findings in Shim (2013) give support to the Basel III new rules that create a

"countercyclical capital buffer" in the range of 0 – 0.25% of common equity. The study uses risk-weighted assets to total assets ratio to proxy for risk.

3.2.4 The effect of the financial crisis on banks' capital structure

Teixeira et al. (2014) investigate whether the determinants of banks' capital structure is only determined by regulation or by some bank-specific characteristics. Using a sample of US and European banks for the period 2004-2010, the study finds that bank's characteristics affect the bank's capital structure, to be more specific, the capital in excess of the regulatory minimum or capital buffer. This findings show that regulation is not the only determinant of banks' capital structure and that banks hold capital buffers in order to avoid the high cost associated with issuing new equity capital at short notice. The study computes the capital in excess as the difference between the equity market capital ratio (the ratio of the market value of equity to book value of assets), the book equity capital ratio (the ratio of the book value of equity to book value of assets) or Tier 1 Capital Ratio with the regulatory minimum capital. The market value of equity is calculated as the number of shares times the year-end stock price and the market value of assets as the market value of equity plus the book value of liabilities. The Tier 1 Capital Ratio is, from a regulatory point of view, a measure of the financial strength of a bank calculated as the ratio of book value of equity to risk-weighted assets.

Shehzad and De Haan (2013) find that the recent crisis affected banks operating in industrial economies. Quijano (2013) points out that during the recent financial crisis banks injected in the balance sheet significant amounts of capital in order to lower their capital risk.

Teixeira et al. (2014) findings show that macroeconomic factors as inflation, GDP growth, the stock market volatility and the term structure of interest rates also have an effect on banks' capital structure. In relation to the location effect, the study finds that European banks are better capitalized and the effect

of banks' characteristics vary among European banks and US banks. Finally, the study finds that during the recent financial crisis, banks had less capital, the effect of banks' characteristics defer before and during the financial crisis and they show that regulation had a temporal effect on banks' excess capital with a more significant effect before the financial crisis (during 2007 and 2008).

Duygun et al. (2012) study the costs of recapitalization on a sample of 22 Turkish banks for the period 2006-2009 that includes the last financial crisis. The study models a cost function that includes banks' specific characteristics and macroeconomic variables among the explanatory variables. The results show that the macroeconomic variables are non-significant while banks' specific characteristics capture all of the relevant variance in short-run costs. The study finds that the banks' recapitalization that occurs in the post-financial crisis period has increased the banks' costs significantly, driving the return on equity to the negative field. Considering these results, Duygun et al. (2012) argue that there is a need to develop recapitalization models and the study measures the efficiency and productivity of the banks through the estimation of their cost function, where the equity capital is a fixed input requirement because it is regulated.

Finding the optimal capital requirements is relevant to keep the financial system stability and to be well prepared for the negative effects of an economic downturn. A way to find it is to estimate assets quality and risk appropriately through regulatory tools such as Basel III risk-weighting schemes and stress testing (Archarya et al., 2014).

3.2.5 The informational role of stress testing

The banking business is highly regulated because depositary financial institutions capture public savings and have specific risks and complexities that make their financial statements opaque and difficult to analyze by the general public (Petrella and Resti, 2013, Morgan, 2001).

In order to address and monitor the banking business risks, regulators use risk management tools to achieve regulatory objectives. Such supervisory efforts increase during periods of financial turmoil because bank opacity tends to increase (Flannery et al., 2010) and hence, regulators use stress tests to assess not only the vulnerability of individual banks but also of the entire banking system (Drehmann et al., 2010; Sorge and Virolainen, 2006). As the main concerns of regulators is financial failure, they design a supervisory system that allows them to prevent institutional failure that could lead to the breakdown of the main financial functions in the economy such as the payment system, savings transformation and the monetary policy transmission mechanism (Weber, 2014).

The use of stress testing after the financial crisis by the EBA is consistent with Basel III requirements that move towards a system of banking supervision more risk-oriented, especially generating measures or models that can anticipate or show vulnerabilities of financial institutions.

Goldstein and Sapra (2013) discuss whether the stress testing results should be disclosed or not. Based on the argument that stress tests are not able to tests scenarios that are extreme enough to simulate a true scenario, Das (2011) argues that the disclosure of stress testing results is inherently flawed. Notwithstanding that, the results of the 2011 EU stress test performed by EBA were released for the 91 participant financial institutions. The results suggest that by the end of 2010, twenty banks in the sample would fall below the 5% Core Tier 1 Ratio.

In a recent study related to the disclosure of 2011 EU stress test results, Petrella and Resti (2013) find evidence of prices drop for tested banks on pre-results date (dilution effect) showing the concern of investors about the possibility that these banks could be under-capitalized. Their research shows that the stress tests produce "valuable information for market participants". On the result publication date, they find price reaction for the tested banks. This shows the

relevance of disclosing the results and the informational role of the stress test, which contributes to reduce bank opacity. The release of bad results by regulators should call the industry attention and lead bank managers to improve the quality of the risk management tools used to assess the entity strength (D'Cruz and Crippa, 2012).

Following the growing literature on the role of regulators in reducing asymmetric information in the banking system, Quijano (2013) shows that bond returns of the banks that passed the Supervisory Capital Assesment Program in the US in 2009 (a stress test performed in the US banking system) react positively to the news, suggesting a downward in their default probability. This study provides evidence of the role of regulators in the banking system and how they help to reduce asymmetric information.

3.2.6 Bank opacity in emerging markets

In emerging markets, stress testing is not yet a common practice among regulators. A potential explanation to this is discussed by Rojas-Suarez (2002a). This study shows that the most commonly used indicator of banking problems in industrial countries, the capital-to-assets ratio has performed poorly as an indicator of banking problems in Latin America and East Asia. This is due to the existence of severe deficiencies in the accounting and regulatory framework and lack of liquid markets for bank shares, subordinated debt and other bank liabilities and assets needed to validate the real worth of a bank as opposed to its accounting value. However, Rojas-Suarez (2002b) indicates that the increasing participation of foreign banks in emerging markets has helped to improve the usefulness of capital ratios. Rojas-Suarez (2002a) also shows that low spreads in emerging markets have often reflected the high-risk taking behavior of weak banks.

In another study about the role that the capital ratio plays in emerging markets, Hassan and Hussain (2006) find that capital ratio and portfolio risk are

inversely related in developing countries, in contrast to the predictions of the "capital buffer theory", "managerial risk aversion theory" and "bankruptcy cost avoidance theory". In this line, Balin (2008) argues that although Basel I and II accords state that its positions are not recommended for application in emerging markets, the use of both accords by public and private organizations as banking standards predicates the inclusion of emerging markets in each accord.

Ferri et al. (2001) examine the effect of linking banks' capital requirements with external credit ratings in non-high income countries, under the Basel II regime. They find that the capital requirements of banks in these countries would become more volatile since the bank ratings seem to be strongly correlated to sovereign ratings.

Finally, the extant literature on government ownership of banks documents that this form of ownership is more prevalent in poorer countries (Barth et al., 2001) and in countries with less efficient governments (La Porta et al., 2002). Prior studies suggest that government ownership is associated with poor bank performance (Berger et al., 2005; Micco et al., 2007) and higher risk taking (Dong et al., 2014). The strategies in state owned banks are more likely to be linked to political objectives, thus, the incentives to follow prudential risk management rules are weak (Dong et al., 2014).

The literature review of this section is summarized in Figure 3.1.

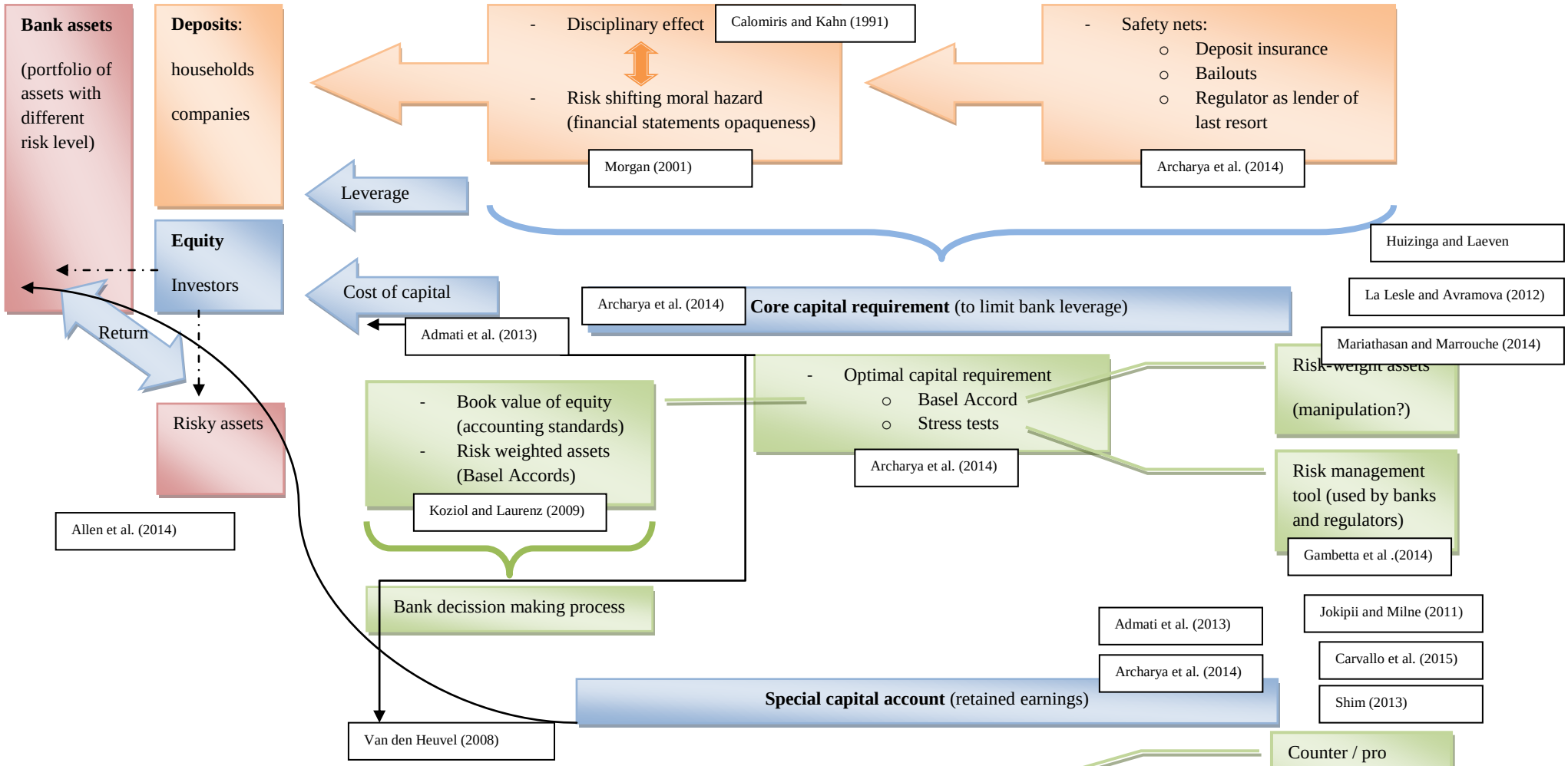


Figure 3.1 - The bank capital structure dilemma

3.3 Theory development

Although stress testing is not a common regulatory tool used by regulators and individual banks in emerging markets, Tier 1 Capital Ratio is monitored because the Basel Accords are generally adopted by regulators to set capital requirements. Considering this and taking into account Petrella and Resti (2013) findings that show that stress tests results reduce bank opacity because they provide investors with relevant information, we investigate whether emerging markets adjust Tier 1 Capital Ratio (the risk-weighted capital ratio) differently from Total Capital Ratio (the book value capital ratio) taking advantage of higher bank opacity than in developed markets. We investigate also whether banks in emerging and developed markets adjust their risk level differently. This is of special interest because there is no consensus on the measure of capital that banks use internally to make decisions (Jokipii and Milne, 2011). Following Jokipii and Milne (2011), we proxy for risk level as the risk-weighted assets to total assets ratio. The severe deficiencies in the accounting and regulatory framework, the lack of liquid markets for bank shares (Rojas-Suarez 2002a) and considering the Basel Accords are not recommended for application in emerging markets, financial statements opacity increases in emerging markets. We investigate whether banks in emerging and developed markets use total capital ratio (based on accounting standards) or Tier 1 Capital Ratio (based on Basel Accords) to make decisions and which bank's characteristics impact on the capital structure. We also look for evidence of higher risk shifting moral hazard in emerging markets than in developed markets as a consequence of higher bank opacity in emerging markets. This will translate in bank management having more freedom to allocate resources in risky assets as depositors and investors count with opaque information to monitor management activity (Mariathasan and Marrouhe, 2014). Risk shifting is particularly severe in the banking industry because leverage in the sector is higher than that in any other sector (Berger et al., 2005). The higher the capital requirement is the more risk shareholders assume.

The incentives of shareholders to engage in risk shifting are stronger when the capital is lower (Duran & Lozano-Vivas, 2015). The moral hazard conflict between shareholders and creditors increases when investments are riskier and the capital to assets ratio decreases (Duran & Lozano-Vivas, 2015). We also investigate whether state owned banks, that are more prevalent in poorer countries and in countries with less efficient governments (Barth et al., 2001) impact on the risk shifting moral hazard and risk-weighting manipulation in emerging markets as this type of banks are linked to political objectives and have weaker risk management rules (Dong et. al., 2014).

Additionally, we investigate whether emerging markets financial institutions align their actual Tier 1 and Total Capital Ratio to the corresponding targets, the speed of such adjustment, and whether their risk profile over time is related to such deviation considering the higher market opacity than in developed markets. We also look for the deviation between the current and the target risk level of banks in both markets. It is of special interest to know whether the 2008/09 financial crisis has an impact on such deviations (Teixeira et al., 2014).

In the light of these potential effects of bank opacity in emerging markets compared to developed markets, we posit the following hypotheses:

H1: Capital structure adjustment determinants in emerging markets are different from those in developed markets due to higher bank opacity.

H2: Risk shifting moral hazard determinants in emerging markets are different from those in developed markets due to higher bank opacity.

H3: The determinants of the gap between the current and the target capital structure in emerging markets are different from those in developed markets due to higher bank opacity.

H4: The determinants of the gap between the current and the target risk level in emerging markets are different from those in developed markets due to higher bank opacity.

3.4 Research design

3.4.1 Data sources and sample selection

The sample includes emerging and developed markets banks with available financial data for the period 2008-2013. Our sample of emerging markets banks includes banks from Latin America (LAC) while the sample of developed markets banks includes banks from the European Union (EU). Banks financial data is gathered from BankScope - Bureau van Dijk database.

For Latin America, the sample includes 30 banks from the major financial markets in the region (including Brazil, Mexico, Chile and Panama) and 134 banks from the European Union (including banks from Italy, Great Britain, Austria, Germany, Spain, Denmark and Portugal among others). In total the sample includes 164 banks for a 6-year period.

3.4.2 Methodology and empirical models

To test hypotheses 1 and 2 we model capital structure adjustment and risk shifting moral hazard using a variety of proxies used in prior studies (Jokipii and Milne, 2011). We use the book capital ratio (TCR, the book value of total capital to book value of assets ratio) and the Tier 1 Capital Ratio (T1CR, the book value of Tier 1 capital to risk-weighted assets ratio) to proxy for capital structure and risk level (Risk, the risk-weighted assets to total assets ratio) to proxy for risk shifting moral hazard (Shim, 2013). In the model we use explanatory variables that prior research finds as determinants of banks' capital structure: bank-specific characteristics (Teixeira et. al, 2014; Shim, 2013), the economic cycle (Jokippi and Milne, 2009; Shim, 2013; Carvallo et al., 2015)

and the balance sheet opacity (Petrella and Resti, 2013; Kurtzman et al., 2004; Morgan, 2001).

To test hypotheses 1 and 2 we follow the Blundell and Bond (1998) Generalized Method of Moments estimator to estimate the average speed of adjustment for all banks and the set of coefficients that we use to estimate the target T1CR, TCR and Risk for each bank in each year.

Following the extant literature (De Jonghe and Öztekin, 2010; Berger et at., 2008; Flannery and Rangan, 2006), we assume that at a certain point in time each bank has a Tier1 Capital Ratio, T1CRi,t, that is a weighted average of the target Tier1 Capital Ratio, T1CR*i,t, and the lagged Tier1 Capital Ratio, T1CRi,t-1 :

$$T1CRi,t = \lambda T1CR^{*}i,t, + (1-\lambda)T1CRi,t-1 \quad (1)$$

The higher the lambda is, the higher the speed of capital-adjustment towards its target and the less rigid bank capital is. This variable speed of adjustment model estimates the bank´s characteristics that determine a specific target capital ratio. To proxy for these bank characteristics we use the different risk areas covered by the CAMELS rating system.

We model T1CR*i,t, as a function of these bank's characteristics (X):

$$T1CR^{*}i,t, = \beta X\ i,t-1 \quad (2)$$

Substituting the equation of target Tier 1 Capital Ratio (2) in equation (1) we obtain the following equation:

$$T1CRi,t = \lambda\beta X\ i,t-1 + (1-\lambda)T1CRi,t-1 \quad (3)$$

We estimate equation (3) following the Blundell and Bond (1998) Generalized Method of Moments estimator. From this equation we got an estimate of the average speed of adjustment (λ) for all banks and the set of coefficients β that

we use to estimate the target Tier1 Capital Ratio for each bank in each year using equation (2).

To test H3 and H4 we calculate for each bank the deviation the current Tier 1 capital ratio has from its target Tier1 Capital Ratio:

$$DÊV\ T1CRi,t = T1CR^{*}i,t - T1CRi,t-1 \quad (4)$$

We use the same methodology to estimate TCR*, Risk*, DÊV TCR and DÊV Risk.

Using a balanced panel data of Latin American and EU banks with available financial information in the BankScope - Bureau van Dijk database for the period 2008-2013, we ended up with a sample of 984 bank-year. In the first step, we run equation (3) using panel data from where we obtained the average λ for all banks and the set of coefficients β. In the second step, we calculate the target capital ratio for each bank in each year using equation (2) and finally, using equation (4), we calculate each bank deviation from its target capital ratio in each year.

3.4.3 CAMELS measurement and variables selection

In the models we use explanatory variables that prior research finds as determinants of banks' capital structure: bank-specific characteristics (Teixeira et. al, 2014; Shim, 2013), the economic cycle (Jokippi and Milne, 2009; Shim, 2013; Carvallo et al., 2015) and the balance sheet opacity (Morgan, 2001; Kurtzman et al., 2004; Petrella and Resti, 2013).

The experimental variables of the models related to banks' specific characteristics are taken from prior studies that have identified proxies for the different risk areas covered by the CAMELS rating system (Martínez-Campillo et al., 2013; de Claro, 2013; Kerstein and Kozberg, 2013; Jin et al., 2013a, Jin et al., 2013b; Jin et al., 2011 and Fields et al., 2004).

The CAMELS rating system is commonly used by regulators to assess the strength of financial institutions and to evaluate the level of bank risks (Office of the Comptroller of the Currency, 2013)

Loan loss provisions (LLP) is used to capture asset quality as this measure will capture the change in the allowance for loan losses in the current period. The higher the LLP is the lower the asset quality. It can also be the case that companies with higher LLP are conservative and record provision for doubtful debtors more timely than other financial institutions (Jin et al., 2011; Kerstein and Kozberg, 2013).

We use the efficiency ratio (EFF) defined as cost to income to proxy for management skills. The higher the efficiency ratio (i.e., the lower the efficiency for the bank), the more difficult it is for the bank to earn a profit and thus, to increase its capital. A high efficiency ratio means a company needs to incur in high costs to get a certain income level. These costs are usually related to non-interest expenses such as personnel, branches, and data processing expenses that are associated with large volumes of transactions accounts and with a geographically diverse branch system. Considering this, a high efficiency ratio could also be used as a proxy for the complexity of bank operations (Fields et al., 2004).

To proxy for earnings and profitability we use the ratio of operating income to total assets (OPINC). Operating profit captures the impact on net profit of the transactions that are closely related to the business of the firm (Fields et al., 2004). Following de Claro (2013) and Martínez-Campillo (2013) we also use the ratios Return on Assets (ROA) as a proxy for earnings and profitability.

We use total loans (LOANS) as a proxy for bank liquidity as the main factor in the financial crisis is a loss in liquidity and an increase in the default risk of loans from interest rate resets (Kerstein and Kozberg, 2013). We also use total liquid assets as a proxy for liquidity (LIQ).

Usually banks tend to grant loans for longer terms than the deposits they received from customers. As a consequence, interest rate resets will impact deposits in first instance and this will reduce the interest rate spread. To proxy for this risk we use the total depostis to total assets ratio (DEP) (Kerstein and Kozberg, 2013). According to de Claro (2013) a bank with liquidity problems will increase the interest rate to retain the level of deposits or to capture new deposits in the market. The higher this ratio the higher the sensitivity of the financial institutions to the impact of liquidity issues on interest expense and hence in the firm profitability.

We control for government ownership of banks (SOB) as prior studies suggest that government ownership is associated with poor bank performance (Berger et al., 2005; Micco et al., 2007) and higher risk taking (Dong et al., 2014). The strategies in state owned banks are more likely to be linked to political objectives, thus, the incentives to follow prudential risk management rules are weak (Dong et al., 2014). The extant literature on government ownership of banks documents that this form of ownership is more prevalent in poorer countries (Barth et al., 2001) and in countries with less efficient governments (La Porta et al., 2002).

To proxy for the economic cycle we use the dummy variables CRISIS (2008 and 2009) (Teixeira et al., 2014). Finally, to proxy for bank opacity we use the difference between the current GDP and the last 5-year average GDP (GDPA5D) (Teixeira et al., 2014), the adoption of Basel Accord II in emerging markets using the dummy variables (BII) (in EU all the banks have adopted Basel II policies), IFRS adoption (IFRS) (Rojas-Suarez (2002a) and we control for the EU banks that were targeted by the 2010 EU-wide stress test (ST) (Petrella and Resti, 2013, Gambetta et al., 2015). We also control for listed banks (Listed) and whether the bank belongs to a developed or emerging market using the dummy variable (EU).

GDP data was obtained from the World Bank database (http://data.worldbank.org/indicator), Basel II adoption per country was obtained from the Bank for International Settlements (BIS) progress reports on implementation of the Basel regulatory framework (http://www.bis.org), the EU banks targeted by the EU-wide stress test were taken from the European Banking Authority (EBA) website (http://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing) and the IFRS adoption by country was taken from the IFRS website (http://www.ifrs.org/Use-around-the-world/Pages/Jurisdiction-profiles.aspx).

Our models to test our four hypotheses are summarized in Figure 3.2.

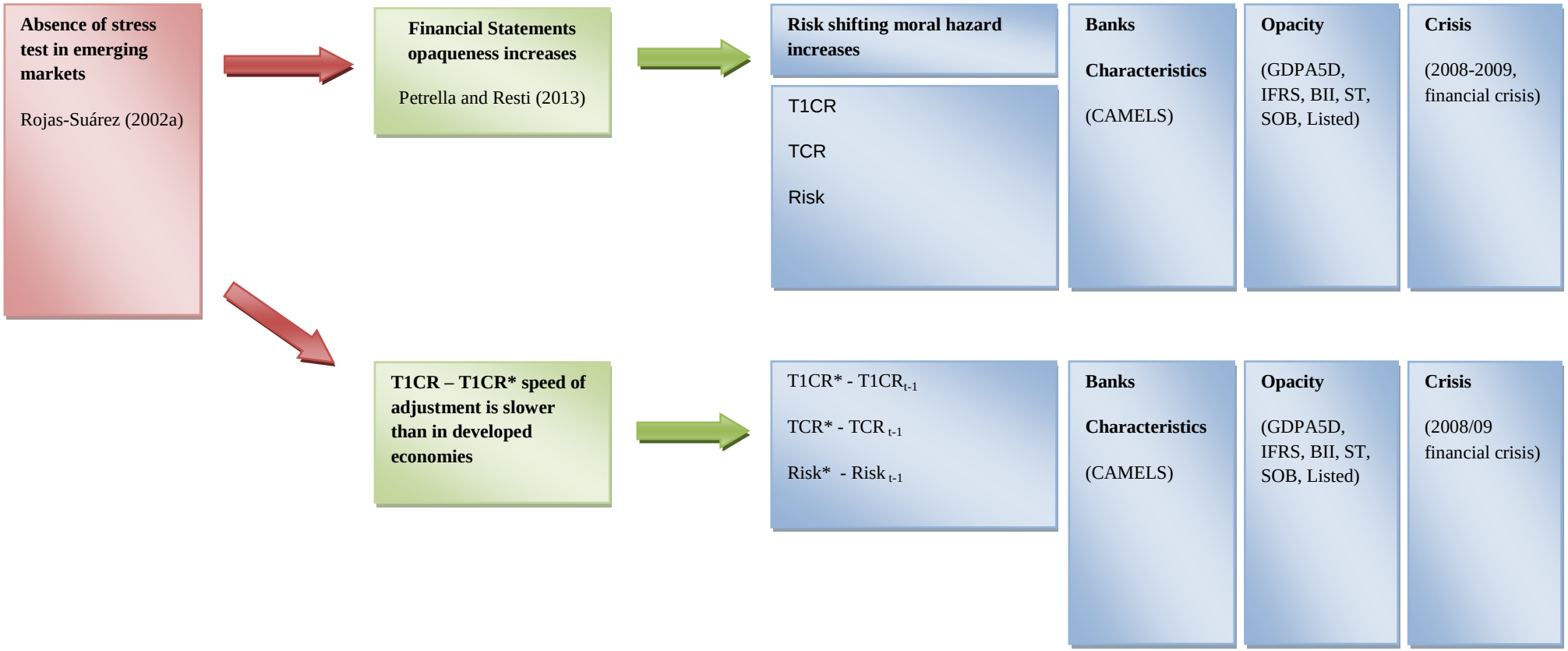


Figure 3.2 - The capital structure and risk shifting moral hazard determinants in emerging and developed markets

3.5 Results

3.5.1 Descriptive statistics

We report the descriptive statistics for the full sample in Table 3.1 – Panel A.

INSERT TABLE 3.1 – PANEL A HERE

The average Tier 1 Capital Ratio for the full sample of banks is 11.75% and the average Total Capital Ratio is 14.25%. Regarding the risk measure, defined as the risk-weighted assets to total assets ratio, the mean value is 68.80%. The average total assets is USD 268,000 million while the average total loans amounts to USD 120,000 million, representing the 45% of total assets. The average loan loss provisions amounts to USD 1,249 million, representing the 1.04% of total loans. The average total liquid assets is USD 60,900 million, a 23% of total assets. The mean deposits to assets ratio is 48.30%, the mean efficiency ratio for the sample is 60.47%, the mean ROA is 0.79% and the operating income to total assets ratio is 4.30%.

In Table 3.1 – Panel B we report the descriptive statistics for the EU banks sub-sample.

INSERT TABLE 3.1 – PANEL B HERE

The average Tier 1 Capital Ratio for the EU sample of banks is 11.39% and the average Total Capital Ratio is 13.89%. Regarding the risk measure, the mean value is 64.10%. The average total assets is USD 319,000 million while the average total loans amounts to USD 143,000 million, representing the 45% of total assets. The average loan loss provisions amounts to USD 1,381 million, representing the 1% of total loans. The average total liquid assets is USD 71,500 million, a 22.41% of total assets. The mean deposits to assets ratio is 48.70%, the mean efficiency ratio for the sample is 61.36%, the mean ROA is 0.49% and the operating income to total assets ratio is 3%.

In Table 3.1 – Panel C we report the descriptive statistics for the Latin American banks sub-sample.

INSERT TABLE 3.1 – PANEL C HERE

The average Tier 1 Capital Ratio for the Latin American sample of banks is 13.37% and the average Total Capital Ratio is 15.85%. Regarding the risk measure, the mean value is 90%. The average total assets is USD 42,900 million while the average total loans amounts to USD 17,800 million, representing the 41.50% of total assets. The average loan loss provisions amounts to USD 0.66 million, representing the 3.70% of total loans. The average total liquid assets is USD 13,500 million, a 31.46% of total assets. The mean deposits to assets ratio is 46.70%, the mean efficiency ratio for the sample is 56.48%, the mean ROA is 2.08% and the operating income to total assets ratio is 10%.

Both, the Tier 1 Capital Ratio and the Total Capital Ratio is 2 percentage points higher for Latin American banks while the Risk Ratio is 26 percentage points higher for Latin American banks. This show that even though they are better capitalized, on average a 16% more, the risk level is significantly higher than in the case of EU banks, 35% higher. The additional capital is half the additional risk in Latin American banks.

The leverage is 2 percentage points lower for Latin American banks, implying that the disciplinary role that depositors play is less significant in this market. The loan loss provisions relative to assets are higher in Latin American banks but they show higher liquid assets relative to EU banks. The lower loans quality could explain the higher risk level in Latin American banks. Regarding efficiency and profitability, Latin American banks are more efficient than EU banks; their efficiency ratio is 5 percentage points lower, and they are also significantly more profitable, showing an operating income to total assets ratio 7 percentage points higher and a ROA 1.6 percentage points higher.

In Table 3.1 – Panel D we show the sample distribution by country.

INSERT TABLE 3.1 – PANEL D HERE

For Latin America, the sample includes 30 banks from the major financial markets in the region (including Brazil, Mexico, Colombia and Panama) for the period 2008-2013 and 134 banks from the European Union for the same period (including banks from Italy, Great Britain, Austria, Germany, Spain, Denmark and Portugal among others). In total the sample includes 164 banks for a 6-year period.

In Table 3.1 – Panel E we show EU and LAC market characteristic that are related to market opacity.

INSERT TABLE 3.1 – PANEL D HERE

The effect of the 2008-2009 financial crisis is more negative in Europe than in Latin America. The difference between the current GDP and the last 5-year average in 2008 and 2009 in EU is -1.82 and -5.51 percentage points respectively and -0.44 and -4.36 in LAC. Regarding IFRS and Basel II adoption, 71% of the banks in EUR use IFRS to prepare their financial statements and all the banks have adopted Basel II policies. In LAC the IFRS adoption went up from 7% in 2007 to 73% in 2012 while 77% of the banks used Basel II policies in the period. Only 5% of the banks in EU are state-owned banks while the 13% are state-owned banks in LAC. Finally, the 47% of the banks in EU are listed while only the 33% are listed in LAC. All these indicators show that the LAC market has characteristics more related to opacity than the EU market.

Finally, in Table 3.2 we report the correlation matrix for the independent variables and no significant collinearity issues are identified.

INSERT TABLE 3.2 HERE

3.5.2 Empirical results

3.5.2.1 Empirical results on capital structure adjustment and risk shifting moral hazard

We report the capital structure adjustment model (H1) and risk shifting moral hazard model (H2) results in Table 3.3. In panel A we report the regression results for the full sample of banks.

INSERT TABLE 3.3 – PANEL A HERE

In Model 1 we regress on Tier 1 Capital Ratio and in Model 2 we regress on Total Capital Ratio.

The coefficients in both capital structure adjustment models are positive and significant on the lagged variable and as expected show a value between 0 and 1 as their complement is the speed of adjustment. The speed of adjustment of T1CR is 11% and for TCR is 55%. In the T1CR model the coefficient on LOANS and EFF is positive and significant. In the TCR model the coefficient on LIQ is negative and significant.

The results show that the larger the loan portfolio and the efficiency ratio the higher the Tier 1 Capital Ratio in the following period and the lower the liquidity level the higher the Total Capital Ratio in the following period.

The significant variables related to bank characteristics show different behavior in each model. These differences provide evidence of some degree of differentiation banks do between Tier 1 Capital Ratio and Total Capital Ratio to adjust their capital structure. This provides preliminary evidence of Tier 1 Capital Ratio manipulation, and that banks differentiate between the risk-adjusted capital ratio and the book value capital ratio to make decisions on their capital structure. There is some evidence of risk-weighting manipulation according with these results.

In Model 3 we regress on Risk (RWA/TA). The lagged Risk variable is positive and significant, showing a speed of adjustment of 26%. In this model, we expect an inverse coefficient for the significant variables than the coefficient showed in Model 1. This is because, for a certain capitalization level, the higher the risk-weighted assets to total assets ratio is, the lower the Tier 1 Capital Ratio. This stands true for LOANS. The variable LIQ shows a positive and significant coefficient but it is not significant in model 1. This means that banks with smaller loan portfolio and higher liquidity levels tend to invest on risky assets in the following year. The results for model 3 suggest that banks with certain risk profile tend to show higher level of risky assets. The variable EU is not significant in any model, showing that there is no significant difference in the level of T1CR, TCR and Risk between EU and LAC banks.

To investigate whether both, EU and LAC banks, adjust their capital structure differently, we split the sample in EU banks sub-sample and in Latin American banks sub-sample. We run the three models in each sub-sample to investigate whether the capital structure adjustment and risk shifting moral hazard is different in them due to bank opacity in emerging markets.

In Table 3.3 – Panel B we report the regression models results for the EU banks sub-sample.

INSERT TABLE 3.3 – PANEL B HERE

The coefficient on the lagged dependent variable is positive and significant in Model 1 and 2, and as expected between 0 and 1, showing a speed of adjustment of 20% for T1CR and 39% for TCR. In both models, the variable OPINC is positive and significant. The results are exactly the same in both models, showing that EU banks jointly adjust Tier 1 Capital Ratio and Total Capital Ratio. In Model 3, LOANS and ROA show a negative and significant coefficient and LIQ show a positive and significant coefficient. The results as a

whole indicate that EU banks that are profitable in the banking business tend to show a lower T1CR and TCR in the following year. Additionally, EU banks with higher level of liquid assets, less profitable and with smaller loan portfolio show higher level of risky assets in the following year.

The results provide evidence that EU banks do not differentiate between Tier 1 Capital Ratio and Total Capital Ratio to adjust their capital structure, and hence, that they do not differentiate between these ratios to make decisions. This provides strong evidence of no manipulation of risk-weighting in EU banks and low risk-shifting moral hazard.

In Table 3.3 – Panel C we report the results for the Latin American banks sub-sample.

INSERT TABLE 3.3 – PANEL C HERE

Only two variables, DEP and LLP are negative and significant in both models. But in this case, contrary to the EU banks sub-sample results, Model 1 and Model 2 show different additional significant variables. This provides evidence that Latin American banks adjust Tier 1 and Total Capital ratio differently. In Tier 1 Capital Ratio model, the coefficient on EFF is positive and significant. In Total Capital Ratio model, the coefficient on LIQ is negative and significant and on LOANS is positive and significant. Banks with higher leverage, lower quality loan portfolio and low efficiency ratio show lower Tier 1 Capital Ratio in the following year. In model 3, the risk model, LIQ shows a positive and significant coefficient, showing that banks with higher liquidity level tend to invest on riskier assets the following year. Banks with higher leverage, lower quality loan portfolio, with higher liquidity level and smaller loan portfolio show lower Total Capital Ratio in the subsequent year.

In all, the results provide evidence that Latin American banks adjust Tier 1 Capital Ratio and Total Capital Ratio differently. This is because the moral hazard conflict between shareholders and depositors increases when

investments are riskier and the capital to assets ratio decreases. The incentives of shareholders to engage in risk shifting moral hazard are stronger in Latin American banks due to bank opacity.

The results from Models 1, 2 and 3 as a whole provide support to Hypotheses 1 and 2 as we find evidence that banks in the Latin American emerging market adjust their capital structure differently from EU banks, which is a developed market. We also find strong evidence of risk shifting moral hazard in the emerging markets under study than in EU banks, because even though in both markets some banks' specific characteristics determine the risk level only in LAC the T1CR adjusts differently than TCR. This means that in EU banks, when the risk is adjusted, the capital level is adjusted accordingly and T1CR adjusts similarly to TCR. The absence of stress testing performed by a regional regulatory body in Latin America, the lack of liquid markets for banks shares and deficiencies in the accounting and regulatory framework increase bank opacity, providing incentives to banks to manipulate T1CR through risk-weighting manipulation.

3.5.2.2 Empirical results on the deviation of current capital ratio from target capital ratio

In Table 3.4 we report the speed of adjustment and the target value of Tier 1 Capital Ratio, Total Capital Ratio and Risk for EU and LAC banks.

INSERT TABLE 3.4 HERE

The target Tier 1 Capital Ratio is 2.1 percentage points lower in LAC banks (12.43%) than in EU banks (14.57%), but the speed of it adjustment is higher in LAC banks (35.30%) than in EU banks (20.10%). The higher the speed of adjustment the easier the availability of funding, so the results show that in the period under study (2008-2013) funding access in LAC was easier than in the EU. This is consistent with the more severe effect of the 2008/09 financial crisis in EU financial markets. In the case of the target Total Capital Ratio, in

EU and LAC it is higher than the target Tier 1 Capital Ratio and the target Total Capital Ratio in LAC banks is 0.63 percentage points higher than in EU banks. The speed of adjustment is almost 50% higher in LAC banks (58.70%) than in EU banks (39.20%). The target risk is 65% higher in LAC banks (91.70%) than in EU banks (55.40%) but the speed of its adjustment in both markets is only 12 percentage points higher in LAC banks (43%) than in EU banks (31%).

It is interesting to note that the gap between Total Capital Ratio and Tier 1 Capital Ratio is 0.42 percentage points in EU banks (14.99% vs. 14.57%) and 3.2 percentage points in LAC banks (15.63% vs. 12.43%). The results provide additional evidence about differentiated levels and adjustments in Tier 1 and Total Capital ratios and also evidence of risk shifting moral hazard in LAC banks due to higher risk-weighted assets to total assets ratio (near to 1), lower Tier 1 Capital Ratio and larger gap between Tier 1 and Total Capital Ratios.

In Table 3.5 we report the results for the deviation models for the EU and LAC sub-samples.

INSERT TABLE 3.5 – PANEL A

INSERT TABLE 3.5 – PANEL B

INSERT TABLE 3.5 – PANEL C

In model 4 we regress on DÊV T1CR ($T1CR^* - T1CR_{t-1}$), in Model 5 on DÊV TCR ($TCR^* - TCR_{t-1}$) and in Model 6 on DÊV Risk ($Risk^* - Risk_{t-1}$). These models explain the determinants of the deviation each current ratio has from its target ratio.

The results in Model 4 show that listed banks and banks that have adopted IFRS in the EU tend to have larger DÊV T1CR than LAC banks. Additionally, banks that have adopted Basel II policies in LAC have smaller DÊV T1CR while banks targeted by the stress test in EUR tend to have larger DÊV T1CR.

Results in model 4 and 5 show that banks with larger OPINC in EU have smaller DÊV T1CR and DÊV TCR. In LAC is the opposite in the case of DÊV T1CR and it is not significant in DÊV TCR.

Model 5 shows that SOBs in EU have smaller DÊV TCR while in LAC is the opposite. Listed banks in EUR and LAC have smaller DÊV TCR. Additionally, banks that have adopted IFRS in EUR have larger DÊV TCR while in LAC the coefficient on IFRS is not significant. Finally, results show that during the financial crisis, DÊV TCR is larger in LAC while it is not significant in EU.

The results for Model 6 show that banks that have adopted IFRS and that are in countries in economic upturn in the EU tend to have lower DÊV Risk while in LAC is the opposite. Finally, results show that during the financial crisis, DÊV Risk tend to be larger in LAC than in EU.

We analyze further the average DÊV T1CR, DÊV TCR and DÊV Risk for EU banks and LAC banks in each year under analysis.

INSERT FIGURE 3.3 HERE

INSERT FIGURE 3.4 HERE

INSERT FIGURE 3.5 HERE

In general, EU and LAC banks show a similar behavior in DÊV T1CR, DÊV TCR in each year (see Figure 3.3 and 3.4). DÊV Risk mainly shows the opposite behavior (see Figure 3.5).

It is of special interest to note the following:

- DÊV T1CR is larger than DÊV TCR in EU and LAC banks, especially during 2008/09 financial crisis.
- In EU banks DÊV T1CR and DÊV TCR are positive (undercapitalized) and in LAC banks are negative (overcapitalized) (except DÊV T1CR in 2013 and DÊV TCR in 2009 that are positive).

- DÊV T1CR and DÊV TCR diminish significantly in LAC banks after the financial crisis. In EU banks, even though both also diminish, they remain on average at 4 and 2 percentage points respectively.
- In LAC banks, DÊV Risk tends to zero after the financial crisis
- The higher speed of adjustment of T1CR and TCR is evident in LAC banks as the subsequent year´s change in T1CR and TCR is similar to the corresponding DÊV. In EU banks the adjustment speed is slower.

3.6 Conclusions

We find evidence of differentiated capital structure adjustment in EU and LAC banks: EU banks seem to adjust T1CR and TCR jointly while LAC banks adjust them differently.

We also find that LAC banks adjust T1CR according to the DEP, LLP, EFF and the TCR according to LOANS, DEP, LLP, LIQ. EU banks adjust both capital ratios only according to OPINC. As T1CR and TCR are calculated following different policies, Basel policies and accounting standards respectively, these results imply that LAC banks strictly follow these rules and compute their capital ratios mainly based on accounting information because there is no other available information to consider in the calculation due to the higher opacity in the LAC market. On the contrary, EU banks count with additional information in a more transparent market and adjust their capital ratios according to that additional information and not on accounting information.

The fact that LAC banks adjust their Risk level, in other words, shift risk, according to LOANS, LIQ and ROA an EU banks only according to LIQ give support to the idea that LAC banks allocate assets following the risk-weighting policies while EU banks invest on assets using additional information other than accounting information.

Our results show that LAC banks are overcapitalized while EU banks are undercapitalized relative to their capital target (T1CR and TCR). Additionally, we find that the financial crisis did not impact on the capital structure adjustment (T1CR and TCR) in any market under study but did impact on the DÊV Risk in both markets: it was larger during the financial crisis.

The DÊV T1CR, TCR and Risk are determined by different banks' and markets' specific characteristics in EU and in LAC

The average DÊV T1CR in EU banks is 3.2 percentage points (22% undercapitalized) and in LAC banks is -0.94 percentage points (7.5% overcapitalized), but the Risk ratio (RWA/TA) is 55% in EU banks (below the target that is 64%) and 90% in LAC banks (above the target that is 90%). These results provide evidence that even though LAC banks have larger capital buffers, they are much riskier than EU banks.

This study is novel in providing evidence that banks in developed markets (EU) and emerging markets (LAC) determine the risk-weighted and book capital ratios differently; while LAC banks mainly use a different set of accounting information to determine each capital ratio, EU banks determine both capital ratios mainly using market information and not accounting information. We also find stronger evidence of risk shifting moral hazard in LAC banks than in EU banks, because even though in both markets some banks' specific characteristics determine the risk level, only in LAC the T1CR adjusts differently than TCR.

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Table 3.1 – Descriptive Statistics
Panel A – Full Sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Tier 1 Capital Ratio %	984	11.748	4.211	0.600	40.040
Total Capital Ratio %	984	14.253	3.950	0.900	38.950
RWA / TA	984	0.688	0.288	0.089	1.913
Loans thUSD	984	120,000,000.000	231,000,000.000	51,962.720	1,660,000,000.000
Total assets thUSD	984	268,000,000.000	589,000,000.000	182,039.000	3,810,000,000.000
Deposits / Total Assets	984	0.483	0.176	0.040	0.917
Liquid Assets thUSD	984	60,900,000.000	159,000,000.000	1,583.769	1,150,000,000.000
Loan Loss Provisions thUSD	984	1,249,401.000	3,202,109.000	197.033	29,500,000.000
Operating Income / Total Assets	984	0.043	0.046	0.002	0.682
ROA %	984	0.786	1.275	(4.502)	11.090
Cost to Income Ratio %	984	60.466	15.135	18.483	184.391

Note: RWA/TA and ROA represent risk-weighted assets to total assets ratio and return on assets ratio, respectively.
Std. Dev., Min and Max denote standard deviation, minimum and maximum, respectively.

Table 3.1 – Descriptive Statistics
Panel B – EU subsample

Variable	Obs	Mean	Std. Dev.	Min	Max
Tier 1 Capital Ratio %	804	11.386	4.042	0.600	40.040
Total Capital Ratio %	804	13.895	3.967	0.900	38.950
RWA / TA	804	0.641	0.270	0.089	1.803
Loans thUSD	804	143,000,000.000	249,000,000.000	224,550.200	1,660,000,000.000
Total assets thUSD	804	319,000,000.000	639,000,000.000	346,757.800	3,810,000,000.000
Deposits / Total Assets	804	0.487	0.175	0.040	0.917
Liquid Assets thUSD	804	71,500,000.000	174,000,000.000	10,577.830	1,150,000,000.000
Loan Loss Provisions thUSD	804	1,381,194.000	3,470,374.000	197.033	29,500,000.000
Operating Income / Total Assets	804	0.031	0.016	0.002	0.097
ROA %	804	0.495	0.875	(4.502)	3.254
Cost to Income Ratio %	804	61.357	14.885	18.483	181.218

Note: RWA/TA and ROA represent risk-weighted assets to total assets ratio and return on assets ratio, respectively.
Std. Dev., Min and Max denote standard deviation, minimum and maximum, respectively.

Table 3.1 – Descriptive Statistics
Panel C – Latin America & The Caribbean subsample

Variable	Obs	Mean	Std. Dev.	Min	Max
Tier 1 Capital Ratio %	180	13.369	4.568	5.600	28.700
Total Capital Ratio %	180	15.853	3.457	10.050	28.700
RWA / TA	180	0.901	0.268	0.364	1.913
Loans thUSD	180	17,800,000.000	35,600,000.000	51,962.720	227,000,000.000
Total assets thUSD	180	42,900,000.000	94,400,000.000	182,039.000	528,000,000.000
Deposits / Total Assets	180	0.467	0.179	0.098	0.873
Liquid Assets thUSD	180	13,500,000.000	34,100,000.000	1,583.769	228,000,000.000
Loan Loss Provisions thUSD	180	660,722.500	1,361,735.000	437.159	8,883,659.000
Operating Income / Total Assets	180	0.100	0.081	0.019	0.682
ROA %	180	2.084	1.849	(4.440)	11.090
Cost to Income Ratio %	180	56.484	15.636	22.954	184.391

Note: RWA/TA and ROA represent risk-weighted assets to total assets ratio and return on assets ratio, respectively.
Std. Dev., Min and Max denote standard deviation, minimum and maximum, respectively.

Table 3.1 – Descriptive Statistics
Panel D – Sample by region and country

Country	Number
LAC	180
BR	102
CL	18
CO	6
MX	36
PA	12
SR	6
EUR	804
AT	60
BE	12
BG	12
CY	12
CZ	6
DE	66
DK	36
ES	54
FI	12
FR	48
GB	114
HR	6
HU	12
IE	12
IT	216
NL	30
PL	12
PT	36
RO	12
SE	6
SI	18
SK	12
TOTAL	984

Note: Region and country codes denote the following: Latin America and The Caribbean (LAC), Europe (EUR), Brazil (BR), Chile (CL), Colombia (CO), Mexico (MX), Panama (PA), Surinam (SR), Austria (AT), Belgium (BE), Bulgaria (BG), Cyprus (CY), Czech Republic (CZ), Germany (DE), Denmark (DK), Spain (ES), Finland (FI), France (FR), Great Britain (GB), Croatia (HR), Hungary (HU), Ireland (IE), Italy (IT), The Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Switzerland (SI), Slovakia (SK).

Table 3.1 – Descriptive Statistics
Panel E – Market profile per region per year

Market	Avg GDPA-5D	IFRS banks	IFRS banks %	SOB	SOB %	BII banks	BII banks %	Listed banks	Listed banks %
LAC									
2007	1.452	2	6.67%	4	13.33%	23	76.67%	10	33.33%
2008	-0.444	2	6.67%	4	13.33%	23	76.67%	10	33.33%
2009	-4.358	5	16.67%	4	13.33%	23	76.67%	10	33.33%
2010	2.448	22	73.33%	4	13.33%	23	76.67%	10	33.33%
2011	0.051	22	73.33%	4	13.33%	23	76.67%	10	33.33%
2012	-0.572	22	73.33%	4	13.33%	23	76.67%	10	33.33%
EU									
2007	0.467	95	70.90%	7	5.22%	134	100.00%	63	47.01%
2008	-1.819	95	70.90%	7	5.22%	134	100.00%	63	47.01%
2009	-5.515	95	70.90%	7	5.22%	134	100.00%	63	47.01%
2010	1.024	95	70.90%	7	5.22%	134	100.00%	63	47.01%
2011	0.967	95	70.90%	7	5.22%	134	100.00%	63	47.01%
2012	-0.525	95	70.90%	7	5.22%	134	100.00%	63	47.01%

Note: Avg GDPA-5D, IFRS banks, SOB, BII and Listed banks represent the average difference between the current gross domestic product and the last 5-year average gross domestic product, banks that have adopted the International Financial Reporting Standards, state-owned banks, banks that have adopted Basel II policies and listed banks, respectively. LAC and EUR denote Latin America and The Caribbean and Europe.

Table 3.2 – Variables correlation matrix

	ST	Listed	EU	SOB	IFRS	GDPA5D	LOANS	DEP	LIQ	LLP	OPINC	ROA	EFF	Crisis
ST	1.000													
Listed	0.240	1.000												
EU	0.233	0.106	1.000											
SOB	-0.009	0.103	-0.125	1.000										
IFRS	0.130	0.499	0.238	0.015	1.000									
GDPA5D	-0.016	-0.022	-0.099	-0.037	-0.038	1.000								
LOANS	0.522	0.229	0.381	-0.092	0.068	-0.001	1.000							
DEP	-0.184	-0.066	0.044	-0.029	-0.016	-0.029	-0.285	1.000						
LIQ	0.512	0.248	0.236	-0.048	0.032	0.016	0.708	-0.357	1.000					
LLP	0.482	0.272	0.129	-0.020	0.069	-0.080	0.760	-0.317	0.718	1.000				
OPINC	-0.198	-0.103	-0.585	0.042	-0.110	0.038	-0.496	0.056	-0.418	-0.226	1.000			
ROA	-0.168	-0.040	-0.482	-0.045	-0.108	0.122	-0.271	0.028	-0.161	-0.243	0.539	1.000		
EFF	0.022	-0.038	0.125	0.076	0.038	0.026	-0.006	-0.009	-0.014	-0.053	0.007	-0.381	1.000	
Crisis	0.000	0.000	0.000	0.000	-0.036	-0.420	-0.002	-0.027	-0.008	0.050	0.015	0.017	-0.001	1.000

Table 3.3 – GMM estimation results (H1 & H2)
Panel A – Full sample

		Model 1: T1CR			Model 2: TCR			Model 3: Risk	
Full Sample	Coef.	Robust Std. Err.		Coef.	Robust Std. Err.		Coef.	Robust Std. Err.	
Dep Var L1	0.894	0.157	***	0.446	0.138	***	0.738	0.107	***
EU	-0.078	4.002		0.104	9.260		-0.097	0.130	
ST	-5.402	7.122		-4.908	18.804		-0.239	0.671	
Listed	2.904	6.894		2.672	6.450		-0.062	0.459	
GDPA5D	-0.007	0.028		-0.012	0.032		0.000	0.002	
SOB	9.683	16.086		-15.065	39.841		-0.184	0.681	
IFRS	0.406	0.601		0.107	0.579		0.028	0.027	
LOANS	1.718	0.925	*	1.376	1.014		-0.113	0.038	***
DEP	-3.549	2.169		-3.326	3.000		-0.051	0.108	
LIQ	-0.270	0.329		-0.671	0.310	**	0.074	0.014	***
LLP	0.080	0.254		0.390	0.243		0.021	0.019	
OPINC	19.952	18.809		-8.290	15.743		-0.985	0.973	
ROA	-0.248	0.248		-0.035	0.257		0.003	0.017	
EFF	0.023	0.013	*	0.010	0.010		0.001	0.001	
Crisis	-0.091	0.146		-0.121	0.140		0.013	0.009	
Intercept	-25.578	15.523	*	-7.489	16.256		0.848	0.643	
Wald Chi2		128.04			83.39			215.57	
Prob > chi2		0.000			0.000			0.000	
AR1 (p-value)		0.016			0.030			0.000	
AR2 (p-value)		0.743			0.863			0.489	
Banks		164			164			164	
Observations		984			984			984	

The dependent variable is T1CR (Model 1), TCR (Model 2) and Risk. (Model 3) defined as the book value of Tier 1 capital to risk-weighted assets ratio, the book value of total capital to book value of assets ratio and the risk-weighted assets to total assets ratio, respectively. The independent variables are defined as follows:
DepVarL1, the lagged dependent variable
EU, a dummy variable set to one if the financial institution is from Europe and to zero if it is from Latin America or The Caribbean
ST, a dummy variable set to one if the financial institution was targeted by the EU-wide stress test and to zero otherwise
Listed, a dummy variable set to one if the financial institution is listed and to zero otherwise
GDPA5D, the average difference between the current gross domestic product and the last 5-year average gross domestic product
SOB, a dummy variable set to one if the financial institution is state-owned and to zero otherwise
IFRS, a dummy variable set to one if the financial institution has adopted the International Financial Reporting Standards and to zero otherwise
LOANS is the financial institution's natural log of total loans
DEP is the financial institution's total deposits to total assets ratio
LIQ is the financial institution's natural log of total liquid assets
LLP is the financial institution's natural log of loan loss provisions
OPINC is the financial institution's operating income to total assets ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
EFF is the financial institution's cost to income ratio
Crisis, a dummy variable set to one if the year is 2008 or 2009 and to zero otherwise
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 3.3 – GMM estimation results (H1 & H2)
Panel B – EU subsample

		Model 1: T1CR			Model 2: TCR			Model 3: Risk	
EU	Coef.	Robust Std. Err.		Coef.	Robust Std. Err.		Coef.	Robust Std. Err.	
Dep Var L1	0.799	0.091	***	0.608	0.116	***	0.690	0.129	***
ST	3.420	13.612		17.193	59.798		-0.392	1.414	
Listed	11.471	51.419		-1.621	13.004		1.487	4.157	
GDPA5D	-0.029	0.032		-0.035	0.043		-0.002	0.002	
SOB	2.665	42.502		-44.779	78.293		-0.435	0.942	
IFRS	5.126	7.971		0.340	7.541		-0.452	0.984	
LOANS	-0.073	0.943		0.316	2.772		-0.115	0.066	*
DEP	-1.154	2.697		0.693	8.238		-0.168	0.199	
LIQ	-0.137	0.413		-0.333	0.347		0.054	0.026	**
LLP	0.212	0.221		0.377	0.229		-0.009	0.023	
OPINC	-99.124	50.519	**	-118.859	57.682	**	1.897	3.959	
ROA	-0.397	0.381		-0.239	0.332		-0.038	0.022	*
EFF	-0.004	0.011		-0.013	0.012		0.000	0.000	
Crisis	-0.072	0.181		-0.172	0.192		0.014	0.012	
Intercept	-2.184	34.619		4.064	33.737		1.173	1.300	
Wald Chi2		460.4			216.63			222.85	
Prob > chi2		0.000			0.000			0.000	
AR1 (p-value)		0.038			0.054			0.000	
AR2 (p-value)		0.993			0.369			0.138	
Banks		134			134			134	
Observations		804			804			804	

The dependent variable is T1CR (Model 1), TCR (Model 2) and Risk. (Model 3) defined as the book value of Tier 1 capital to risk-weighted assets ratio, the book value of total capital to book value of assets ratio and the risk-weighted assets to total assets ratio, respectively. The independent variables are defined as follows:
DepVarL1, the lagged dependent variable
ST, a dummy variable set to one if the financial institution was targeted by the EU-wide stress test and to zero otherwise
Listed, a dummy variable set to one if the financial institution is listed and to zero otherwise
GDPA5D, the average difference between the current gross domestic product and the last 5-year average gross domestic product
SOB, a dummy variable set to one if the financial institution is state-owned and to zero otherwise
IFRS, a dummy variable set to one if the financial institution has adopted the International Financial Reporting Standards and to zero otherwise
LOANS is the financial institution's natural log of total loans
DEP is the financial institution's total deposits to total assets ratio
LIQ is the financial institution's natural log of total liquid assets
LLP is the financial institution's natural log of loan loss provisions
OPINC is the financial institution's operating income to total assets ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
EFF is the financial institution's cost to income ratio
Crisis, a dummy variable set to one if the year is 2008 or 2009 and to zero otherwise
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 3.3 – GMM estimation results (H1 & H2)
Panel C – LAC subsample

	Model 1: T1CR			Model 2: TCR			Model 3: Risk		
LAC	Coef.	Robust Std. Err.		Coef.	Robust Std. Err.		Coef.	Robust Std. Err.	
Dep Var L1	0.647	0.175	***	0.413	0.220	*	0.571	0.312	*
BII	-12.622	13.280		-1.330	4.445		0.722	2.048	
Listed	12.550	12.355		0.021	5.805		0.662	1.591	
GDPA5D	-0.054	0.062		-0.037	0.059		0.004	0.004	
SOB	4.273	11.327		8.244	9.843		-0.873	2.143	
IFRS	0.101	0.614		-0.504	0.547		0.020	0.045	
LOANS	2.139	2.110		2.289	1.106	**	-0.103	0.108	
DEP	-6.397	3.644	*	-8.356	3.488	**	-0.187	0.212	
LIQ	-1.012	0.631		-1.667	0.721	**	0.114	0.040	***
LLP	-0.835	0.467	*	-0.884	0.456	*	0.026	0.055	
OPINC	20.067	17.720		1.473	13.224		-1.043	1.014	
ROA	0.031	0.296		0.174	0.275		0.022	0.026	
EFF	0.035	0.020	*	0.015	0.013		0.000	0.003	
Crisis	0.022	0.349		0.475	0.319		0.023	0.033	
Intercept	-0.268	35.275		10.805	12.838		-0.517	2.651	
Wald Chi2		236.91			55.97			71.41	
Prob > chi2		0.000			0.000			0.000	
AR1 (p-value)		0.006			0.048			0.030	
AR2 (p-value)		0.744			0.273			0.442	
Banks		30			30			30	
Observations		180			180			180	

The dependent variable is T1CR (Model 1), TCR (Model 2) and Risk. (Model 3) defined as the book value of Tier 1 capital to risk-weighted assets ratio, the book value of total capital to book value of assets ratio and the risk-weighted assets to total assets ratio, respectively. The independent variables are defined as follows:
DepVarL1, the lagged dependent variable
BII, a dummy variable set to one if the financial institution has adopted the Basel II policies and to zero otherwise
Listed, a dummy variable set to one if the financial institution is listed and to zero otherwise
GDPA5D, the average difference between the current gross domestic product and the last 5-year average gross domestic product
SOB, a dummy variable set to one if the financial institution is state-owned and to zero otherwise
IFRS, a dummy variable set to one if the financial institution has adopted the International Financial Reporting Standards and to zero otherwise
LOANS is the financial institution's natural log of total loans
DEP is the financial institution's total deposits to total assets ratio
LIQ is the financial institution's natural log of total liquid assets
LLP is the financial institution's natural log of loan loss provisions
OPINC is the financial institution's operating income to total assets ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
EFF is the financial institution's cost to income ratio
Crisis, a dummy variable set to one if the year is 2008 or 2009 and to zero otherwise
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 3.4 – Targets and Speed of Adjustment

	Mean EUR	Mean LAC
Speed of adjustment T1CR (λ T1CR)	0.201	0.353
Target T1 Capital Ratio (Tier1CR*$_{i,t}$) %	14.574	12.429
Speed of adjustment TCR (λ TCR)	0.392	0.587
Target Total Capital Ratio (CR*$_{i,t}$) %	14.995	15.626
Speed of adjustment Risk (λ Risk)	0.310	0.429
Target Risk (Risk*i,t) %	0.554	0.917

The table shows the Tier 1 capital ratio (T1CR) speed of adjustment we calculate using the equation $Tier1CR_{i,t} = \lambda\beta X_{i,t-1} + (1-\lambda)Tier1CR_{i,t-1}$ and the target Tier 1 capital ratio we calculate using the equation
$Tier1CR^*_{i,t,} = \beta X_{i,t-1}$. We estimate equation $Tier1CR_{i,t} = \lambda\beta X_{i,t-1} + (1-\lambda)Tier1CR_{i,t-1}$ following the Blundell and Bond (1998) Generalized Method of Moments estimator (GMM). We also report the speed of adjustment and target value for the total capital ratio (TCR) and the risk-weighted assets to total assets ratio (Risk) also using GMM.

Table 3.5 – Logistic models estimation results (H3 & H4)
Panel A – Model 4: DÊV T1CR Model for EU and LAC subsamples

	EU			LAC		
DÊV T1CR	Coef.	Robust Std. Err.		Coef.	Robust Std. Err.	
ST / BII	17.364	0.277	***	-37.817	1.308	***
Listed	57.620	0.360	***	33.437	0.831	***
GDPA5D	-0.141	0.057	**	-0.383	0.118	***
SOB	14.280	0.523	***	14.751	1.194	***
IFRS	25.531	0.372	***	1.500	0.660	**
LOANS	0.083	0.258		8.540	0.800	***
DEP	-10.793	0.961	***	-13.126	2.352	***
LIQ	-0.820	0.152	***	-2.585	0.377	***
LLP	0.799	0.237	***	-3.518	0.681	***
OPINC	-467.714	13.110	***	73.645	10.477	***
ROA	-2.448	0.285	***	-0.349	0.330	
EFF	-0.033	0.012	***	0.200	0.046	***
Crisis	0.293	0.297		0.069	0.634	
Intercept	-21.917	1.605	***	-50.584	6.066	***
R2		0.99			0.97	
Banks		134			30	
Observations		804			180	

The dependent variable is DÊV T1CR defined the average distance from target Tier 1 Capital Ratio in t from the current Tier 1 Capital Ratio in t-1. We calculate DÊV T1CR as follows: DÊV i,t = T1CR*i,t - T1CRi,t-1 , where T1CR*i,t, = βX i,t-1. and T1CR*i,t, was estimated through the equation T1CRi,t = λβX i,t-1 + (1-λ)T1CRi,t-1 following the Blundell and Bond (1998) Generalized Method of Moments estimator.
The independent variables are defined as follows:
ST, a dummy variable set to one if the financial institution was targeted by the EU-wide stress test and to zero otherwise
BII, a dummy variable set to one if the financial institution has adopted the Basel II policies and to zero otherwise
Listed, a dummy variable set to one if the financial institution is listed and to zero otherwise
GDPA5D, the average difference between the current gross domestic product and the last 5-year average gross domestic product
SOB, a dummy variable set to one if the financial institution is state-owned and to zero otherwise
IFRS, a dummy variable set to one if the financial institution has adopted the International Financial Reporting Standards and to zero otherwise
LOANS is the financial institution's natural log of total loans
DEP is the financial institution's total deposits to total assets ratio
LIQ is the financial institution's natural log of total liquid assets
LLP is the financial institution's natural log of loan loss provisions
OPINC is the financial institution's operating income to total assets ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
EFF is the financial institution's cost to income ratio
Crisis, a dummy variable set to one if the year is 2008 or 2009 and to zero otherwise
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 3.5 – Logistic models estimation results (H3 & H4)
Panel B – Model 5: DÊV TCR Model for EU and LAC subsamples

	EU			LAC		
DÊV TCR	Coef.	Robust Std. Err.		Coef.	Robust Std. Err.	
ST / BII	44.465	0.290	***	-3.737	1.115	***
Listed	-3.766	0.355	***	-1.745	0.719	**
GDPA5D	-0.116	0.057	**	-0.199	0.104	*
SOB	-113.168	0.461	***	14.770	0.969	***
IFRS	0.906	0.380	**	-0.198	0.544	
LOANS	1.268	0.260	***	5.672	0.649	***
DEP	-3.538	0.951	***	-11.769	2.006	***
LIQ	-1.101	0.149	***	-3.143	0.355	***
LLP	0.696	0.239	***	-1.954	0.551	***
OPINC	-289.276	13.734	***	4.739	8.594	
ROA	-0.835	0.324	**	0.155	0.286	
EFF	-0.054	0.013	***	0.111	0.043	**
Crisis	-0.104	0.290		1.012	0.523	*
Intercept	-0.688	1.693		-20.003	5.167	***
R2		0.99			0.76	
Banks		134			30	
Observations		804			180	

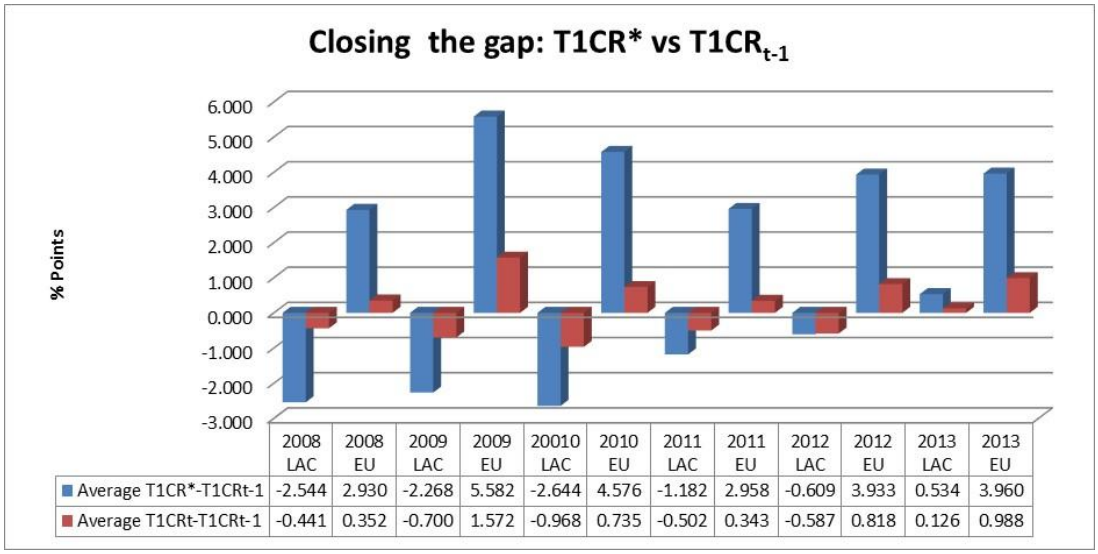
The dependent variable is DÊV TCR defined the average distance from target Total Capital Ratio in t from the current Total Capital Ratio in t-1. We calculate DÊV i,t = TCR*i,t - TCRi,t-1 , where TCR*i,t, = βX i,t-1. and TCR*i,t, was estimated through the equation TCRi,t = λβX i,t-1 + (1-λ)TCRi,t-1 following the Blundell and Bond (1998) Generalized Method of Moments estimator.
The independent variables are defined as follows:
ST, a dummy variable set to one if the financial institution was targeted by the EU-wide stress test and to zero otherwise
BII, a dummy variable set to one if the financial institution has adopted the Basel II policies and to zero otherwise
Listed, a dummy variable set to one if the financial institution is listed and to zero otherwise
GDPA5D, the average difference between the current gross domestic product and the last 5-year average gross domestic product
SOB, a dummy variable set to one if the financial institution is state-owned and to zero otherwise
IFRS, a dummy variable set to one if the financial institution has adopted the International Financial Reporting Standards and to zero otherwise
LOANS is the financial institution's natural log of total loans
DEP is the financial institution's total deposits to total assets ratio
LIQ is the financial institution's natural log of total liquid assets
LLP is the financial institution's natural log of loan loss provisions
OPINC is the financial institution's operating income to total assets ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
EFF is the financial institution's cost to income ratio
Crisis, a dummy variable set to one if the year is 2008 or 2009 and to zero otherwise
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 3.5 – Logistic models estimation results (H3 & H4)
Panel C – Model 6: DÊV Risk Model for EU and LAC subsamples

	EU			LAC		
DÊV Risk	Coef.	Robust Std. Err.		Coef.	Robust Std. Err.	
ST / BII	-1.170	0.018	***	1.580	0.063	***
Listed	4.773	0.022	***	1.577	0.032	***
GDPA5D	-0.007	0.003	*	0.017	0.006	***
SOB	-1.494	0.039	***	-2.149	0.054	***
IFRS	-1.515	0.025	***	0.060	0.034	*
LOANS	-0.436	0.015	***	-0.283	0.038	***
DEP	-0.271	0.060	***	-0.676	0.122	***
LIQ	0.254	0.009	***	0.408	0.022	***
LLP	-0.029	0.014	**	-0.028	0.029	
OPINC	-2.981	1.052	***	-1.731	0.442	***
ROA	-0.155	0.025	***	-0.028	0.016	*
EFF	0.001	0.001		-0.004	0.001	**
Crisis	0.034	0.017	*	0.103	0.031	***
Intercept	3.200	0.120	***	-1.939	0.296	***
R2		0.99			0.98	
Banks		134			30	
Observations		804			180	

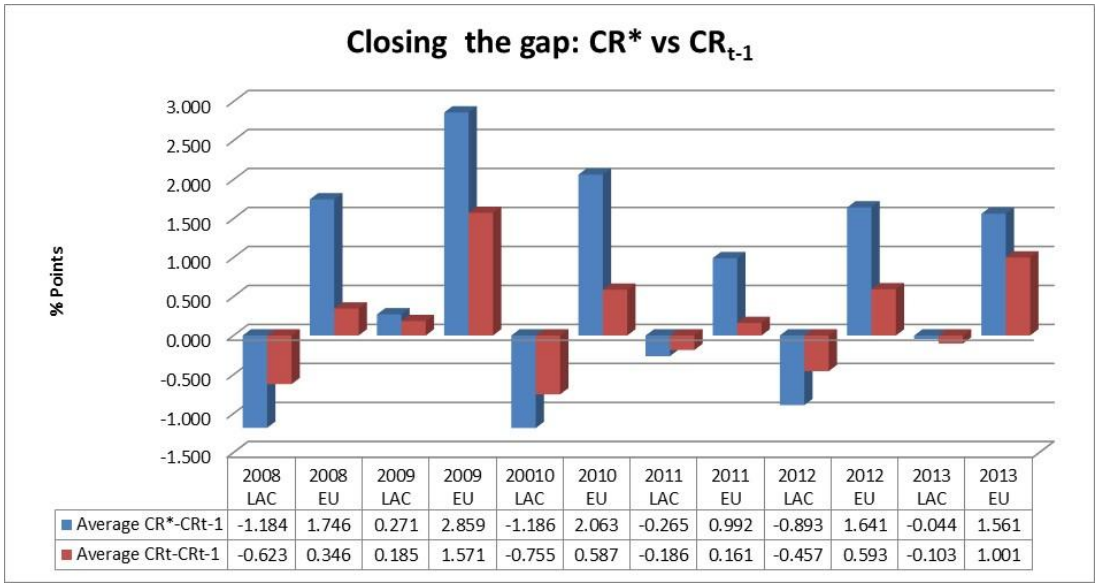
The dependent variable is DÊV Risk defined the average distance from target Risk Ratio (the risk-weighted assets to total assets ratio) in t from the current Risk Ratio in t-1. We calculate DÊV Risk as follows: DÊV i,t = Risk*i,t - Risk$i,t-1$, where Risk*i,t, = $\beta X_{i,t-1}$. and Risk*i,t, was estimated through the equation Riski,t = $\lambda\beta X_{i,t-1}$ + (1-λ)Risk$i,t-1$ following the Blundell and Bond (1998) Generalized Method of Moments estimator.
The independent variables are defined as follows:
ST, a dummy variable set to one if the financial institution was targeted by the EU-wide stress test and to zero otherwise
BII, a dummy variable set to one if the financial institution has adopted the Basel II policies and to zero otherwise
Listed, a dummy variable set to one if the financial institution is listed and to zero otherwise
GDPA5D, the average difference between the current gross domestic product and the last 5-year average gross domestic product
SOB, a dummy variable set to one if the financial institution is state-owned and to zero otherwise
IFRS, a dummy variable set to one if the financial institution has adopted the International Financial Reporting Standards and to zero otherwise
LOANS is the financial institution's natural log of total loans
DEP is the financial institution's total deposits to total assets ratio
LIQ is the financial institution's natural log of total liquid assets
LLP is the financial institution's natural log of loan loss provisions
OPINC is the financial institution's operating income to total assets ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
EFF is the financial institution's cost to income ratio
Crisis, a dummy variable set to one if the year is 2008 or 2009 and to zero otherwise
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Figure 3.3 – Subsequent year's change in Tier 1 Capital Ratio (figures in % points)



	2008 LAC	2008 EU	2009 LAC	2009 EU	20010 LAC	2010 EU	2011 LAC	2011 EU	2012 LAC	2012 EU	2013 LAC	2013 EU
Average T1CR*-T1CRt-1	-2.544	2.930	-2.268	5.582	-2.644	4.576	-1.182	2.958	-0.609	3.933	0.534	3.960
Average T1CRt-T1CRt-1	-0.441	0.352	-0.700	1.572	-0.968	0.735	-0.502	0.343	-0.587	0.818	0.126	0.988

Figure 3.4 – Subsequent year's change in Total Capital Ratio (figures in % points)



	2008 LAC	2008 EU	2009 LAC	2009 EU	20010 LAC	2010 EU	2011 LAC	2011 EU	2012 LAC	2012 EU	2013 LAC	2013 EU
Average CR*-CRt-1	-1.184	1.746	0.271	2.859	-1.186	2.063	-0.265	0.992	-0.893	1.641	-0.044	1.561
Average CRt-CRt-1	-0.623	0.346	0.185	1.571	-0.755	0.587	-0.186	0.161	-0.457	0.593	-0.103	1.001

Figure 3.5 – Subsequent year's change in Risk (figures in % points)

	2008 LAC	2008 EU	2009 LAC	2009 EU	20010 LAC	2010 EU	2011 LAC	2011 EU	2012 LAC	2012 EU	2013 LAC	2013 EU
Average Risk*-Riskt-1	-0.037	-0.253	0.051	-0.128	0.056	-0.083	0.109	-0.131	-0.015	-0.104	-0.003	-0.051
Average Riskt-Riskt-1	-0.035	-0.080	0.026	-0.049	0.023	-0.024	0.043	-0.038	-0.019	-0.029	0.032	-0.012

Part III – Theoretical development and empirical analysis of the relationship between financial institutions' risk profile and corporate social responsibility, the attitude towards customers' claims and complaints and reputation

Chapter 4 - Corporate social responsibility and bank risk profile: Evidence from Europe

Chapter 4 - Corporate social responsibility and bank risk profile: Evidence from Europe

4.1 Introduction

Corporate social responsibility (CSR) reports are tools that companies use to highlight their contribution to society. Considering the singularities of financial institutions (FI) and the role they play in the economy, CSR is closely related to this type of companies in two specific ways: a) they are important agents in the financial inclusion process in the economy (Carbó and Rodríguez, 2015) which is viewed as a social function of FI – note that this could be a win-win situation for commercial banks because as participating in this process gives them the opportunity to do more business, the cost of the financial services provided decreases (Mukherjee, 2012) and b) they incorporate environmental and social considerations in the design of the products, in the credit policies and investment strategies (de la Cuesta-González et al., 2006).

When the FI extend credit to economic agents, they facilitate economic growth. However, the last global financial crisis brought a reduction in the volume of loans in European banks, excluding more people from the financial system (Jurek, 2014). In this context, FI were viewed by the society as profit maximizing companies (Dow, 2011). FI need to regain their stakeholders' trust and CSR aims to achieve this goal. In fact, the FI business model as well as the products they offer should consider CSR issues and sustainability reporting is the appropriate vehicle to communicate this initiative to stakeholders.

CSR is then not only a credit risk factor that should be considered in the risk management system of the institutions when they grant loans to their clients but also could be used to increase the volume of business, according to the instrumental theory (Garriga and Melé, 2004).

FI incorporate environmental and social consideration into their bank lending products and services such as loans and project finance (Thompson and Cowton, 2004; White 1996) which is in line with the Global Reporting Initiative (GRI) Financial Services Sector (FSS) disclosures requirements. Hence, the development of environmental credit risk management (ECRM), integrating environmental risk assessment procedures into the credit assessment process, is a key element for banks risk management (Mengze and Wei, 2013).

The aim of this paper is to draw a connection between FI risk profile and the propensity to issue a sustainability report as well as the propensity to publish a sustainability report containing high quality CSR FSS specific information. We contribute to extant literature by finding a relationship between the type of risk and complexity of FI and Corporate Social Responsibility Reporting (CSRR) and GRI Financial Services Sector disclosures, using a Financial Services Sector disclosure Index (FSSI) we developed.

We argue that the FI's risk profile will influence the propensity to issue a CSR report and also the propensity to publish a sustainability report containing high quality CSR FSS specific information. We use the CAMELS approach to identify the FI's risk profile. CAMELS is a rating system that assesses Capital adequacy, Asset quality, Management skills, Earnings and profitability, Liquidity risk and Sensitivity to market risk (Kerstein and Kozbeg, 2013; Office of the Comptroller of the Currency, 2013; Jin et al., 2011). We also control for the type of assuror of the firm's CSR report.

Our empirical research is conducted on a sample of 2014 EU-wide stress test sample of FI with available public information from 2011 through 2013 (212 FI-year observations). The period under study is the window period between the 2010 and 2014 EU-wise stress test.

We find empirical evidence that FI with higher capital ratio, significant amounts of loans granted (that results in having a large number of customers), higher profitability in the banking business and higher level of interest bearing liabilities booked tend to issue a CSR report. Among the FI that issue a CSR, the ones with lower profitability in the banking business disclose higher quality CSR financial services sector specific information while the ones that do not submit the CSR report to external assurance or get it assured by PwC and EY disclose lower quality CSR information related to the financial services sector.

Our findings are unique and valuable. First, our study contributes to the literature that tries to better understand the motivations behind CSR reporting in the EU FSS key players. Second, by providing a deeper understanding of the intertwining nature of risk profile and CSR reporting in the banking industry, we fill an important gap in the literature to contribute to the framework to understanding aspects of complex decision making process related to CSR reporting and disclosure quality. Third, our study is innovative in many aspects: a) in using the CAMELS risk approach to identify the risk profile of FI involved in sustainability reporting. Prior studies in the banking industry mainly use corporate governance characteristics (Jizi et al., 2012; Khan, 2010), profitability (Martinez-Campillo et al., 2013) and earning management strategies (Prior et al., 2008) to explain the propensity to issue a CSR report, b) in explaining the role that FI sustainability reporting plays in the financial inclusion process and c) to raise awareness that FI could use higher quality CSR reporting not only to communicate social sensitivity but also to improve their reputation and to increase business opportunities and increase profitability.

The structure of this article is organized as follows. After this introduction that highlights the interest of the paper, the second section addresses the literature review related to CSR reporting role and determinants, the social role of FI in the financial inclusion process, CSR and risk management in the FSS and the

hypothesis development. Next, we describe the sample and the methodological approach of our empirical study. The fourth section presents the results obtained. The article concludes with a section on the contribution and main conclusions of this study.

4.2 Literature review

4.2.1 CSR reporting role and determinants

CSR reporting has become an increasing trend among companies all over the world. Indeed, in 2014 more than 3,000 companies filed a sustainability report with the GRI, including 183 companies from the European FSS (Global Reporting Initiative, 2014). This could be showing the response of companies to the fact that consumer preferences shift toward products and services that are more environmentally responsible (Lucas and Wilson, 2008).

Sustainability reporting is defined as "public reports issued by companies to provide internal and external stakeholders with a picture of the corporate position and activities on economic, environmental and social dimensions. In short, such reports attempt to describe the company's contribution towards sustainable development" (World Business Council for Sustainable Development, 2002). According to the stakeholder theory, the company discloses sustainability matters to keep a sustainable relationship with its stakeholders (Freeman, 1994). Companies are encouraged to adopt CSR because of the benefits to both macro and micro-performances. Macro performance is related to environmental improvements and reduction in social inequality, while micro-performance includes reputational matters that allow companies to charge a premium price and retain high quality workers (Wu and Shen, 2013). The major purpose of corporate disclosure practices is the reduction of information asymmetry among stakeholders. This helps to reduce the stakeholders' perceived uncertainty about the consequences of the decisions made by the organization (Andrikopoulos et al., 2014).

To understand the CSR reporting incentives, a large body of research attempts to explain the determinants of CSR voluntary disclosure (Cornier and Ledoux, 2011; Guthrie and Parker, 1989). Other studies investigate the type of information and extent of social disclosures included in the CSR reports (Newson and Deegan, 2002; Adams et al. 1995) finding significant relationships between companies CSR disclosures and companies characteristics or financial attributes such as size, industry membership, market reaction, external influences, firm reputation, country of origin or proximity to individual consumers (Chih et al., 2010; Newson and Deegan, 2002; Tilt, 1994 and Herremans et al., 1993) . Zorio et al. (2013) find that the type of industry and the type of external auditor are determinants for CSR reporting and CSR assurance.

Some studies investigate on the determinants of CSR reporting quality. Guidry and Patten (2010) investigate whether market participants see value in publishing a sustainability report and whether this reaction depends on the quality of the report. They find that companies with high quality reports show more positive market reactions than companies issuing lower quality reports.

Surprisingly, only a few studies have analyzed the determinants of CSR reporting in the financial sector. This little attention to CSR reporting in the financial services sector could be explained by the indirect impact FI have on the environment through financial intermediation.

Prior studies in the banking industry mainly use corporate governance characteristics, profitability and earning management strategies to explain the propensity to issue a CSR report. Jizi et al. (2013) investigate the corporate governance related determinants of CSR reporting in a sample of large US commercial banks for the period 2009–2011 and find that board independence and board size are positively related to CSR disclosure. Khan (2010) look into CSR information of Bangladesh listed commercial banks and explores the

potential effects of corporate governance elements on CSR disclosures. The study finds that non-executive directors and the existence of foreign nationalities in the board have a significant impact on CSR reporting. Martínez-Campillo et al. (2013) find a negative relationship between profitability level and CSR expenditure in the Spanish savings institutions. Nobanee and Ellili (2015) find that the degree of sustainability disclosure in conventional banks is higher than in Islamic banks. They argue that higher leverage and more financial constraints lead conventional banks to be more responsive to the environmental disclosure demands of stakeholders. Mallin et al. (2014) analyze the CSR disclosures in a sample of Islamic banks using a CSR disclosure index covering ten dimensions. Their results show a positive association between CSR disclosure and financial performance. Prior research shows that managers who pursue private benefits by earning management strategies are more motivated to engage in CSR activities to protect their positions (Prior et al., 2008) and to divert attention from questionable financial reporting processes (Hahn and Kuhnen, 2013). Pérez et al. (2013) develop a scale to evaluate customer's perceptions of CSR performance in the banking industry and analyze the attitude of Spanish savings banks towards charitable activities and the inclusion of CSR in their business policies.

In sum, the singularities of the financial services sector and the role that FI play in the economy define a different role of CSR reporting in this sector when compared to the role it plays in other industries because: a) FI are important agents in the financial inclusion process in the economy which is viewed as a social function of FI but also as an opportunity to do more business and create new products (Mukherjee, 2012) and b) FI incorporate environmental and social considerations in the design of the products, in the credit policies and in their investment strategies (de la Cuesta-González et al., 2006).

4.2.2 FI social role in the financial inclusion process

"Financial exclusion" is the incapacity to gain access to financial services needed due to high prices, strict entry requirements, lack of offer, social discrimination and auto-exclusion (Carbó and Rodríguez, 2015; Carbó et al., 2005), for instance those who lack trust in formal FI because they experienced bank failure or fear fraud. The magnitude of the financial exclusion problem is considerable even in higher rent economies where a 10% of the population is financially excluded and CSR is a crucial concept that is considered by the FI initiatives to reduce it (Carbó and Rodríguez, 2015).

FI play an important social role in the financial inclusion process, which is considered in recent years a global policy objective to improve the lives of the poor (Anzoategui et al., 2014; Swamy, 2014; The World Bank, 2011). Financial inclusion can be defined as ensuring access to financial services at an affordable cost in a fair and transparent manner (FATF, 2011). Multilateral agencies promote financial inclusion initiatives that aim at expanding formal financial services to those who are not currently using such services (CGAP, 2009).

Financial inclusion is also viewed as a tool to monitor financial transactions and to expand the surveillance of regulators (de Koker and Jentzsch, 2013).
The EU banking sector regulated by the European Banking Authority (EBA) is dominated by domestic credit institutions that control more than 70% of total assets. Only the remaining 30% is controlled by non-domestic subsidiaries. Larger countries in the EU such as Germany and Italy have more fragmented markets and show strong savings and cooperative banking sectors, whereas smaller countries show a concentrated banking sector. This concentration allows large institutions to obtain significant market power (Jurek, 2014). European commercial banks are a crucial part of the European economy yet credit cooperatives and saving banks offer similar commercial banking services

tending to operate more locally. The latter institutions are especially important in Spain, Italy, Norway, Sweden, and Switzerland (Haq and Heaney, 2012). Cooperative banks are different from the other two types of FI as regards control, ownership and benefits (Fiordelisi and Mare, 2014).

These FI extend credit to economic agents and facilitate economic growth. However, the volume of loans granted by European FI dramatically decreased with the last global financial crisis, excluding more people from the financial system (Jurek, 2014). CSR is a crucial concept within the FI's initiatives to reduce financial exclusion (Carbó and Rodríguez, 2015).

In the recent financial crisis, financial institutions were viewed by the society as profit maximizing companies that did not look after their clients' interests but for their own managers' interests (Dow, 2011). Moral hazard in the financial sector has been analyzed in relation to loans granted to clients that were not creditworthy, high risk sophisticated financial products offered to financially unsophisticated clients and also because the states provided unlimited support to banks in the form of deposit insurance and lender-of-last-resort (Dow, 2011).

FI need to regain their stakeholders' trust and CSR is a good tool to achieve this goal. CSR seeks to fulfill the economic, legal, ethical and philanthropic expectations of a firm's stakeholders and these expectations define the type of responsibilities firms have for their stakeholders (Hinson et al., 2010). CSR can also be viewed from the legitimacy theory perspective as firms engage in socially responsible activities in order to gain, improve or maintain legitimacy (Moir, 2001).

This brings not only an opportunity for depositary financial institutions to show their social role by fulfilling their stakeholders' expectations and legitimate their existence but also constitutes a business opportunity. Promoting financial

inclusion is a win-win situation for commercial banks because they improve their global corporate image and, at the same time, as the number of customers grows through active engagement in financial inclusion the cost of banking services decrease in these deprived areas (Mukherjee, 2012). The FI business model as well as the products offered to its customers should consider CSR issues if the financial institution aims to regain the customers' trust. Sustainability reporting is the appropriate vehicle to communicate this concern.

4.2.3 CSR and risk management in the financial services sector

In the current financial services sector context, CSR has a distinctive and increasing significance (Bravo et al., 2012; Scholtens, 2009).

The concept of CSR in the financial sector not only refers to firms' responsibility for the impact that their actions have on their stakeholders, but also to their role as financial intermediaries (Prior and Argandoña, 2009). De la Cuesta-González et al. (2006) argue that the CSR concept affects the financial sector from a two-pronged perspective: a) in the internal dimension which implies the implementation of environmental and socially responsible initiatives within the entity's internal management procedures and b) in the external dimension, which implies the incorporation of CSR into the entity's business of financial intermediation and investment in the financial markets.

The internal dimension should lead to incorporating environmental and social considerations in the design of the financial products, in the credit policies and investment strategies. Consequently, the business strategy and the risk management should take CSR into account. Considering this, the Global Reporting Initiative (GRI) has issued the GRI Financial Services Sector (FSS) disclosures, a sector supplement that addresses specific industry issues that are not contemplated in the general GRI guidelines. The GRI FSS disclosures aim to provide FI stakeholders with higher quality information because the disclosure requirements are linked to the specific risks and complexities of the

industry. The internal dimension of CSR in FI is contemplated in the "Product and service impact" section of the GRI FSS supplement (Global Reporting Initiative, 2013). It requires the firm to design and implement procedures for assessing and screening environmental and social risks in business lines, process and monitor clients' implementation of and compliance with environmental and social requirements included in agreements, transactions and initiatives to mitigate environmental impacts of products and services (Global Reporting Initiative, 2013).

The external dimension of CSR in the financial sector is particularly relevant because the impact that financial intermediation has in the society does not only depend on FI sustainable performance, but also on the behaviour of loan-receivers and investment projects' managers that receive funds from them. This singularity requires FI to perform a complex assessment and measurement of present and future social impact of third-parties behaviour (de la Cuesta-González et al., 2006). In the case of FI, the limit of CSR is not set at the environmental credit risk assessment of the FI themselves as the poor environmental performance of the project they finance to a third-party could impact on their social image (Mengze and Wei, 2013).

The development of environmental credit risk management (ECRM), which integrates environmental risk assessment procedures into the credit assessment process, is important for the risk management of banks (Mengze and Wei, 2013). The idea of the inclusion of CSR in risk management programs in the financial sector has been taken into account by Bangladesh Bank (the Central Bank of Bangladesh) in recent policies issued (Bangladesh Bank, 2011). In this policy, the Bangladeshi authority requires the environmental risk to be incorporated in the Core Risk Management (CRM) that mandates considering environmental risk in the overall credit risk assessment methodology applied by banks. Additionally, this will have an impact in the computation of Risk-Adjusted Capital Ratio (a measure of FI that compares total adjusted capital to

the institutions risk-weighted assets) and the CAMELS rating of the institution (a banks' composite rating that integrates ratings from six different areas: Capital adequacy, Asset quality, Management skills, Earnings and profitability, Liquidity risk and Sensitivity to market risk).

This suggests the following null hypotheses about a FI risk profile and its propensity to issue a sustainability report and a FI risk profile and its propensity to publish a sustainability report containing high quality CSR FSS specific information:

H1: The bank propensity to issue a sustainability report does not depend on bank risk factors such as capital risk, the quality of assets, managerial skills, the level of earnings and profitability, the level of liquidity risk and the sensitivity to market risk.

H2: High quality financial sector specific information on sustainability does not depend on bank risk factors such as capital risk, the quality of assets, managerial skills, the level of earnings and profitability, the level of liquidity risk, the sensitivity to market risk and on the type of assuror.

4.3 Research design

4.3.1 Empirical model

Our H1 is tested using a logistic regression model on sustainability reports issued from 2011 to 2013 using the dummy variable Corporate Social Responsibility Report (CSRR) which is coded one if the financial institution has issued a CSR report and zero otherwise. H2 is tested using a linear regression model on the Financial Service Sector disclosures Index (FSSI). To develop the FSSI we use content analysis, an approach commonly used in CSR reporting (Guidry and Patten, 20110). The FSSI is developed using the sixteen Global Reporting Initiative (GRI) Financial Services Sector disclosures indicators. The Financial Services Sector disclosures contains a set of

disclosures for use by all financial institutions that cover key aspects of sustainability performance that are relevant to the Financial Services Sector and which are not sufficiently covered in the general GRI guidelines (Global Reporting Initiative, 2013). Using content analysis, we analyze each CSR report included in the sample to identify disclosure of each of the sixteen indicators included in the GRI Financial Services Sector supplement. We coded each indicator with 1 if it is fully disclosed, 0.5 if partially disclosed and 0 if not disclosed:

$$FSSI_i = \frac{\sum_{t=1}^{16} X_{t,i}}{16}$$

where $FSSI_i$ is the financial service sector disclosure index $0 \leq FSSI_i \leq 1$ and $X_{t,i}$ is each of the sixteen Financial Services disclosure indicators t for each bank i. The coding was reviewed by two members of the research team and discrepancies were discussed and reconciled.

4.3.2 CAMELS measurement and variables selection

The experimental variables of the models are taken from prior studies that have identified proxies for the different risk areas covered by the CAMELS rating system (Martínez-Campillo et al., 2013; de Claro, 2013; Kerstein and Kozberg, 2013; Jin et al., 2011; Oshinsky and Olin, 2006 and Fields et al., 2004). These variables capture strategic choices that bank managers do and may affect the risk profile of the bank (De Jonghe, 2010).

To capture the capital adequacy we use the capitalization ratio (T1RATIO) which is defined as Tier 1 Capital Ratio, the ratio of a bank's core equity capital to its total risk-weighted assets which is stressed in the EU-wide stress test carried out by the EBA.

The natural logarithm of provision for loan losses (PLL) is used to capture asset quality as this measure will capture the change in the allowance for loan

losses in the current period. The higher the PLL the lower the asset quality. It can also be the case that companies with higher PLL are conservative and record provision for doubtful debtors more timely than other financial institutions (Jin et al. 2011; Kerstein and Kozberg 2013).

We use the efficiency ratio (EFF) defined as cost to income to proxy for management skills. The higher the efficiency ratio (i.e., the lower the efficiency for the bank), the more difficult it is for the bank to earn a profit and thus, to increase its capital (Yeh, 2011). A high efficiency ratio means a company needs to incur in high cost to get a certain income level. These costs are usually related to non-interest expenses such as personnel, branches, and data processing expenses that are associated with large volumes of transactions accounts and with a geographically diverse branch system. Considering this, a high efficiency ratio could also be used as a proxy for the complexity of bank operations (Fields et al., 2004).

To proxy for earnings and profitability we use the ratio of operating income to total assets (OPINC). Operating profit captures the impact on net profit of the transactions that are closely related to the business of the firm (Fields et al., 2004). Following de Claro (2013) and Martínez-Campillo (2013) we also use the ratios Return on Assets (ROA) as proxies for earnings and profitability.

We use natural logarithm of total loans (LOANS) as a proxy for bank liquidity as the main factor in the financial crisis is a loss in liquidity and an increase in the default risk of loans from interest rate resets (Kerstein and Kozberg, 2013). LOANS is also a proxy for bank size as it is an asset's component that represent the main business of a commercial bank (Paravisini et al., 2014; Nissim, 2003). We use natural logarithm of total liquid assets as a proxy for liquidity (LIQ) (Chen et al., 2011).

Usually banks tend to grant loans for longer terms than the deposits they receive from customers. As a consequence, interest rate resets (either rise/fall)

will impact deposits in first instance and this will in turn reduce/increase the interest rate spread. To proxy for this risk we use the level of other interest bearing liabilities to total assets (INTBEAR) (Kerstein and Kozberg, 2013). According to de Claro (2013) a bank with liquidity problems will increase the interest rate to retain the level of deposits or to capture new deposits in the market and also to pay higher interest rate for borrowings from other financial institutions. The higher this ratio the higher the sensitivity of the financial institutions to the impact of liquidity issues on interest expense and hence in firm's profitability.

Following Zorio et al. (2013) we control for the type of auditor of the firm's CSR report using the following dummy variables: EY, DT, KPMG, PwC and OTHER to identify the assuror of the CSR report and the dummy variable NONE when the CSR report is not assured.

4.3.3 Data sources and sample selection

Our sample includes the 2014 EU-wide stress test sample of banks with available public information from 2011 through 2013. Consequently, the sample includes the major banks in the EU and the period under study is the window period between the 2010 and 2014 EU-wide stress test.

Financial data were collected from the Orbis Database. CSRR data and the data we use to develop the FSSI index was gathered from the CSR reports we find in the GRI database and in the banks' websites. Departing from the 2014 EU-wide sample of banks, we search the GRI database for CSR reports of these FIs. When the report of a FI was not available in the GRI database for all or any of the years considered in the sample, we search the FI website for the corresponding CSR report. A total of 212 bank-year are included in the full sample.

Table 4.1 – Panel A shows the descriptive statistics for the full sample for the period 2011-2013, which is used to test H1.

INSERT TABLE 4.1 – PANEL A HERE

Data reveal that the average Tier 1 capital ratio of the sample is 12%. Considering that the sample banks were targeted by the EU-wide stress test that requires a minimum Tier 1 Capital Ratio of 8% in the baseline scenario, the sample average Tier 1 Capital Ratio is well above that minimum. The mean ROA is -0.192%, with a minimum of -9.173% and a maximum of 2.849%. The banks with lower ROA are the Banque Internationale a Luxemburg (-9.17% in 2011) and two Greek banks, Eurobank Ergasias (-9.05% in 2011) and Alpha Bank (-8% in 2011) while the banks with higher ROA are from Poland, the Bank Handlowy W Warszawie (2.85% in 2012 and 2.68% in 2013) and the PKO BP (2.51% in 2012). The average total loans is EUR 134,234 million, while the average loan loss provisions is EUR 1,489 million. The mean efficiency ratio is 64.99%,the mean operating income to total assets ratio is 2.32% and the mean other interest bearing-liabilities is EUR 90,824 million.

Table 4.1 – Panel B shows the descriptive statistics for the sample of CSR issuers in the period 2011-2013, which is used to test H2. The quality of CSR disclosure and assurance testing is supplemental to the issuance analysis and needs to include only those firms having issued reports (see, e.g., Simnett et al. 2009). Therefore, the subsample to test H2 includes only the CSR issuers- i.e. 93 bank-year.

INSERT TABLE 4.1 – PANEL B HERE

Data reveal that the average Tier 1 capital ratio of the sample is also 12%. The mean ROA is –1.48%, with a minimum of -8% and a maximum of 1.9%. The average total loans is EUR 195,922 million, while the average loan loss provisions is EUR 20,856 million (the bank with higher loan loss provisions is

Banco Santander in the three years included in the sample). The mean efficiency ratio is 64.95%,the mean operating income to total assets ratio is 2.347% and the mean other interest-bearing liabilities is EUR 144,625 million. The FSSI descriptive statistics are reported in Table 4.2. In Panel A we show the FSSI and each of the sixteen GRI Financial Services Sector disclosure indicators by country. The countries with more CSR reports in the sample are Spain (22), Italy (19) and Germany (10).

INSERT TABLE 4.2 – PANEL A HERE

The two countries with higher mean FSSI are The Netherlands (99%) and Spain (88%) while the two countries with lower mean FSSI are Denmark (22%) and Sweden (23%). The indicators with higher disclosure quality are F16 (88%) and F1 (83%). FS16 are disclosures related to the initiatives to enhance financial literacy by type of beneficiary and FS1 shows policies with specific environmental and social components applied to business lines. The indicators with lower disclosure quality are F12 (60%) and F10 (61%). FS12 are disclosures related to voting policies applied to environmental or social issues for shares over which the reporting organization holds the right to vote shares or advises on voting and FS10 is an indicator that shows the percentage and number of companies held in the institution's portfolio with which the reporting organization has interacted on environmental or social issues.

In Panel B we show the FSSI and each of the sixteen GRI Financial Services Sector disclosure indicators by auditor. The auditors with more CSR reports assured are Deloitte and PwC with 18 reports each.

INSERT TABLE 4.2 – PANEL A HERE

Within the Big 4, KPMG (98%) and Deloitte (77%) assure the CSR report of banks with higher mean FSSI while PwC (75%) and EY (74%) assure the CSR reports of banks with lower mean FSSI. It is important to note that the banks

that do not get the CSR report assured show a very low mean FSSI (30%) compared with the banks that get the CSR report assured.

4.4 Results

In Table 4.3 Panel A and Panel B we report the correlation matrix of the covariates used in the models to test H1 and H2 respectively.

INSERT TABLE 4.3 – PANEL A HERE

INSERT TABLE 4.3 – PANEL B HERE

There are no significant correlation coefficients greater than 50%, showing that our models are not subject to multicollinearity problems.

The corporate social responsibility reporting (CSRR) logistic model estimation results are presented in Table 4.4.

INSERT TABLE 4.4 HERE

The regression model has a significant Chi-square. Note that the goodness of fit of our model is adequate, as the R-square Nagelkerke shows that the model explains 35.4% of the variability. The global classification is 73% which is high.

The results show that there is a positive and significant relationship between other interest bearing liabilities and the propensity to issue a CSR report among the banks that were targeted by the EU-wide stress test. The results also indicate that financial institutions with larger loan portfolios tend to issue a CSR report. Following de Claro (2013), these two results together suggest that the larger loan portfolios the higher the liquidity risk, so if they want to capture deposits from customers or receive loans from other financial institutions to increase liquidity, they will have to pay higher interest rates to become attractive among depositors and lenders. The higher INTBEAR suggest a

higher the sensitivity of the financial institution to market risk and hence the higher the impact on the banks' profitability. Table 4 also reports that OPINC and the propensity to issue a CSR report have a positive and significant relationship. This, in fact, mitigates the negative impact of liquidity issues on profitability because these are large banks with a diverse profit-generating product portfolio. Interestingly, we find a positive and significant association between T1RATIO and CSRR. This means that among the banks that were targeted by the EU-wide stress test, the capital risk is lower in the case of the banks that issue a CSR report. From a regulator perspective, this shows that banks with a strong capital position tend to be involved in CSR reporting activities.

The results as a whole indicate that financial institutions with a significant loan portfolio booked, with adequate capital level, with high sensitivity to market risk and that are highly profitable in the banking business tend to issue a CSR report.

Table 4.5 presents the results of H2 on the relationship between bank risk profile and type of assuror with the Financial Services Sector disclosure Index (FSSI).

INSERT TABLE 4.5 HERE

The results presented in Table 4.5 show that LOANS and INTBEAR have a positive and significant association with FSSI. This result shows that among the reporting banks, the banks with higher liquidity risk (due to the higher loan portfolio) and with higher sensitivity to market risk (due to the higher interest bearing liabilities to total assets ratio) tend to disclose higher quality CSR information that is closely related to the financial services sector. The negative and significant relationship we find between LIQ and FSSI also provides support to the presence of higher liquidity risk among these banks. An interesting result is the negative and significant association between OPINC

and FSSI, showing that the banks that disclose higher quality financial services sector CSR information are not the most profitable in the banking business among the financial institutions that issue a sustainability report. This suggest that as these banks are highly sensitive to the impact of liquidity issues on interest expense, they are interested in showing the market their involvement in CSR activities and that they take into account sustainability issues when doing business in the financial services sector.

Finally, Table 4.5 shows interesting results in relation to the type of auditor that provide assurance to the CSR report. We find a negative and significant association between PWC, EY and NONE with FSSI. This shows that the banks that get the CSR report assured by PwC and EY and the banks that do not get their CSR reports assured disclose lower quality specific financial services sector CSR information. The only auditor with a positive coefficient is KPMG, but the association with FSSI is not significant.

4.5 Conclusions

CSR initiatives are considered by companies as an opportunity to make a contribution to society. As a consequence, an increasing amount of sustainability reports are issued every year. Due to the specific characteristics that FI have regarding risk management and the role that these type of institutions play in the financial inclusion process and the economy stability (Liang and Reichert, 2012) CSR has a distinctive effect on them.

This study investigates the impact that the bank's risk profile has on CSR reporting in the European FSS.

Under a theory that FI play an important social function in the financial inclusion process in the economy and that CSR is considered in the product design process and the credit policy, FI incorporate social and environmental risk management in their risk management system. The risk management

system of the FI will then impact on the propensity of the company to issue a sustainability report and on the propensity to publish a sustainability report containing high quality CSR FSS specific information. The purpose of this paper is to look into the connections between the risk profile and CSR reporting and the CSR reporting quality under the CAMELS multifaceted risk approach.

Our sample includes all the available CSR reports and financial information of the FI included in the 2014 EU-wide stress tests, covering the period 2011-2013. Our results indicate that FI which are in a strong position regarding capital adequacy, that have a significant loan portfolio, that have a high level of other interest bearing liabilities booked and that manage to get higher profitability in the banking business have a propensity to issue a sustainability report. As total loans is an appropriate proxy of bank size because it is an asset's component that represent the main business of a commercial bank (Paravisini et al., 2014; Nissim, 2003), our findings show that the largest banks tend to issue a CSR report. This result is in line with prior studies of CSR reporting in industries different from the financial sector that find a positive and significant relationship between total assets and CSR reporting (Zorio et. al., 2013; Sierra-García et. al., 2013). According to our findings using a CAMELS-risk-approach, the institutions with lower capital risk, higher liquidity risk, higher profitability in the banking business and higher sensitivity to market risk tend to issue a CSR report.

An interesting finding is that the risk profile of the FI that publish a sustainability report containing higher quality CSR FSS specific information has some particularities. Our results show that among the banks that issue a CSR report, the ones with a larger loan portfolio, a lower liquid assets level, higher other interest bearing liabilities booked, and lower profitability in the banking business, publish a sustainability report containing high quality CSR FSS specific information. Regarding the effect of the type of assurance of the

CSR report, when PwC and EY provide assurance to the report and when no assurance is provided, the quality of the CSR FSS specific information disclosed is lower. In summary, if we link these findings with the CAMELS risk approach we see that the institutions with higher liquidity risk, lower profitability in the banking business and higher sensitivity to market risk tend to disclose higher quality CSR FSS specific information in the CSR report.

While previous CSR studies in the banking industry mainly provide evidence from the US, UK and emerging markets, this study is unique as it focuses on the EU banking sector, and more specifically, in the larger EU banks targeted by the EBA 2014 stress testing exercise, which are the FI that have a significant impact on the EU financial sector stability. Moreover, the study is novel in using the CAMELS risk approach to identify the risk profile of FI involved in sustainability reporting. Prior studies in the banking industry mainly use corporate governance characteristics and earning management strategies to explain the propensity to issue a CSR report.

Our findings contribute to the extant literature by providing insight into the reporting strategy of an important sector in the EU economy – the financial services sector. We find that FI with larger amounts of creditors and depositors that manage to get higher rent from them tend to issue a CSR report. This means that FI of greater visibility that are more profitable are more likely to face higher demands from stakeholders to be socially responsible.

Our findings have important implications for shareholders, investors and analysts who may consider CSR reporting as a vehicle that FI use to express ethical behavior and higher quality of financial reporting. Stakeholders should be aware that FI could use CSR reporting to improve reputation and as an opportunity to do more business, especially in a period following a financial crisis. Our results show that among the FI that issue a CSR report, the ones that are less profitable in the banking business and that get their CSR assured by

non-Big 4 auditors disclose higher quality CSR information. Hiring a higher quality assuror like PwC and EY to carry out the CSR external assurance could be a strategy to lower transaction costs and serves as a protection to disclose lower quality CSR information. In line with legitimacy theory, these practices may threaten the banks' credibility and may lead to see CSR reporting as a strategy employed by banks' managers to divert attention from their risk level by creating a social responsible profile to attract more customers.

Lastly, regulators should take into account, from a regulatory perspective, the risk profile of FI that tend to issue a sustainability report and the risk profile of FI that disclose higher quality CSR FSS specific information. This paper is valuable for regulators to consider whether CSR related activities should be somehow included in the CAMELS rating system as it is in the pioneer countries in this field (see Ullah, 2013; Weber et al., 2015).

Future work on CSR reporting in the EU FSS should explore whether a financial crisis impacts on the risk profile of FI involved in sustainability reporting and on the disclosure quality. This could shed some light on the use of CSR reporting by FI to create a social responsible profile. Another interesting research question to explore is whether the business volume and profitability increase among the FI that issue a CSR report after the financial crisis and more specially, among the FI that disclose higher quality CSR FSS specific information.

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Table 4.1 – Panel A - Descriptive statistics for the full sample of FI (H1)

	Observations	Minimum	Maximum	Mean	Std. Deviation
Loan Loss Provisions th EUR	212	-191,203	18,523,000	1,489,560.630	2,649,951.863
Cost to Income Ratio %	212	-175.769	289.223	64.999	32.908
Operating Income / Total assets %	212	-5.135	8.423	2.317	1.416
ROA using P/L before tax %	212	-9.173	2.849	-.1920	1.657
Loans th EUR	212	190,400	745,678,000	134,234,694.560	175,468,713.258
Liquid Assets th EUR	212	12,900	656,255,000	66,622,574.060	124,444,042.540
Other Int bearing liabilities th EUR	212	2,200	1,110,798,000	90,824,501.830	165,530,196.210
Tier 1 Capital Ratio %	212	-1.300	21.300	12.039	3.2833

Source: Orbis database

Table 4.1 – Panel B - Descriptive statistics of FI which are CSR issuers (H2)

	Observations	Minimum	Maximum	Mean	Std. Deviation
Financial Service Sector Index	93	0.000	1.000	0.725	0.296
Loan Loss Provisions th EUR	93	-19.343.000	18,523,000.000	20,856,229.470	3,118,011.207
Cost to Income Ratio %	93	38.597	195.348	64.955	21.537
Operating Income / Total assets %	93	0.36	8.422	2.347	1.290
ROA using P/L before tax %	93	-8.000	1.900	-1.480	1.324
Loans th EUR	93	6,299,555.000	731,662,000.000	195,922,541.980	193,673,197.645
Liquid Assets th EUR	93	705,900	656,255,000	101,664,213.830	147,258,531.029
Other Int bearing liabilities th EUR	93	891,500.000	1,110,798,000.000	144,624,709.750	204,706,087.637
Tier 1 Capital Ratio %	93	4.200	21.300	12.027	2.887

Source: Orbis database

Table 4.2 – Panel A – Mean FSSI by country

		Mean																
Country	**# CSR reports**	**FSSI**	**F1**	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**	**F9**	**F10**	**F11**	**F12**	**F13**	**F14**	**F15**	**F16**
BE	3	**0.625**	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.333	0.667	0.667	0.333	0.667	0.667	1.000	0.667	1.000
DE	10	**0.863**	1.000	1.000	0.850	1.000	0.900	0.700	0.850	0.850	1.000	0.750	0.800	0.700	0.700	0.700	1.000	1.000
DK	6	**0.219**	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.000	0.000	0.000	0.500
ES	22	**0.881**	1.000	0.773	0.750	1.000	0.955	0.932	0.932	0.818	0.705	0.727	0.727	0.909	0.864	1.000	1.000	1.000
FI	3	**0.875**	1.000	1.000	1.000	1.000	1.000	1.000	0.333	1.000	0.667	1.000	0.667	1.000	0.667	0.667	1.000	1.000
FR	6	**0.490**	0.667	0.833	0.500	0.167	0.333	0.167	0.667	0.667	0.000	0.000	0.833	0.000	0.500	1.000	0.833	0.667
GB	4	**0.563**	0.750	0.750	0.750	0.750	0.750	0.875	0.125	0.125	0.750	0.000	0.000	0.000	0.875	1.000	0.750	0.750
GR	4	**0.672**	1.000	1.000	1.000	1.000	1.000	0.875	0.875	0.875	0.375	0.125	0.125	0.000	0.500	0.750	0.750	0.500
HU	3	**0.354**	0.000	0.000	0.500	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000	0.667	1.000	0.500	1.000
IT	19	**0.834**	0.868	0.842	0.737	0.842	0.842	0.895	0.921	0.816	0.737	0.816	0.842	0.789	0.842	0.763	0.868	0.921
NL	6	**0.990**	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.833	1.000	1.000	1.000
NO	3	**0.385**	1.000	0.333	0.833	0.167	0.167	0.333	0.000	0.000	0.000	0.833	1.000	0.000	0.000	0.500	0.167	0.833
PT	2	**0.656**	0.500	0.500	0.500	0.500	0.500	0.500	1.000	1.000	0.500	0.500	0.500	0.500	0.500	1.000	1.000	1.000
SE	2	**0.234**	0.000	0.000	0.000	0.000	0.000	0.250	0.500	0.500	0.000	0.500	0.500	0.000	0.500	0.500	0.000	0.500
	93	**0.725**	**0.828**	**0.758**	**0.726**	**0.763**	**0.720**	**0.704**	**0.742**	**0.726**	**0.608**	**0.608**	**0.656**	**0.597**	**0.683**	**0.806**	**0.801**	**0.882**

GRI Financial Services Sector Disclosure Indictors:
FS1 Policies with specific environmental and social components applied to business lines.
FS2 Procedures for assessing and screening environmental and social risks in business lines.
FS3 Processes for monitoring clients' implementation of and compliance with environmental and social requirements included in agreements or transactions.
FS4 Processes for improving staff competency to implement the environmental and social policies and procedures as applied to business lines.
FS5 Interactions with clients/investees/business partners regarding environmental and social risks and opportunities.
FS6 Percentage of the portfolio for business lines by specific region, size (e.g. micro/SME/large) and by sector.
FS7 Monetary value of products and services designed to deliver a specific social benefit for each business line broken down by purpose.
FS8 Monetary value of products and services designed to deliver a specific environmental benefit for each business line broken down by purpose.
FS9 Coverage and frequency of audits to assess implementation of environmental and social policies and risk assessment procedures.
FS10 Percentage and number of companies held in the institution's portfolio with which the reporting organization has interacted on environmental or social issues.
FS11 Percentage of assets subject to positive and negative environmental or social screening.
FS12 Voting policies applied to environmental or social issues for shares over which the reporting organization holds the right to vote shares or advises on voting.
FS13 Access points in low-populated or economically disadvantaged areas by type.
FS14 Initiatives to improve access to financial services for disadvantaged people.
FS15 Policies for the fair design and sale of financial products and services.
FS16 Initiatives to enhance financial literacy by type of beneficiary.

Table 4.2 – Panel B – Mean FSSI by auditor

Assuror	# CSR reports	Mean FSSI	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16
EY	**9**	**0.743**	1.000	0.778	0.889	0.778	0.778	0.778	0.778	0.667	0.667	0.778	0.778	0.556	0.444	0.722	0.667	0.833
Deloitte	**18**	**0.766**	0.778	0.778	0.833	0.778	0.778	0.750	0.861	0.806	0.667	0.500	0.556	0.722	0.778	1.000	0.833	0.833
KPMG	**12**	**0.977**	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.875	0.917	0.917	0.917	1.000	1.000	1.000	1.000
PwC	**18**	**0.753**	0.972	0.694	0.694	0.833	0.833	0.833	0.639	0.611	0.472	0.583	0.722	0.528	0.889	0.889	0.917	0.944
None	**14**	**0.299**	0.464	0.357	0.179	0.357	0.286	0.321	0.429	0.286	0.179	0.250	0.214	0.071	0.143	0.250	0.321	0.679
Other	**22**	**0.797**	0.818	0.909	0.795	0.818	0.682	0.614	0.773	0.909	0.773	0.705	0.773	0.727	0.705	0.864	0.932	0.955
	93	**0.725**	**0.828**	**0.758**	**0.726**	**0.763**	**0.720**	**0.704**	**0.742**	**0.726**	**0.608**	**0.608**	**0.656**	**0.597**	**0.683**	**0.806**	**0.801**	**0.882**

GRI Financial Services Sector Disclosure Indictors:
FS1 Policies with specific environmental and social components applied to business lines.
FS2 Procedures for assessing and screening environmental and social risks in business lines.
FS3 Processes for monitoring clients' implementation of and compliance with environmental and social requirements included in agreements or transactions.
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FS13 Access points in low-populated or economically disadvantaged areas by type.
FS14 Initiatives to improve access to financial services for disadvantaged people.
FS15 Policies for the fair design and sale of financial products and services.
FS16 Initiatives to enhance financial literacy by type of beneficiary.

Table 4.3 – Panel A – Correlation matrix of the covariates used to test H1

	EFF	OPINC	INTBEAR	T1RATIO	ROA	LLP	LIQ	LOANS
EFF	1.000							
OPINC	-0.193***	1.000						
INTBEAR	0.152***	-0.218***	1.000					
T1RATIO	0.036	-0.196***	-0.116**	1.000				
ROA	-0.326***	0.150***	-0.085*	0.136***	1.000			
LLP	0.059	0.035	0.162	-0.038	-0.264***	1.000		
LIQ	0.077*	-0.192***	0.332***	0.123***	0.000	0.397***	1.000	
LOANS	0.030	-0.135***	0.365***	-0.003	-0.041	0.468***	0.452***	1.000

The table presents the correlation matrix for the covariates used to test H1:
EFF is the financial institution's cost to income ratio
OPINC is the financial institution's operating income to total assets ratio
INTBEAR is the financial institution's other interest bearing liabilities to total assets ratio
T1RATIO is the financial institution's Tier 1 capital ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
LLP is the financial institution's natural log of loan loss provisions
LIQ is the financial institution's natural log of total liquid assets
LOANS is the financial institution's natural log of total loans
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 4.3 – Panel B – Correlation matrix of the covariates used to test H2

	EY	DT	PWC	KPMG	OTHER	NONE	EFF	OPINC	INTBEAR	T1RATIO	LLP	LIQ	LOANS	ROA
EY	1.000													
DT	-0.160	1.000												
PWC	-0.160	-0.240**	1.000											
KPMG	-0.126	-0.189*	-0.188*	1.000										
OTHER	-0.120	-0.179*	-0.179*	-0.141	1.000									
NONE	-0.138	-0.206**	-0.206**	-0.162	-0.154	1.000								
EFF	-0.022	-0.152*	-0.118	-0.069	0.125	0.203**	1.000							
OPINC	0.095	0.393***	-0.148*	0.041	-0.095	-0.265***	-0.188***	1.000						
INTBEAR	-0.101	-0.052	-0.017	-0.009	0.073	0.272***	0.249***	-0.217***	1.000					
T1RATIO	-0.171**	-0.047	-0.003	-0.078	0.071	0.008	-0.049	-0.230***	-0.051	1.000				
LLP	0.036	0.229***	-0.068	0.103	-0.093	-0.140	-0.018	0.267***	0.073	-0.085	1.000			
LIQ	-0.080	0.042	-0.042	0.026	0.034	-0.020	0.131*	-0.206***	0.310***	0.159**	0.346***	1.000		
LOANS	-0.011	0.089	-0.012	0.095	0.000	-0.164*	0.014	-0.045	0.247***	0.053	0.503***	0.501***	1.000	
ROA	0.012	0.084	0.080	-0.112	0.011	-0.155*	-0.353***	-0.033	-0.149**	0.309***	-0.112	0.104	0.123*	1.000

The table presents the correlation matrix for the covariates used to test H2:

EY is a dummy variable set to one when the CSR report is EY and zero otherwise, DT is a dummy variable set to one when the CSR report is Deloitte and zero otherwise

PWC is a dummy variable set to one when the CSR report is PwC and zero otherwise, KPMG is a dummy variable set to one when the CSR report is KPMG and zero therwise

OTHER is a dummy variable set to one when the CSR report is a non-Big4 and zero otherwise,

NONE is a dummy variable set to one when the CSR report is not audited and zero otherwise

EFF is the financial institution's cost to income ratio / OPINC is the financial institution's operating income to total assets ratio

INTBEAR is the financial institution's other interest bearing liabilities to total assets ratio

T1RATIO is the financial institution's Tier 1 capital ratio / LLP is the financial institution's natural log of loan loss provisions

LIQ is the financial institution's natural log of total liquid assets / LOANS is the financial institution's natural log of total loans

ROA is the financial institution's profit and loss before tax to total assets ratio

* Significant at 10% level ** Significant at 5% level *** Significant at 1% level

Table 4.4 - Logistic regression on Corporate Social Responsibility Reporting (CSRR) – H1

	B	S.E.	Wald Statistics	ρ- values
EFF	-.332	.560	.353	.553
OPINC	39.656	16.703	5.637	.018**
ROA	-8.571	13.581	.398	.528
INTBEAR	6.874	1.856	13.717	.000***
T1RATIO	10.931	6.455	2.868	.090*
LLP	.112	.180	.384	.536
LOANS	.612	.332	3.408	.065*
LIQ	-.113	.175	.418	.518
Constant	-14.456	3.433	17.734	.000***
Goodness of fit test statistics:				
X^2 (ρ- value)		60.760 (.000***)		
-2 log likelihood		220.080		
R^2 Cox and Snell		.258		
R^2 Nagelkerke		.345		
Global Classification		73.000		

Reported are the coefficients and p-values of the logistic regression. The dependent variable is CSRR, a dummy variable that equals one if the financial institutions issues a sustainability report, and zero otherwise. The independent variables are defined as follows:

EFF is the financial institution's cost to income ratio

OPINC is the financial institution's operating income to total assets ratio

ROA is the financial institution's profit and loss before tax to total assets ratio

INTBEAR is the financial institution's other interest bearing liabilities to total assets ratio

T1RATIO is the financial institution's Tier 1 capital ratio

LLP is the financial institution's natural log of loan loss provisions

LOANS is the financial institution's natural log of total loans

LIQ is the financial institution's natural log of total liquid assets

* Significant at 10% level

** Significant at 5% level

*** Significant at 1% level

Table 4.5 - Determinants of Financial Services Sector disclosure Index (FSSI)- H2

	B	t- values
EFF	.098	.364
OPINC	-5.097	.021**
ROA	1.978	.361
INTBEAR	.801	.001***
T1RATIO	-.862	.377
LLP	.042	.126
LOANS	.114	.030**
LIQ	-.126	.000***
EY	-.130	.098*
DT	-.035	.602
PWC	-.125	.047**
KPMG	.103	.153
NONE	-.521	.000***
Constant	.230	.675

F stat.	10.937 (.000*******)
R^2	.646
Mean Tolerance	.485
Mean VIF	2.820

Reported are the coefficients and p-values of the logistic regression.
The dependent variable is FSSI, Financial Services sector disclosure index.
The FSSI is developed using the sixteen Global Reporting Initiative (GRI) Financial Services Sector disclosures indicators.
The independent variables are defined as follows:

EFF is the financial institution's cost to income ratio

OPINC is the financial institution's operating income to total assets ratio

ROA is the financial institution's profit and loss before tax to total assets ratio

INTBEAR is the financial institution's other interest bearing liabilities to total assets ratio

T1RATIO is the financial institution's Tier 1 capital ratio

LLP is the financial institution's natural log of loan loss provisions
LOANS is the financial institution's natural log of total loans
LIQ is the financial institution's natural log of total liquid assets

EY is a dummy variable set to one when the CSR report is EY and zero otherwise

DT is a dummy variable set to one when the CSR report is Deloitte and zero otherwise

PWC is a dummy variable set to one when the CSR report is PwC and zero otherwise

KPMG is a dummy variable set to one when the CSR report is KPMG and zero therwise

NONE is a dummy variable set to one when the CSR report is not audited and zero otherwise

* Significant at 10% level

** Significant at 5% level

*** Significant at 1% level

Chapter 5 - Complaints management and bank risk profile

Chapter 5 - Complaints management and bank risk profile

5.1 Introduction

Complaints management is essential for successful businesses as it may affect the company's relationship with customers, showing the level of a company's customer orientation (Chebat et al., 2011; Estelami, 2003). If companies respond satisfactorily to customers, the complaining customer may become loyal. Conversely, an ineffective response can frustrate customers and drive them to leave (Hultén, 2012).

The banking industry must appropriately manage customer complaints for achieving customer satisfaction and retention. Manrai and Manrai (2007) suggest that dissatisfaction is one of the main reasons why customers switch banks. When customers feel banks do not properly address their complaints, they file complaints with the regulatory body, constituting a third-party complaint according to Singh's (1988) classification.

Baker et al. (2013) find that customers experiencing negative emotions with a service failure usually respond non-verbally and may file a third party complaint. Then, the FI can appear in a public complaint report that the agency issues. This fact will affect future profits of the FI because reputation will decrease (Rose & Thomsen, 2004).

This study contributes to literature by investigating complaints management in the Spanish FI and by analyzing the link between responsiveness to customers' complaints and FI's risk profile. The study also provides a novel insight into Spanish FI motivations to react proactively or reactively to customers' complaints.

5.2 Theoretical framework

5.2.1 The Bank of Spain´s Complaints Service

The Bank of Spain (Banco de España, BE), the Spanish banking regulator protecting FI customers, publishes information on customers' complaints to increase financial sector transparency. Users must file the complaint directly with the FI's Complaints Service (CS) or Ombudsman. If FI does not reply within two months or replies negatively, the user can file the complaint with the BE's CS.

Reports of the BE's CS are not binding for FIs, so they can: a) Ignore the decision; b) be proactive and amend the error before the BE issues the report; or c) be reactive and rectify after the report issuance. If the FI takes remedial actions during that process, the BE closes the file.

5.2.2 Company risk profile and corporate reputation

Reputation risk management, including managing costumers' complaints, is inseparable from other organizational processes management (Hutton et al., 2001). This study main contribution is the connection between the responsiveness to customer complaints and FIs' risk profile. The risk areas that CAMELS rating (OCC, 2013) covers, namely capital risk level, assets quality, managerial skills, earnings and profitability level, liquidity risk level, and sensitivity to market risk highly determine FIs attitude towards customer complaints.

The BE supervisory objective is to determine and monitor the risk profile of each FI, and adopts corrective measures if necessary. The BE uses Supervision of the Banking Activity by Risk Approach methodology, which follows the CAMELS rating system. In Bangladesh, supervising financial sector risk management also comprises corporate social responsibility (CSR) (Bangladesh Bank, 2011).

The level of exposure to reputational risk depends on the adequacy of the internal risk management process (BIS, 2009). Thus, this study poses the following hypotheses the FI attitude towards customer complaints and its risk profile:

H1: The FI proactive attitude towards error amendment does not depend on bank risk factors.

H2: The FI reactive attitude towards error rectification does not depend on bank risk factors.

5.3 Empirical Research Design

5.3.1 Data sources, sample selection and methodology

The sample includes the Spanish depositary institutions that the BE regulates with available public information from 2005 to 2012 receiving more than fifteen reports in favor of its customers in the yearly report that the BE's CS issues (the cut-off number that regulator uses to include a FI in the report). The years of booming economy and the deep financial crisis starting in 2008 in Spain make this period especially interesting (Suarez, 2011).

Financial statements data comes from Orbis database. The sample comprises 79 firm-years, including 63 commercial banks and 16 savings institutions.

This study tests H1 and H2 using a multiple regression model. For H1, the dependent variable AMEND is the ratio of the number of amendments (before the CS's report issuance) to the number of total reports and amendments. This ratio shows the FI's proactive attitude towards customers' complaints.

For H2, the dependent variable RECTIF is the ratio of the number of rectifications (done after the CS's report issuance) to the number of total reports favoring customers. This ratio shows FI's reactive attitude towards customers' complaints.

5.3.2 CAMELS measurement and variables selection

Models' experimental variables come from prior studies that identify proxies for the different risk areas that CAMELS rating system covers (Jin et al., 2013, Kerstein & Kozberg, 2013).

To proxy for capital adequacy, this study uses the capitalization ratio consisting of total equity to total assets (CAPRATIO). Provision for loan losses (PLL) captures asset quality by measuring the change in the allowance for loan losses on each period. The efficiency ratio (EFF) (cost to income) proxies for management skills and for bank operations complexity (Fields et al., 2004). This study also includes corporate social responsibility reporting (CSRR) as a management skills proxy. The ratio of operating income to total assets serves as an earnings and profitability proxy (OPINC). Operating profit captures the effect of the transactions close to the firm's business on the net profit (Fields et al., 2004). Following de Claro (2013) the ratio return on equity (ROE) is a proxy for earnings and profitability. This study uses total loans (LOANS) as a proxy for bank liquidity since the main factors in the financial crisis are a loss in liquidity and an increase in loans' default risk from interest rate resets. Total liquid assets serve as a proxy for liquidity (LIQ). Banks usually grant loans for longer terms than the deposits they receive from customers. Consequently, interest rate resets affect deposits and this effect reduces the interest rate spread. To proxy for this risk, this study uses the level of other interest bearing liabilities to total assets (INTBEAR).

5.3.3 Descriptive statistics

The final sample comprises 79 FIs. Data reveal that the mean rectification ratio is 25.66% and the mean amendment ratio is 22.01%. Figure 1 shows mean ratios' decline during the period. The amendment ratio decreases from 26.13% in 2005 to 20.27% in 2012 while the rectification ratio decreases from 49.90% in 2005 to 17.25% in 2012.

INSERT FIGURE 5.1 HERE

The number of FIs in the CS's yearly report increase from 4 in 2005 to 15 in 2012. These figures show that the number of FIs receiving more BE's complaints reports increased during the financial crisis, but as the CS's reports are not binding, FIs' responsiveness is in sharp decline.

5.4 Results

Multicollinearity tests show that none of the tolerance levels of the independent variables is less than or equal to 0.01 and all VIF values are below 10 (most below 5). Therefore, multicollinearity is not a concern in these models. Table 1 contains regression models estimation results.

INSERT TABLE 5.1 HERE

The regression model for H1 has a significant F value. The adjusted R-square is 49.30%. Results indicate that explanatory variables LIQ and CSRR are positive and significant at the 1% level. Variables EFF and OPINC are positive and significant at the 5% level while INTBEAR is positive and significant at the 10% level.

Results reject H1 and indicate that FIs with high efficiency ratio, which are highly profitable at the operating level, with high level of liquid assets and other interest-bearing liabilities, and that issue a sustainability report are usually more proactive and amend its errors before the regulator issues the report.

The regression model for H2 has a significant F value and an adjusted R-square of 24.70%. LOANS and CSRR are positive and significant at the 5% level while LLP is negative and significant at the 5% level.

Results reject H2 and show that FIs with larger credit portfolios, with low loan loss provisions booked, or that issue a CSR report are usually more reactive and rectify errors after the regulator issues a favorable report for the customer.

5.5 Conclusions

This study finds that FIs that usually amend errors have a different risk profile from the FIs that usually rectify errors.

Regarding amendments (AMEND), results show that FIs with higher amendment ratio usually issue a CSR report, are inefficient (have large and complex structures), have high liquidity, are highly profitable in the banking business (charge high fees and interest to clients), and are sensitive to market risk. Results reveal a positive relationship of the amendment ratio with earnings quality and liquidity. Moreover, sensitivity to market risk of these institutions also appears.

Regarding rectifications (RECTIF), results show that FIs with higher rectification ratio usually issue a CSR report, have lower loan loss provisions booked, and have larger loan portfolios. These results suggest that FIs' reactive attitude towards error amendment has a relationship with high quality assets, good managerial skills, and concentration of funds in less liquid assets (loans).

When comparing the risk profile of proactive FIs with those reactive to BE's reports favoring customers, the results are:

- Both usually issue a CSR report showing some kind of customer orientation.
- Those amending usually invest funds in more liquid assets than those rectifying, suggesting that FIs with larger loan portfolios (less liquid assets) give the reason to customers only after the regulator favors them. This fact may suggest that a FI with a larger number of customers decides not to be proactive to error amendment.

- Those amending are profitable and show sensitivity to market risk while those rectifying have high quality assets. This result suggests that since proactive institutions towards error amendment are profitable, they have resources to face potential customer error compensation. Additionally, proactive FIs are more dependent on other interest bearing liabilities making them more customer-oriented that those less leveraged. Finally, FIs with good credit customers usually take care of them rectifying their errors.
- Capital adequacy is not related to neither with error amendment nor with error rectification

Findings shed light on the relationship between FI's risk profile and the propensity to amend or rectify errors. These results may help regulators to understand FIs' characteristics that consider the reports that regulators issue regarding FIs customers' claims and complaints. Results are also useful for customers to identify FIs with a higher customer orientation.

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Figure 5.1 - Evolution of rectifications and amendments in the period 2005-2012

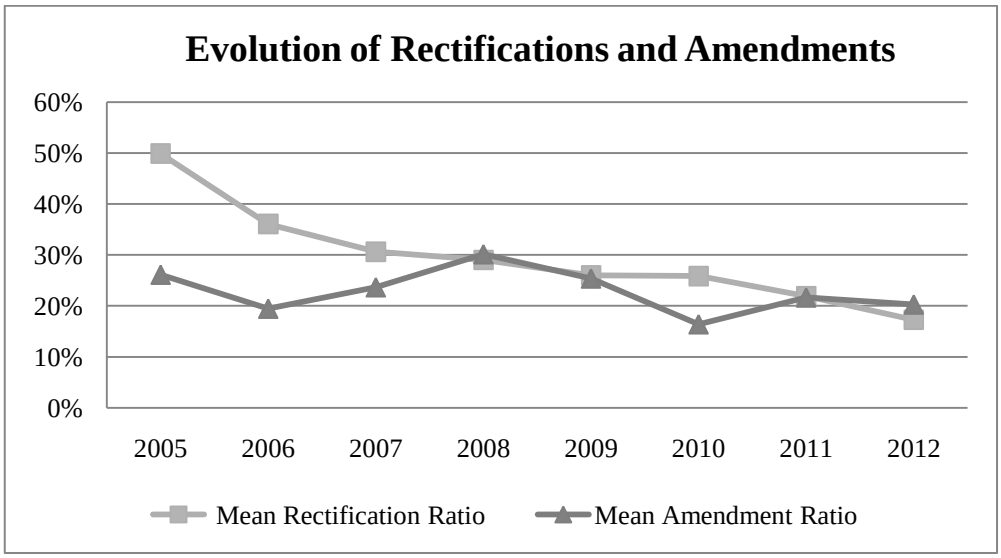

Table 5.1 - Descriptive statistics and hypotheses testing results

	Descriptive statistics		H1: Multiple regression on Amendments (AMEND)				H2: Multiple regression on Rectifications (RECTIF)			
Variable	**#CSRR / Mean**	**Std. Drv.**	**Beta**	**Std. Error**	**p-value**		**Beta**	**Std. Error**	**p-value**	
CSRR	30	-	7.47	2.26	0.00	***	11.19	4.46	0.01	**
EFF	0.60	0.17	0.19	0.08	0.02	**	-0.18	0.16	0.25	
OPINC	0.02	0.01	322.29	120.93	0.01	**	348.96	238.76	0.15	
ROE	-0.08	0.78	-0.01	0.02	0.45		-0.02	0.04	0.49	
INTBEAR	0.90	0.04	70.79	36.27	0.05	*	86.55	71.61	0.23	
CAPRATIO	0.06	0.02	1.03	0.67	0.13		-1.40	1.33	0.30	
LLP	13.19	1.79	-0.30	1.56	0.85		-6.94	3.07	0.03	**
LOANS	17.99	1.59	0.14	1.68	0.93		6.94	3.31	0.04	**
LIQ	15.81	1.84	3.92	0.91	0.00	***	1.66	1.80	0.36	
Constant	-	-	-131.09	42.11	0.00	***	-106.07	83.14	0.21	
N			79				79			
F Value			9.44	***			3.85	***		
Adjusted R^2			49.30%				24.70%			

Reported are the coefficients and t-stat of the multiple regressions.
The dependent variable to test H1 is AMEND or ratio of the number of amendments (done before the Banco de España yearly report issuance) to the number of total reports and amendments. The dependent variable to test H2 is RECTIF or ratio of the number of rectifications (done after the Banco de España yearly report issuance) to the number of reports in favor of the claimant.
The independent variables definitions are:
CSRR, a dummy variable that equals one if the financial institutions issues a sustainability report, and zero otherwise, EFF is the financial institution's cost to income ratio, OPINC is the financial institution's operating income to total assets ratio, ROE is the financial institution's profit and loss before tax to total equity ratio, INTBEAR is the financial institution's interest bearing deposits to total assets ratio, CAPRATIO is the financial institution's equity to total assets ratio, LLP is the financial institution's natural log of loan loss provisions, LOANS is the financial institution's natural log of total loans, LIQ is the financial institution's natural log of total liquid assets
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Chapter 6 - Reputation loss and risk management in the banking industry

Chapter 6 - Reputation loss and risk management in the banking industry

6.1 Introduction

Corporate reputation is an intangible that companies need to maintain because it helps them to do business in more favorable terms (Bebbington et al., 2008) and has a significant impact on the company value (Casado-Díaz et al, 2009). By providing a high quality service to the clients and showing proximity to them, companies meet their clients' needs and expectations keeping them satisfied. The immediate effect of customer satisfaction is a high level of corporate reputation (McDonald and Rundle-Thiele, 2008). Recent studies have analyzed the effect that corporate social responsibility (CSR) has on corporate reputation and find that CSR is used to mitigate reputation risk and also that companies with bad reputation tend to get involved in CSR activities to improve their public image (Esen, 2013). De la Cuesta-González et al. (2006) and Mengze and Wei (2013) argue that CSR is contemplated in the bank's credit policies and in managing environmental credit risk, so it is part of the risk management system of the company. Additionally, reputation levels are controlled by the companies through reputation risk management which is also part of the risk management system (Bebbington et al., 2008). This concept is also taken by The Bank for International Settlements who argues that reputational risk depends on the adequacy of the financial institution's internal risk management process (Basel Committee on Banking Supervision, 2009).

Under a modern integrated risk management approach, one should expect no reputation damage derived from an adequate risk management policy. Hence, in this paper we argue that an appropriate risk management system (following the CAMELS approach) (see Kerstein and Kozbeg, 2013; Jin et al, 2011, Jin et al., 2013a, Jin et al., 2013b) and also sustainability reporting as a tool for

reputation risk management of the company (McDonald et Rundle-Thiele, 2008; Bebbington et al.,2008; Sierra-García et al, 2013) will imply lower reputation loss, or in other words, lower propensity to be signaled by the banking regulator as one of the top-ten complaint-receivers. Our empirical research is conducted on a sample of Spanish banks supervised by the Banco de España (BE) between 2005 and 2012. The period under study is of special interest because it covers years of a booming economy and a sudden change in 2008 to a deep financial crisis in Spain (McAleer et al., 2009; Climent, 2013). The total sample of 685 firm-years includes banks, saving institutions and credit unions.

Our results indicate that financial institutions that are inefficient and issue a CSR report will probably be included in the group of financial institutions that receive the higher number of claims and complaints in the system. We also find that high profitable companies in the banking-related business and with higher return on equity will be included in the same group. This is not the case for the financial institutions with higher level of return on assets. Finally, our results show that companies with higher amount of loans granted, higher level of liquid assets and lower capital ratio will receive a larger number of claims and complaints.

Our research explains the link between risk management and customer dissatisfaction. Note that greater attention is increasingly being paid by consumers to this kind of "watch lists" and reputation loss might be regained if a better risk management methodology is implemented by the institution.

Our study is pioneer in this area of research in the banking industry and opens up new directions for future research. For instance, it could be interesting to find out how the different type of risks relate to the type of claims and complaints customers file against a financial institution and how the change in the level of each type of risks through time impacts on the reputation a

company has in the market.

After this introduction that highlights the interests of research, the remainder of this paper is organized as follows: the second section explains the theoretical framework analyzing customer satisfaction, risk management and corporate reputation. The third section of this paper explains the empirical research, the sample, the methodology and the analysis of the results obtained. Finally, we present the conclusions of this research.

6.2 Theoretical Framework

6.2.1 Customer satisfaction and corporate reputation

Prior studies suggest that customer dissatisfaction is one of the main reasons why customers switch banks (Manrai and Manrai, 2007). Considering that banks provide services to a wide range and number of customers, the probability of customer dissatisfaction is relatively high so banks make a significant effort to manage clients' complaints through an efficient customer affairs department (Fornell and Wernerfelt, 1988). When customers feel like their complaints are not properly addressed by the banking institution, they file complaints to the regulatory body and this constitutes a third-party complaint according to Singh's (1988) classification. These types of complaints are not desirable for financial institutions as they could result in significant legal costs, regulatory intervention and reputation loss (Tipper, 1997).

In a study by Chakrabarty (2006), four factors that determine customer satisfaction were identified amongst more than 12.000 UK retail banking customers and they were, in order of importance: in-branch satisfaction (quality of in-branch service), economic satisfaction (related to interest and fees charged by the bank), remote satisfaction (related to the efficiency of the bank in dealing with remote enquiries) and ATM satisfaction (quality of the ATM network). Another UK study by Zhao et al. (2013) finds that financial

market concentration in the post-2000 period increases the number of bank customer complaints to the Financial Ombudsman. Similar factors to the ones identified by Chakrabarty (2006) are identified by Manrai and Manrai (2007) and Pomering and Dolnicar (2006), reinforcing the idea that customer-centric initiatives are important to achieve customer satisfaction. This approach links customer satisfaction and corporate reputation to the stakeholder theory because an efficient management of customer complaints help companies to stand closer to their stakeholders and many of the determinants of corporate reputation are related to the ability of the company to satisfy the customers' needs and expectations (Donaldson and Preston, 1995).

If companies fail to do that, customers will file a third-party complaint with a regulatory agency and the financial institution runs the risk of being included in a complaint report issued by the agency. This fact will impact on future profits of the financial institution because its reputation will be impaired (Rose and Thomsen, 2004).

Considering the findings of the studies mentioned above, customer dissatisfaction leads to reputation loss. Fombrun et al. (2000) argues that reputational capital is at risk every day because the interaction of the organization and the stakeholders are exposed to many risks such as financial, compliance, strategic and operational risks. Additionaly, other risks related to social and environmental issues could also impact on company reputation (Rayner, 2001). Following this rationale, there are a few models that summarize the determinants of corporate reputation and the most used are the Most Admired Companies List (MACL) prepared by the Fortune Magazine, the Reputation Quotient (RQ) (Fombrun and Van Riel, 2004), Corporate Personality Scale (Davies et al., 2003) and the Stakeholder Performance Indicator and Relationship Improvement Tool (SPIRIT) (MacMillan et al., 2004).

Amongst the determinants of reputation included in these models, the following can be considered more related to the banking sector: financial performance, use of corporate assets, long-term investment value, social responsibility, quality of products and services, quality of management and advocacy and retention of stakeholders towards a business.

In the light of prior research in the corporate reputation field and under a modern integrated risk management approach, reputation damage should be avoided by means of an adequate risk management policy.

6.2.2 Risk management and Corporate Reputation

Reputation risk management cannot be separated from the management of other organizational processes (Hutton et al., 2001) and as stated by Power (2004, p. 61), *"while organizations can do much themselves to mitigate reputational risks, they remain hostage to the institutional environment in which they operate"*. Therefore, customer satisfaction and reputation issues should be included in the risk management programs in the financial sector. The side effects of reputation loss are analyzed by Gillet et al. (2010) and they argue that financial scandals do not only impact on the financial institution's profit and loss account but also put the business continuity at risk.

Recent studies have explained the relationship between corporate social responsibility (CSR) and corporate reputation (Esen, 2013). Due to the fact that CSR activities have a positive effect on the company image and reputation, companies are increasingly getting involved in CSR activities (Lai et al., 2010). Moreover, Yoon et al. (2006) argue that companies with bad reputation engage in CSR activities in order to improve it.

The novelty of our study is the connection we draw between the level of risk a financial institution has and its reputation. We argue that the risk areas covered by the CAMELS rating, namely the level of capital risk, the quality of assets,

managerial skills, the level of earnings and profitability, the level of liquidity risk and the sensitivity to market risk are determinants of customer satisfaction and corporate reputation. The CAMELS rating system is commonly used by regulators to assess the strength of financial institutions and to evaluate the level of the risks mentioned above (Office of the Comptroller of the Currency, 2013).

The link between corporate risk and reputation can also be seen from the marketing perspective through the concept of perceived risk. This concept refers to the uncertainty that customers have about the services provided by the companies and it is also viewed as the composite of several risks such as financial risk, time risk, performance risk, psychological risk and social risk (Johnson et al., 2008). Satisfaction and perceived risk share the common influence of consumption emotions as it is shown in Chaudhuri (1997) where a strong relationship between risk perceptions and negative consumption emotions was found.

In the document "Enhancements to the Basel II framework" issued by The Bank for International Settlements (BIS) it is clearly stated that the level of exposure to reputational risk depends on the adequacy of the internal risk management process (Basel Committee on Banking Supervision, 2009, p.19) Additionally, the BIS recommends in the document mentioned above that *"in order to avoid reputational damages and to maintain market confidence, a bank should develop methodologies to measure as precisely as possible the effect of reputational risk in terms of other risk types (eg credit, liquidity, market or operational risk) to which it may be exposed"* (Basel Committee on Banking Supervision, 2009, p.20).

This suggests the following null hypothesis about the bank reputation and its risk level:

H1: The bank reputation does not depend on bank risk factors such as capital risk, the quality of assets, managerial skills, the level of earnings and profitability, the level of liquidity risk, the sensitivity to market risk and also, on the issuance of a sustainability report.

6.3 Research Design

6.3.1 Empirical model

Our hypothesis is tested using a logistic regression model on corporate reputation which is estimated on Spanish depositary institutions regulated by the Banco de España (the Spanish regulator) with available public information from 2005 through 2012.

In order to classify the banks according to their reputation, we use the Annual Complaints Service Report issued by the Banco de España through its Complaints Services. This report includes statistical data related to the complaints the financial services customers file against the financial institutions annually. These reports are available in the website of Banco de España (Banco de España, 2012). Kerstein and Kozberg (2013) use enforcement actions taken by the US Federal Reserve, the US Federal Deposit Insurance Corporation (FDIC) and the US Office of Thrift Supervision (OTS) to proxy for managerial skills that can also be related to corporate reputation.

Based on the information published by the Banco de España regarding claims and complaints filed by financial institutions' customers, we test the hypothesis using the dummy variable reputation loss (RL) which is coded one if the financial institution is among the top ten companies that received the largest number of claims and complaint during the year and zero otherwise.

6.3.2 CAMELS measurement and variables selection

The experimental variables of the models are taken from prior studies that have identified proxies for the different risk areas covered by the CAMELS rating system (Martínez-Campillo et al., 2013; de Claro, 2013; Kerstein and Kozberg, 2013; Jin et al., 2013a, Jin et al., 2013b; Jin et al., 2011 and Fields et al., 2004).

To capture the capital adequacy we use the capitalization ratio (CAPRATIO) which is defined as total equity to total assets (Jin et al., 2013a, Jin et al., 2013b; Jin et al., 2011).

Provision for loan losses (PLL) is used to capture asset quality as this measure will capture the change in the allowance for loan losses in the current period. The higher the PLL the lower the asset quality. It can also be the case that companies with higher PLL are conservative and record provision for doubtful debtors more timely than other financial institutions (Jin et al., 2011; Kerstein and Kozberg, 2013).

We use the efficiency ratio (EFF) defined as cost to income to proxy for management skills. The higher the efficiency ratio (i.e., the lower the efficiency for the bank), the more difficult it is for the bank to earn a profit and thus, to increase its capital. A high efficiency ratio means a company needs to incur in high cost to get a certain income level. These costs are usually related to non-interest expenses such as personnel, branches, and data processing expenses that are associated with large volumes of transactions accounts and with a geographically diverse branch system. Considering this, a high efficiency ratio could also be used as a proxy for the complexity of bank operations (Fields et al., 2004). To capture the relationship between corporate social responsibility and corporate reputation (Esen, 2013) we use the dummy variable (CSRR) which is set to one when the financial institution issues a CSR report and zero otherwise.

To proxy for earnings and profitability we use the ratio of operating income to total assets (OPINC). Operating profit captures the impact on net profit of the transactions that are closely related to the business of the firm (Fields et al., 2004). Following de Claro (2013) and Martínez-Campillo (2013) we also use the ratios Return on Assets (ROA) and Return on Equity (ROE) as proxies for earnings and profitability.

We use total loans (LOANS) as a proxy for bank liquidity as the main factor in the financial crisis is a loss in liquidity and an increase in the default risk of loans from interest rate resets (Kerstein and Kozberg, 2013). We also use total liquid assets as a proxy for liquidity (LIQ).

Usually banks tend to grant loans for longer terms than the deposits they received from customers. As a consequence, interest rate resets will impact deposits in first instance and this will reduce the interest rate spread. To proxy for this risk we use the level of interest bearing liabilities to total assets (INTBEAR) (Kerstein and Kozberg, 2013). According to de Claro (2013) a bank with liquidity problems will increase the interest rate to retain the level of deposits or to capture new deposits in the market. The higher this ratio the higher the sensitivity of the financial institutions to the impact of liquidity issues on interest expense and hence in the firm profitability.

Finally, we use total assets (SIZE) to proxy for the company size (Roberts, 1992; Khan, 2010; Sierra et al., 2013).

6.3.3 Data sources and sample selection

The sample includes the Spanish depositary institutions regulated by the Banco de España (the Spanish regulator) with available public information from 2005 through 2012.

The period under study is of special interest because it covers years of a booming economy and a sudden change in 2008 to a deep financial crisis in Spain (see, for instance, Álvarez, 2008; Alonso y Furio, 2011; Maudos, 2011). Data are collected from the Orbis Database. A total of 685 firm-years are included in the sample- of which 202 belong to commercial banks and 483 to savings institutions.

Table 6.1 provides the distribution of sample firms by year. The sample by year consists of 80 financial institutions (FI) for 2005, 84 FI for 2006, 80 FI for 2007, 84 FI for 2008, 97 FI for 2009, 93 FI for 2010, 92 FI for 2011 and 75 FI for 2012.

INSERT TABLE 6.1 HERE

The data reveal that the average capital ratio of the sample went down from 9.9 in 2005 to 7.74 in 2012, the ROE down from 10.23 to -28.84 and ROA from 0.94 to -0.72. The average total loans in the sample increased from USD 15.482 million to USD 34.028, showing a 120% increase, while the average loan loss provisions increased a 1.850%, going up from USD 59 million to USD 1.150 million. The main reason for the increase in the average loan loss provision during 2012 is the significant loan loss provision booked by Banco Santander and Banco Financiero y de Ahorros SA. While the first recorded on average USD 9.000 million and the second USD 2.770 million annually for the period 2005-2011, they booked USD 24.473 million and USD 23.257 million respectively in 2012.

Table 6.2 shows the descriptive statistics for the full sample for the period 2005-2012.

INSERT TABLE 6.2 HERE

6.4 Results

In Table 6.3 we present the results of the T-test of equality of means and the contingency table on the key attributes of the financial institutions that have good and bad reputation. Significant differences were found among both groups of institutions. This is the case for OPINC, INTBEAR, CAPRATIO, LLP, SIZE, LOANS and LIQ. We did not find a significant difference between the groups with good and bad reputation in the case of EFF, ROE and ROA. For the CSRR variable we run a contingency table to illustrate whether being a CSR report issuer explains the reputation of the financial institutions and the result is significant at 1% level.

INSERT TABLE 6.3 HERE

The reputation loss (RL) logistic model estimation results are presented in Table 6.4. The regression model has a significant Chi-square. Note that the goodness of fit of our model is adequate, as the R-square Nagelkerke shows that the model explains 80.2% of the variability. The global classification is 96.6% which is very high.

The results indicate that financial institutions that issue a CSR report will probably be included in the group of financial institutions that receive the higher number of claims and complaints in the system. These results show, in line with Esen (2013), that depositary institutions with bad reputation tend to issue a CSR report in an attempt to improve their public image among the stakeholders. We also find that companies with higher level of liquid assets, higher amount of loans granted and lower capital ratio (meaning that higher volume of deposits are financing the financial institution's assets) will receive a larger number of claims and complaints. Finally, our results show that high profitable companies in the banking-related business, with high efficiency ratio (meaning low efficiency indeed as per ratio construction- i.e. cost to income) and with higher return on equity will be included in the same group. This is not

the case for the financial institutions with higher level of return on assets. Regarding size, the results show that not necessarily the big financial institutions are the ones with bad reputation.

The results as a whole indicate that financial institutions with large and complex business structures, with significant amounts of loans and liquid assets booked and that are highly profitable in the banking business are at risk of losing reputation if they are not able to have an appropriate risk management system.

INSERT TABLE 6.4 HERE

Considering that our sample includes a period of a booming economy (from 2005 to 2008) and a period of financial crisis (from 2009 to 2012), we run the regression model in these two subsamples. The untabulated results indicate that in the period of healthy economy the findings are in line with the results for the full sample for the variables CSRR, LIQ, OPINC, SIZE, CAPRATIO. All the variables are significant at 5% level. For the period of crisis, only the variables CSRR and LIQ are significant at 5% and 10% level respectively. Both variables keep the sign identified in the full sample. These results imply that the ratio of operating income to total assets (OPINC), total assets (SIZE) and the capital ratio (CAPRATIO) are not related to the reputation level of financial institutions in the financial crisis period. Total loans (LOANS), the efficiency ratio (EFF) and the profitability ratios ROA and ROE explain the reputation level of financial institutions only for the full sample.

6.5 Conclusions

This study investigates the impact that risk management has on corporate reputation in the Spanish financial sector. The Spanish market is of special interest in the years under study because it covers a period that went from a healthy economy to a deep financial crisis (2005-2012). In addition, Spain is a

leading country regarding CSR reporting (see Garcia-Benau et al, 2013; Sierra-García et al., 2013, Zorio et al, 2012).

Under the theory that customer dissatisfaction could lead the client to file a complaint with a regulatory agency against the financial institution, banks incorporate reputation risk management in their risk management system. An efficient risk management system and the involvement of the institutions in CSR activities will help the company to improve corporate reputation. The purpose of this paper is to look into their connections with bank risk management under the CAMELS multifaceted risk approach.

Our results, based on disclosures available for a sample of Spanish depositary financial institutions for the period 2005-2012, show that institutions that are in a weak position regarding capital adequacy have lower reputation than institutions with higher capitalization levels. Regarding assets quality, the results show no significant relationship between the provision for loan losses and reputation. As a high loan loss provision impacts on the capital ratio, this could imply that low quality loans lead to customer dissatisfaction through a low capital ratio, but assets quality per se is not a determinant of customer satisfaction.

The efficiency ratio (cost to income ratio) and the involvement of the institutions in CSR reporting were used to find the relationship between management skills with reputation and the results show that financial institutions that are inefficient and that issue a CSR report tend to have lower reputation. Institutions with high efficiency ratio have a complex structure and need to incur in high costs to get a certain income level. This large and complex structure, if not managed efficiently to cope with clients' expectations, may lead to customer dissatisfaction. It seems that if this is the case, companies will then get involved in CSR activities to improve their public image through sustainability reporting.

An interesting result is that institutions that are highly profitable in the banking business (measured by the ratio operating income to total assets) have low reputation. This could imply that financial institutions that get significant rent from their clients through high fees, commissions and interest rates provoke dissatisfaction among their clients, and this could result in the customer switching bank. Our results also show that banks with smaller assets and lower return on assets have lower reputation. This shows that smaller financial institutions tend to have bad reputation and the same happens when the institution gets low ROA. Smaller institutions usually have smaller structures that make it difficult to satisfy a large number of clients and this creates dissatisfaction. Also, smaller institutions find it difficult to be profitable. Finally financial institutions with higher levels of capital and lower return on equity show higher reputation, implying that institutions with higher capital adequacy are regarded by customers as stable and trustworthy, and when there are two institutions with the same level of net income, the one with higher capital and better reputation gets a lower return on equity (ROE).

Finally, the results also show that financial institutions with larger credit portfolios and that have higher amounts of liquid assets booked have lower reputation. A possible explanation is that the larger the credit portfolio, the larger the number of customers, making it more probable to get some kind of customer dissatisfaction. An intriguing result is that a higher volume of liquid assets leads to a lower reputation. From the depositors' point of view, this should be seen as a positive signal because the bank will have the sufficient liquidity to refund the deposits and from the borrower point of view this could be seen as the bank being risk averse and granting lower loans that the loans they are able to grant, causing dissatisfaction in the borrower. Our results show no significant connection between sensitivity to market risk and reputation loss.

Our findings contribute to the literature and regulatory debate on the relationship between client satisfaction, corporate reputation, CSR and risk management in the financial sector. In fact, the results obtained shed some light on the risk profile of the financial institutions that have lower reputation in the Spanish financial sector.

We also add to the extant literature on corporate reputation because we find reputation determinants related to the risk profile of a company and not to the service or product quality it commercialize in the market.

Finally, we consider our results could help regulators to understand the role that reputation has in the financial sector and could be useful to evaluate whether customer satisfaction and financial institution reputation should be assessed in the CAMELS rating system.

Our study is pioneer in this area of research in the banking industry and opens up new directions for future research. For instance, it could be most interesting to find out how the different type of risks relate to the type of claims and complaints (e.g., related to active or passive products) customers file against a financial institution and how the change in the level of each type of risk through time impacts on the reputation a financial institution has in the market.

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Table 6.1 – Sample descriptive statistics for the sample by year

Year	Observations	Descriptive	Capital/Total Assets	Cost to Income Ratio %	Operating Income / Total assets	ROE using P/L before tax %	ROA using P/L before tax %	Loans Million USD	Liquid Assets Million USD	Loan Loss Provisions Million USD	Int bearing deposits / Total assets	Total assets Million USD
2005	80	Min	1.88	5.39	0.00	-31.79	-2.54	12.50	1.65	0.12	0.67	29.61
		Max	32.78	192.28	0.10	30.52	5.49	514,149.11	192,587.55	2,062.01	0.98	954,506.90
		Media	9.90	62.03	0.03	10.23	0.94	15,482.30	4,358.76	59.23	0.88	26,048.38
2006	84	Min	1.05	1.91	0.00	1.46	0.11	13.04	5.79	0.13	0.71	38.59
		Max	26.33	90.37	0.09	153.04	8.85	689,247.88	216,564.47	3,271.30	0.99	1,098,212.46
		Media	8.66	55.71	0.03	14.41	1.12	20,130.59	5,188.88	91.30	0.89	30,684.55
2007	80	Min	1.48	18.81	0.00	-5.70	-0.30	15.02	2.80	0.15	0.69	39.89
		Max	26.66	90.63	0.07	31.90	4.37	832,410.33	228,537.23	5,146.61	0.98	1,343,901.54
		Media	8.88	52.88	0.03	13.16	1.08	27,403.99	6,437.13	141.55	0.89	41,749.35
2008	84	Min	2.34	10.67	0.00	-2.65	-0.70	32.43	2.51	0.14	0.70	41.19
		Max	26.47	111.00	0.06	25.93	3.56	865,164.35	261,503.08	8,300.65	0.97	1,460,771.58
		Media	8.83	54.53	0.03	9.99	0.81	31,843.97	6,167.78	250.28	0.89	48,370.48
2009	97	Min	1.21	1.87	0.00	-234.71	-2.85	17.72	0.43	0.14	0.69	50.13
		Max	27.28	111.20	0.09	23.94	3.37	963,175.34	289,697.54	15,973.38	0.97	1,599,829.24
		Media	9.14	53.20	0.03	3.61	0.51	29,479.10	5,946.78	395.98	0.89	45,864.72
2010	93	Min	1.80	7.97	0.00	-2.20	-0.18	16.84	1.07	0.13	0.64	46.39
		Max	26.81	100.00	0.10	25.43	2.88	959,876.91	325,401.08	13,725.80	0.98	1,627,674.79
		Media	8.50	61.43	0.03	5.85	0.49	33,428.11	6,071.73	359.08	0.89	51,758.88
2011	92	Min	0.88	22.35	0.00	-179.07	-3.65	4.92	0.13	0.13	0.65	35.45
		Max	25.56	111.26	0.06	14.10	3.26	946,697.47	294,038.78	14,284.66	0.98	1,619,349.51
		Media	8.42	64.27	0.02	-0.26	0.22	33,421.31	5,946.19	410.51	0.90	53,467.07
2012	75	Min	1.01	-15.71	0.00	-804.07	-13.43	16.36	1.58	0.13	0.83	47.50
		Max	16.04	320.00	0.04	10.12	1.10	924,905.96	349,121.14	24,473.55	0.98	1,675,147.12
		Media	7.74	67.09	0.02	-28.84	-0.72	34,028.37	7,959.94	1,149.77	0.90	59,875.96
Total	**685**											

Source: Orbis database

Table 6.2 – Sample descriptive statistics for the full sample

	Observations	Minimum	Maximum	Mean	Std. Deviation
Loan Loss Provisions th USD	685	117.97	24,473,549.73	351,180.07	1,833,519.37
Cost to Income Ratio %	685	-15.71	320.00	58.79	21.58
Total assets th USD	685	29,610.58	1,675,147,123.39	44,870,893.63	180,505,585.79
Operating Income / Total assets	685	0.00	0.10	0.03	0.01
ROE using P/L before tax %	685	-804.07	153.04	3.84	44.00
ROA using P/L before tax %	685	-13.43	8.85	0.56	1.20
Loans th USD	685	4,916.82	963,175,340.03	28,309,404.06	107,624,304.47
Liquid Assets th USD	685	129.39	349,121,143.93	5,990,049.78	31,860,702.30
Int bearing deposits / Total assets	685	0.64	0.99	0.89	0.05
Equity / Total assets %	685	0.88	32.78	8.77	4.07

Source: Orbis database

Table 6.3 –T-test for equality of means and contingency table – RL

						Pearson Chi- square		Fisher´s Exact Test	
		% RL=1	RL=0	RL=1	Total	Value	Asym. Sig. (2- sided)	Exact. Sig. (2- sided)	Exact. Sig. (1- sided)
CSRR	0	3.15%	614	20	634	161.779	.000***	.000***	.000***
	1	49.02%	26	25	51				

		RL=0	RL=1	*t*-Statistics [a]	Sig. (2-tailed)	*t*-Statistics [b]	Sig. (2-tailed)
EFF	Mean	58.981	56.088	.869	.385	1.074	.288
	Std. Deviation	21.861	17.119				
OPINC	Mean	.028	.031	-1.902	.058*	-1.406	.166
	Std. Deviation	.010	.014				
ROE	Mean	4.282	-2.488	.998	.319	.480	.633
	Std. Deviation	38.217	94.000				
ROA	Mean	.582	.291	1.570	.117	.850	.400
	Std. Deviation	1.088	2.275				
INTBEAR	Mean	.889	.910	-2.989	.003***	-4.497	.000***
	Std. Deviation	.047	.029				
CAPRATIO	Mean	8.993	5.528	5.646	.000***	11.956	.000***
	Std. Deviation	4.092	1.613				
LLP	Mean	8.503	13.619	-13.650	.000***	-14.653	.000***
	Std. Deviation	2.442	2.251				
SIZE	Mean	14.158	18.890	-13778.000	.000***	-17.544	.000***
	Std. Deviation	2.258	1.707				
LOANS	Mean	13.726	18.392	-13.211	.000***	-15.714	.000***
	Std. Deviation	2.315	1.895				
LIQ	Mean	11.881	16.856	-15.862	.000***	-18.511	.000***
	Std. Deviation	2.054	1.719				

Source: Orbis database

RL is a dummy variable that equals one if the financial institutions is included in the top ten complaints receiver in the Banco de España yearly report, and zero otherwise

CSSR is a dummy variable that equals one if the financial institutions issues a sustainability report, and zero otherwise

EFF is the financial institution's cost to income ratio

OPINC is the financial institution's operating income to total assets ratio

ROE is the financial institution's profit and loss before tax to total equity ratio

ROA is the financial institution's profit and loss before tax to total assets ratio

INTBEAR is the financial institution's interest bearing depostis to total assets ratio

CAPRATIO is the financial institution's equity to total assets ratio

LLP is the financial institution's natutral log of loan loss provisions

SIZE is the financial institution's natutral log of total assets

LOANS is the financial institution's natutral log of total loans

LIQ is the financial institution's natutral log of total liquid assets

[a] Equal variances assumed

[b] Equal variances not assumed

* Significant at 10% level

** Significant at 5% level

*** Significant at 1% level

Table 6.4 - Logistic regression on Reputation Loss (RL)

	B	S.E.	Wald Statistics	ρ- values
CSR	3.119	.823	14.368	.000***
EFF	.024	.013	3.390	.066*
OPINC	155.600	45.857	11.513	.001***
ROE	.022	.012	3.220	.073*
ROA	-1.523	.626	5.915	.015**
INTBEAR	1.102	12.619	.008	.930
CAPRATIO	-.582	.305	3.638	.056*
LLP	-.443	.448	.980	.322
SIZE	-2.753	1.329	4.294	.038**
LOANS	1.834	.785	5.466	.019**
LIQ	3.173	.807	15.460	.000***
Goodness of fit test statistics:				
X^2 (ρ- value)		252.261 (.000***)		
-2 log likelihood		79.764		
R^2 Cox and Snell		.308		
R^2 Nagelkerke		.802		
Global Classification		96.6		

Reported are the coefficients and p-values of the logistic regression.
The dependent variable is RL is a dummy variable that equals one if the financial institutions is included in the top ten complaints receiver in the Banco de España yearly report, and zero otherwise
The independent variables are defined as follows:
CSRR, a dummy variable that equals one if the financial institutions issues a sustainability report, and zero otherwise
EFF is the financial institution's cost to income ratio
OPINC is the financial institution's operating income to total assets ratio
ROE is the financial institution's profit and loss before tax to total equity ratio
ROA is the financial institution's profit and loss before tax to total assets ratio
INTBEAR is the financial institution's interest bearing deposits to total assets ratio
CAPRATIO is the financial institution's equity to total assets ratio
LLP is the financial institution's natural log of loan loss provisions
SIZE is the financial institution's natural log of total assets
LOANS is the financial institution's natural log of total loans
LIQ is the financial institution's natural log of total liquid assets
* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Part IV – Conclusions

Chapter 7 - Conclusions

Chapter 7 - Conclusions

The recent global financial crisis revealed that regulators were not addressing properly financial services sector risks and complexities. The post-financial crisis era brought changes in the monitoring tools used by regulators worldwide, and specifically EU-wide stress testing exercises were performed, and this translated into changes in the FI risk management systems. As a result of the crisis, financial institutions' reputation was impaired. So, in order to regain customers' confidence and improve their reputation, FI got involved in socially responsible activities.

The general objective of this thesis is to analyze how the risk profile of a FI relates to: a) the impact regulatory stress test results have on its capital ratio and how the FI uses these results to adjust it, b) the propensity a FI has to issue a sustainability report and the quality of the information disclosed, c) the FI proactive or reactive reaction to the customers' complaints and, d) the FI reputation. The focus of analysis in this study is mainly the European financial services sector during the period 2005-2013.

The recent changes in the financial services sector reveal the need for research to identify the characteristics of the banks that are incorporating the information provided by the regulatory stress testing exercise to adapt their risk profile and adjust their capital ratio, whether this attitude differs between emerging and developed markets, as well as the characteristics of the banks that get involved in corporate social responsibility activities to be closer to their customers and the characteristics of the banks with higher reputation.

The need to understand the changes in this new global financial services sector is the main motivation of this thesis.

The results of this study will be useful for regulators, to better understand the effect of the new regulatory tools used, how the supervised institutions react to

them and subsequently whether to adapt regulations and policies; for financial institutions, to understand the usefulness of stress testing as a component of their risk management system; for customers, to better understand the behavior of the financial institutions to which they trust their savings and finally for researchers, to build on the banking research literature and to identify future avenues for research.

The general conclusions of the thesis, which relate to the general objectives, can be summarized as follows:

First conclusion: Financial institutions with low liquidity risk, with high-quality assets and that are efficient are better prepared to successfully overcome the stress tests of the European Union.

To investigate how banks use the results of stress tests to adjust their risk profile and whether the stress tests play an informative and disciplinary role to determine the capital structure of banks (Objective 1) we use a sample of European Union (EU) banks covered by the 2011 stress test conducted by the Euroepan Banking Authority (EBA) with financial data available for the years 2010, 2011 and 2012. The results show strong evidence that bank with higher liquid assets, with low levels of provisions for doubtful accounts and that are efficient perform better on the stress tests in the adverse scenario in 2012. These findings could be useful for regulators when focusing their efforts on supervision of financial institutions. The EBA stress tests are used as regulatory tools that help to identify the strength of financial institutions, and therefore the financial system as a whole, in a potential crisis scenario. If the scenarios designed by the regulator are sufficiently adverse to simulate a situation of financial crisis, our results are very useful for the stakeholders of the financial system that can identify financial institutions that will be less affected by a potential crisis scenario. We can therefore conclude that the financial institutions that invest in more liquid assets, which by definition are

less risky, with a high quality loan portfolio and that have an efficicient cost structure are less affected by a financial crisis.

The first conclusion of the thesis identifies the risk profile of EU financial institutions that receive a less negative impact in a financial crisis.

Second conclusion: Financial institutions in the European Union use the results of stress tests to adjust their capital structure, showing the informative role played by stress tests in the region.

The results of the thesis also provide evidence of capital structure adjustment of financial institutions in the European Union through capital increase and assets decrease in the year in which the results of the stress tests are disclosed (2011) and also we found evidence that banks reverse in 2012 this potentially excessive adjustment. Based on these results we conclude that the financial institutions of the European Union use the results of stress tests disclosed to adjust its capital structure by increasing capital and reducing assets, resulting in an increase in its Tier 1 Capital ratio. This shows the tendency of financial institutions to create a capital buffer in the year in which the results of stress tests are disclosed. We also found that in the year following the year results are published, financial institutions reverse the increase in Tier 1 Capital ratio shifting their investments to riskier assets. This attitude of financial institutions allows us to conclude that the results of stress tests play an informative role to financial institutions because they are considered by management to make decisions regarding their capital structure and the level of risk assumed.

The second conclusion of the thesis shows that the financial institutions of the European Union use the results of stress tests conducted by the European Banking Authority to modify its capital structure, which shows the informative role that stress tests play in the region.

Third conclusion: Financial institutions in the European Union use the results of stress tests to align its current Tier 1 capital ratio with the target Tier 1 capital ratio, showing the disciplinary role played by stress tests in the region.

The results also show that banks in the European Union align its current Tier 1 capital ratio with the target Tier 1 capital ratio after the results of stress tests conducted by the European Banking Authority (EBA) are disclosed. Financial institutions rationally align their current capital ratio to the target capital ratio over a period of 3 years: financial institutions with current ratio lower than the target ratio increase the current ratio, while financial institutions with current ratio higher than the target ratio decrease the current ratio.

This allows us to conclude that the stress tests play a disciplinary role to banks, as the results of stress tests published provide useful information to banks and are incorporated in the decision-making process. This attitude is rational, since banks that are overcapitalized regarding its target capital ratio incur in additional costs to maintain the excess of capital, which also is inefficient; while financial institutions that are undercapitalized relative to their target capital ratio incur in risk of default and are exposed to receive penalties from the regulator, and this will also increase the cost of the additional capital needed by the bank to meet the minimum regulatory capital requirement. Our findings could help regulators to focus their regulatory efforts on banks that show risk profiles that tend to receive more negative results in this type of stress test and also help to understand the risk profile of banks using risk management strategies to modify its capital structure after the results of the stress tests are released.

The third conclusion of the doctoral thesis show that the stress tests carried out by the European Banking Authority play a disciplinary role in the financial institutions in the European Union, and that lead them to adjust their current capital ratio to its target capital ratio.

Fourth conclusion: Financial institutions from emerging markets (Latin America) adjust its capital ratios differently than financial institutions in developed markets (EU) due to higher market opacity.

To investigate whether financial institutions in emerging markets adjust the Tier 1 Capital ratio (T1CR, the risk-weighted capital ratio) differently from the total capital ratio (TCR, the book value capital ratio) taking advantage of the greater markets opacity in developed markets (Objective 2) using a sample of banks in emerging and developed markets with financial data available for the period 2008-2013. The sample of emerging market banks includes banks in Latin America (LAC), while the sample of developed market banks includes banks of the European Union (EU). We found evidence of different capital structure adjustment of banks in the EU and in LAC: EU banks adjust their T1CR and TCR together while LAC banks adjust them differently. As T1CR and TCR are calculated using different set of policies, Basel policies and accounting standards respectively, we conclude that LAC banks strictly follow these rules to calculate their capital ratios mainly based on the Basel rules and on accounting information because there is no other information available to consider in the calculation due to the higher market opacity in LAC, caused in part by the absence of stress tests on the financial sector. On the contrary, EU banks have additional information in a more transparent market and adjust their capital ratios in accordance with this additional information and not only on the accounting information. We conclude that EU financial institutions use TCR and T1CR indistinctly to make decisions about its capital structure and the level of risk assumed, while financial institutions in LAC use both ratios differently in decision-making process.

The fourth conclusion of the doctoral thesis shows that financial institutions in emerging markets, which are more opaque markets, adjust differentially the capital ratio calculated on the basis of their risk-weighted assets compared to the capital ratio calculated on the basis of total assets, while financial institutions in developed markets adjust both ratios jointly.

Fifth conclusion: Financial institutions from emerging markets (Latin America) have higher capital ratio than financial institutions from developed markets (European Union), but thet are riskier.

Our results show that banks in Latin America (LAC) are overcapitalized while banks in the European Union (EU) are undercapitalized relative to its target capital ratio measured either as Tier 1 Capital ratio (T1CR, the risk-weighted capital ratio) or total capital ratio (TCR, the book value equity ratio). Moreover, the current average level of risk (measured as the ratio of risk-weighted assets to total assets) in LAC financial institutions (90.10%) is close to its target level (91.70%) while in EU the average current risk level (64.10%) is above the target (55.40%).

Based on these results we conclude that financial institutions in LAC have capitalization levels above the EU financial institutions capitalization level, yet the level of risk assumed by the former is much higher than the level assumed by the latter. This conclusion, analyzed in conjunction with the above conclusion allows us to understand that the higher risk shifting moral hazard in LAC financial institutions lead them to assume greater risk levels than financial institutions in the EU, partly due to the higher market opacity in LAC and also because the 2008/2009 crisis effect in LAC was not as negative as in the EU, and this allowed LAC financial institutions to have faster access to capital than the financial institutions in the EU.

Stakeholders in the LAC financial sector, especially regulators, could consider our findings since the level of capitalization of LAC financial institutions relative to EU financial institutions is on average 15% higher, while the level of risk is 41% higher in the former relative to the latter. This situation could imply that LAC financial institutions are in a weak position to face a financial crisis.

The fifth conclusion of the thesis shows that financial institutions in emerging markets have a higher level of capitalization relative to financial institutions in developed markets, but they are in a weak position to face a a financial crisis due to the higher risk level assumed.

Sixth conclusion: Financial institutions in the European Union that have greater loan portfolio, with higher deposit level and higher profitability tend to issue a corporate social responsibility report.

To investigate the impact of the risk profile of a financial institution on the propensity to issue a sustainability report and the propensity to publish a sustainability report that contains high quality financial sector CSR specific information (Objective 3) we use a sample Banks targeted by the stress tests that the EU conducted in 2014 that have available financial information for the period 2011-2013. Our results indicate that financial institutions with lower capital risk, higher liquidity risk (greater loan portfolio), higher sensitivity to market risk and higher profitability in the banking business tend to issue a corporate social responsibility report (CSR).

Based on these results we conclude that financial institutions with a higher loan portfolio and a greater number of deposits face greater demands from their clients to show a socially responsible attitude due to the higher visibility they have pn the markets, which leads them to issue a corporate social responsibility report.

Additionally, because these financial institutions also have a higher profitability level, they have available funds to issue a corporate social responsibility report.

Corporate social responsibility reports are then used by European financial institutions with a significant number of customers to meet their requests for information, which can be interpreted as a communication strategy that can be carried out because they have the funds available to do so, as they are profitable financial institutions.

The sixth conclusion of the thesis identifies the risk profile of financial institutions of the European Union that issue a corporate social responsibility report.

Seventh conclusion: Among the financial institutions in the European Union that issue a corporate social responsibility report, the ones that are less profitable and get the report assured by a non-Big 4 auditor disclose higher quality corporate social responsibility financial sector specific information.

Additionally, the results of the thesis show that among banks that issue a corporate social responsibility report (CSR), those with a higher loan portfolio, higher level of other interest-bearing liabilities, and lower profitability in the banking business, issue a sustainability report that contains highest quality CSR financial sector (FS) specific information. When the CSR report is assured by PricewaterhouseCoopers (PwC), Ernst & Young (EY) or the report is not assured, the quality of the CSR FS specific information disclosed is of lower quality.

Based on these results we conclude that hiring a higher quality assuror such as PwC or EY could be a strategy to reduce transaction costs and serves as a protection to disclose lower quality CSR information, which is cheaper to

generate. Our findings have important implications for shareholders, investors and analysts that can see CSR reports as a vehicle that financial institutions use to show an ethical behavior. Stakeholders should be aware that the FI could use CSR reporting to improve their reputation and as an opportunity to do more business, especially in the aftermath of a financial crisis. The results can be considered by regulators to assess whether CSR related activities should be included in the CAMELS rating system.

The seventh conclusion of the thesis identifies the risk profile of financial institutions of the European Union that disclose higher quality corporate social responsibility financial sector specific information in its corporate social responsibility report.

Eighth conclusion: The Spanish financial institutions with lower loan portfolio, with higher profitability level and that issue a CSR report show a proactive attitude towards customers' complaints, while financial institutions with higher credit portfolio show a reactive attitude.

To investigate complaints management in the Spanish financial institutions we analyze the relationship between the financial institutions (FIs) risk profile and the attitude towards customers' complaints (Objective 4). We use a sample that includes Spanish financial institutions with available financial information for the period 2005-2012. The results show that FIs that issue a corporate social responsibility (CSR) report, that are inefficient (have large and complex structures), have higher liquidity level, are highly profitable in the banking business (charge high fees and interest to customers) and are sensitive to market risk tend to amend (AMEND). As for the rectifications (RECTIF), the results show that IF that issue a CSR report, which have lower provisions for doubtful accounts, and have larger loan portfolios tend to rectify their mistakes.

These results allow us to conclude that financial institutions that have larger loan portfolio and of higher quality, rectify the error once the regulator

decision favors the customer. Financial institutions that show a socially responsible attitude by issuing a corporate social responsibility report tend to have this positive attitude towards their clients.

These results could help regulators to understand the characteristics of FIs that take into account the reports on complaints and claims from customers the regulator issues. Our findings are also useful for customers to identify FIs with greater customer orientation.

The eighth conclusion of the thesis identifies the risk profile of the Spanish financial institutions that have a reactive or proactive attitude towards customers' claims and complaints.

Ninth conclusion: The Spanish financial institutions that are inefficient, that have an higher capital risk, have higher profitability in the banking business, have a larger loans portfolio and that issue corporate social responsibility report have lower reputation.

To investigate the relationship between the bank reputation and its risk profile (Objective 5) we use a sample that includes the Spanish financial institutions with available financial information for the period 2005-2012. Our results show that the institutions that are in a weak capital position, with a larger credir portfolio, which are inefficient, that show higher profitability level and issue a corporate social responsibility (CSR) report have lower reputation.

These results allow us to conclude that financial institutions with higher equity and liquidity risk, which are inefficient but that get higher rent from their customers through higher fees, commissions and interest rates tend to cause dissatisfaction among them, a situation that could lead customers to switch bank. Additionally, the results allow us to conclude that financial institutions that issue a CSR report have lower reputation, which means they can use these reports as a strategy to improve its reputation.

Our findings contribute to the extant literature and policy debate on the relationship between customer satisfaction, corporate reputation, CSR and risk management in the financial services sector. In fact, the results show the risk profile of financial institutions with lower reputation in the Spanish financial services sector. Our results could help regulators to understand the role that reputation plays in the financial services sector and could be useful in assessing whether the customer satisfaction and the reputation of financial institutions must be assessed in the CAMELS rating system

The ninth conclusion of the thesis identifies the risk profile of the Spanish financial institutions that have lower reputation.

The conclusions of the doctoral thesis identify the risk profile of European financial institutions that tend to receive a more negative impact in a financial crisis, that use the results of the stress tests to adjust its capital structure and as this adjustment differs in emerging markets financial institutions as a result of a higher market opacity. Additionally, the conclusions identify the risk profile of European financial institutions that tend to issue a corporate social responsibility report, the risk profile of Spanish financial institutions that have a proactive or reactive attitude towards customers' claims and complaints and the risk profile of Spanish financial institutions that have lower reputation.

Part V – Doctoral thesis summary in Spanish

Chapter 8 – Doctoral thesis summary in Spanish

Capítulo 8 – Resumen de la tesis doctoral en castellano

Capítulo 8 – Resumen de la tesis doctoral en castellano

8.1 Objetivos de la tesis doctoral

La última crisis financiera mundial introdujo dudas sobre el nivel de entendimiento que los grupos de interés de los mercados financieros tienen sobre los riesgos y complejidades de las instituciones financieras. La recesión económica, que comenzó en el año 2008, dio lugar a la quiebra de algunas instituciones financieras que impulsaron el desarrollo de nuevas regulaciones y normativa en el sector bancario.

Una prueba de la actitud que tenían los bancos frente a la regulación fue evidente en el Q4 de 2012, cuando la Europena Banking Authority (EBA) llevó a cabo un estudio para entender cómo los bancos medían el nivel de riesgo de sus activos. La EBA concluyó que había "diferencias sustanciales" en la forma en que los riesgos se medían en 89 bancos de 16 países.

En esta línea, el ex primer ministro británico Tony Blair asumió alguna responsabilidad por el estado de la economía de Gran Bretaña después de admitir que su gobierno no alcanzó a entender la complejidad del sector financiero para prever que se estaba al borde de la crisis.

Una de las principales características del sector financiero es que está integrado por grandes empresas, muy complejas y "sistémicamente importantes". El profesor Simon Johnson argumenta que la mejor manera de prevenir futuros desastres financieros a expensas de la sociedad es la de evitar que las instituciones financieras sean más grandes. La razón que subyace detrás de este argumento es que con instituciones financieras más pequeñas, un colapso potencial de alguna de ellas no llevaría al caos del sistema financiero internacional (Johnson, 2011). Por otra parte, Johnson admite que tener instituciones financieras más pequeñas, no sería suficiente para garantizar la estabilidad financiera, pero aseguraría una supervisión más eficiente y reducirá los riesgos sistémicos en los casos de turbulencias financieras.

Para agregar complejidad al problema de "demasiado grande para quebrar", otro factor que distingue a los bancos de otras empresas es que sólo los bancos usan depósitos de terceros para financiase. Los depósitos, en forma de cuentas bancarias, no sólo tienen como titulares a las familias, sino también a las empresas que los utilizan para su operativa comercial y como reservas. Los bancos se financian con depósitos y capital e inverten en activos de riesgo. Archarya et al. (2014) muestran que "el apalancamiento debe ser lo suficientemente alto como para cumplir con el rol disciplinador de de los depositantes, pero lo suficientemente bajo como para asegurar que la toma de riesgos del banco no sea excesiva". El establecimiento de un requisito de capital óptimo es el deseo de todo el regulador del sector de los servicios financieros, ya que les ayudará a cumplir con su mandato de mantener la estabilidad financiera. Con el fin de abordar y controlar los riesgos del negocio bancario, los reguladores utilizan herramientas de gestión de riesgo para alcanzar sus objetivos regulatorios. Tales esfuerzos de supervisión aumentan durante los períodos de turbulencia financiera debido a que la opacidad bancaria tiende a aumentar (Flannery et al., 2010) y, por tanto, los reguladores utilizan pruebas de estrés para evaluar no sólo la vulnerabilidad de los bancos, sino también de todo el sistema bancario (Drehmann et al ., 2010; Sorge y Virolainen, 2006). Como una de las principales preocupaciones de los reguladores es la estabilidad financiera, ellos diseñan un sistema de supervisión que les permite evitar el fracaso institucional que podría conducir a la ruptura de las principales funciones financieras de la economía, tales como el sistema de pago, la transformación del ahorro y la política monetaria (Weber, 2014).

El regulador del sector financiero europeo es la European Banking Authority (EBA), organismo creado en enero de 2011 a raíz de la crisis financiera en el marco del Sistema Europeo de Supervisión Financiera (SESF). La EBA realizó a partir de 2009 pruebas de estrés del sector financiero euroepo. La prueba de estrés que realizó la EBA en el año 2010 incluyó una muestra de 91 bancos europeos, que representan el 65% del mercado europeo en términos de activos

totales, y se realizó en coordinación con 20 autoridades nacionales de supervisión. Se llevó a cabo en un horizonte de 2 años, hasta finales de 2011, bajo supuestos de situación potencial adversa. La prueba de estrés se centró principalmente en los riesgos de crédito y de mercado, incluyendo las exposiciones a la deuda soberana europea. Como resultado del escenario adverso después de un shock soberano, se suponía que 7 bancos verían caer su Tier 1 capital ratio por debajo del 6%. Todos los bancos que eran supervisados en la UE debían tener un Tier 1 capital ratio mínimo de 4% ratio en ese momento. Para las instituciones que no cumplieran el umbral en la prueba de estrés, las autoridades nacionales competentes estaban obligadas a estar en contacto cercano con estos bancos para evaluar los resultados de la prueba y sus consecuencias, en particular en términos de necesidad de recapitalización.

Un año más tarde, en 2011, la EBA realizó una prueba de estrés que abarcó a 90 bancos de 21 países, mientras que la prueba de estrés del 2014 incluyó 123 grupos bancarios en toda la UE incluyendo a Noruega, con un total de activos de 28.000 millones de euros que cubren más del 70% del total de los activos bancarios de la UE.

Las pruebas de estrés también son utilizados por los bancos como una herramienta de gestión de riesgos para evaluar sus propias debilidades y su exposición al riesgo, siguiendo las directrices y recomendaciones establecidas por los reguladores que tienen como objetivo identificar la cantidad de capital que necesita el banco para estar preparado ante situaciones adversas que podrían impactar en su capital actual (Comité de Supervisión Bancaria de Basilea, 2006; Peura y Jokivuolle, 2004). La similitud de las pruebas de estrés utilizada en un nivel macro con las técnicas utilizadas por los bancos como parte integrante del sistema de gestión de riesgos (véase Verano, 2008), junto con la recomendación de los supervisores sobre el uso de las pruebas de estrés como herramientas de gestión de riesgos para la bancos (Comité de Basilea de Supervisión Bancaria, 2006; Foro de Estabilidad Financiera, 2008), sugieren

que las pruebas de estrés se están convirtiendo en una herramienta muy importante para los reguladores (Drehmann et al., 2010).

Estudios recientes analizan el papel informativo que las pruebas de estrés tienen en la gestión bancaria y en los mercados financieros. Goldstein y Sapra (2013) discuten si los resultados de las pruebas de estrés deben ser divulgados o no. Con el argumento de que las pruebas de estrés no son capaces de simular escenarios que sean lo suficientemente extremos como para simular una verdadera crisis, Das (2011) sostiene que la divulgación de los resultados de las pruebas de estrés es inherentemente inútil.

Como las instituciones financieras son vitales para la estabilidad financiera, los gobiernos tienen que evitar su colapso y por lo tanto, dedican una importante cantidad de recursos para el rescate de los bancos. La quiebra de un banco tiene costos sociales inmediatos sobre los depositantes, así como un impacto en otros bancos, en el sistema de pago, y puede desestabilizar todo el sector financiero. Es por esto que, a finales de febrero de 2009, los planes de rescate financiero que implicaban inyecciones de capital, compra de activos de los banco, la emisión de títulos bancarios, swaps y otras garantías, ascendieron a un compromiso total de los gobiernos de la EU del 22% del PIB de la región y el 29% del PIB en los Estados Unidos.

Como consecuencia del esfuerzo que la sociedad en su conjunto hizo para rescatar al sistema financiero, las instituciones financieras han sido vistas por la sociedad como empresas lucrativas que se ocupan únicamente de sus intereses, y no velan por los intereses de sus clientes (Dow 2011). El riesgo moral en el sector financiero se ha analizado en relación a los préstamos concedidos a clientes de alto riesgo, a los productos financieros sofisticados que se ofrecen a los clientes financieramente no sofisticados y también porque los estados proporcionaron apoyo ilimitado a los bancos en forma de seguro de depósitos y prestamista de último recurso (Dow, 2011). La discusión principal en torno al riesgo moral se relaciona con el hecho de que las instituciones financieras se

ven tentadas a asumir mayores riesgos debido a la protección que tienen por parte de los bancos mediante las salvaguardas (Calomiris, 1998; Önder y Ozyildirim, 2008; Ratnosvski y Huang, 2009).

De acuerdo con una encuesta realizada entre ejecutivos bancarios en 225 empresas por parte de la firma Makovsky a través del investigador de mercado Ebiquity a mediados de 2014, más del 80% de los directivos de comunicación, de marketing y asesores de inversión de las instituciones financieras piensa que la crisis financiera de 2008 todavía está teniendo un impacto negativo en sus empresas. Ejecutivos bancarios reconocen que tomará varios años más para que los bancos recuperen la confianza que perdieron[5]. Baker et al. (2013) encuentra que los clientes experimentam emociones negativas con una falla en el servicio y pueden presentar reclamanciones ante el regulardor. Si esto sucede, la institución financiera puede aparecer en un informe del regulador. Este hecho afectará a los futuros beneficios de la institución porque su reputación disminuirá (Rose y Thomsen, 2004).

Las instituciones financieras pueden mostrar a los clientes que se preocupan por ellos mediante el manejo eficiente de las quejas que se presentan sobre los servicios que prestan. Para asegurarse de que este es el caso, los reguladores exigen a las instituciones financieras diseñar e implementar un proceso de tramitación de las reclamaciones. El Banco de España, regulador bancario español, publica información sobre las quejas de los clientes como una forma de aumentar la transparencia del sector de servicios financieros. Los usuarios deben presentar la queja directamente al Servicio de Reclamaciones de la IF (CS) o al Defensor del Pueblo. Si la IF no responde dentro de los dos meses o responde negativamente, el usuario puede presentar la queja con el CS del BE. Los informes de CS del BE no son vinculantes para las IF, quienes pueden: a)

[5] Money.cnn.com, 2014. Banks know that customers hate them. http://money.cnn.com/2014/06/17/investing/banks-crisis-reputation/ Accessed: 14/12/15

ignorar la decisión; b) ser proactivo y enmendar el error antes de que el BE emite el informe; o c) ser reactivos y rectificar el error después de la emisión de informe del regulador. Si la IF toma medidas correctivas durante ese proceso, el BE cierra el proceso.

El concepto de responsabilidad social empresarial (RSE) en el sector de los servicios financieros no sólo se refiere a la responsabilidad de la empresa por el impacto que sus acciones tienen en sus grupos de interés, sino también a su papel como intermediarios financieros (Prior y Argandoña, 2009). De la Cuesta-González et al. (2006) argumenta que el concepto de RSE afecta al sector financiero desde una perspectiva doble: a) en la dimensión interna que implica la implementación de iniciativas ambientales y de responsabilidad social dentro de los procedimientos de gestión interna de la entidad y b) en la dimensión externa, que implica la incorporación de la RSE en el negocio de la entidad de intermediación financiera y de inversión en los mercados financieros. Esto debería conducir a la incorporación de las consideraciones ambientales y sociales en el diseño de los productos financieros, en las políticas de crédito y estrategias de inversión. En consecuencia, la estrategia de negocio y la gestión de riesgos deben tener en cuenta la RSE.

Teniendo en cuenta esto, la Global Reporting Initiative (GRI) ha publicado las revelaciones GRI del Sector de Servicios Financieros, un suplemento para el sector que se ocupa de cuestiones específicas de la industria que no están contemplados en las directrices generales del GRI. La dimensión exterior de la RSE en las instituciones financieras mencionadas por De la Cuesta-González et al. (2006) se contempla en la sección "impacto de productos y servicios" del suplemento GRI del Sector de Servicios Financieros (Global Reporting Initiative, 2013). Se requiere a la empresa diseñar y poner en práctica procedimientos para evaluar y controlar los riesgos ambientales y sociales en las líneas de negocio, procesos y supervisar la aplicación por parte de los clientes de los requerimientos ambientales y sociales incluidos en acuerdos,

transacciones e iniciativas para mitigar los impactos ambientales de los productos y servicios (Global Reporting Initiative, 2013).

Los cambios recientes que se han producido en el sector de servicios financieros muestra la necesidad de realizar investigación adicional que ayude a entender cuáles son las características de los bancos que están incorporando la información proporcionada por las pruebas de estrés realizadas por el regulador para adaptar su perfil de riesgo y ajustar su ratio de capital; si esta actitud es diferente entre los mercados emergentes y desarrollados; cuáles son las características de los bancos que se involucran en actividades de responsabilidad social empresarial para estar más cerca de sus clientes y cuáles son las características de los bancos con mayor reputación.

La necesidad de entender los cambios en este nuevo sector de servicios financieros globales es la principal motivación de esta tesis doctoral.

Los resultados de esta tesis doctoral serán de utilidad para los reguladores, para entender mejor el efecto que los nuevos instrumentos de regulación utilizados tienen sobre las instituciones supervisadas y evaluar si utilizan la nueva información obtendida sobre ellas para adaptar los reglamentos y las políticas. También consideramos que las conclusiones de esta investigación serán de interés para las instituciones financieras, ya que les ayudará a entender la utilidad de las pruebas de estrés como un componente de su sistema de gestión de riesgos. Nuestras conclusiones esperamos que también sean relevantes para los clientes, ya que les permitirá entender mejor el comportamiento de las instituciones financieras a las que confían sus ahorros Y por último deseamos contribuir a los trabajos previos de otros investigadores y ofrecer futuras oportunidades de investigación.

El objetivo general de esta tesis doctoral es entender el perfil de riesgo de las instituciones financieras que: a) utilizan los resultados de las pruebas de estrés para ajustar su ratio de capital y cómo las pruebas de estrés impactan en dicho

ratio, b) tienden a emitir un informe de sostenibilidad y la calidad de la información divulgada en los mismos, c) reaccionan de manera proactiva o reactiva a las quejas de los clientes y, d) tienen una mayor reputación.

Poco se sabe acerca de cómo los bancos utilizan los resultados de las pruebas de estrés para ajustar su perfil de riesgo y si las pruebas de estrés juegan un rol disciplinador e informativo para determinar la estructura de capital de los bancos, por lo que, este estudio tiene como objetivo investigarlo, y este es su primer objetivo (Objetivo 1). En el entendimiento de que las pruebas de estrés son parte del sistema de gestión de riesgos de los bancos, nuestro objetivo es identificar el perfil de riesgo de los bancos (siguiendo el enfoque CAMELS como en Kerstein y Kozbeg, 2013; Jin et al, 2011, Jin et al, 2013a; Jin et al., 2013b) que tienden a recibir un impacto más negativo en las pruebas de estrés. También investigamos el perfil de riesgo de los bancos que utilicen la información proporcionada por los resultados de las pruebas de estrés para modificar su Tier 1 capital ratio. En esta investigación, también apuntamos a identificar el perfil de riesgo de los bancos que muestran una brecha más pequeña entre el ratio de capital actual y el objetivo, cómo ajustan su ratio de capital actual antes y después que los resultados de las pruebas de estrés son publicados.

Es importante señalar que la prueba de estrés aún no es una práctica común entre los reguladores de los mercados emergentes. Esto se debe a la existencia de graves deficiencias en la contabilidad y en el marco regulatorio y la falta de mercados líquidos para acciones de los bancos, deuda subordinada y otros pasivos bancarios y activos necesarios para validar el valor real de un banco en lugar de su valor contable (Rojas-Suárez, 2002a). También es pertinente recordar que aunque el Acuerdo de Basilea no recomienda aplicación sus normas en los mercados emergentes, las instituciones financieras de los mercados emergentes usan los Acuerdos como normas bancarias adecuadas (Balin, 2008). Esto incluye el Tier 1 capital ratio que no está sujeta a pruebas de estrés regional en estos mercados emergentes.

Además, teniendo en cuenta los hallazgos de Petrella y Resti (2013) que muestran que los resultados de las pruebas de estrés reducen la opacidad bancaria, ya que proporcionan a los inversores información relevante, el segundo objetivo de este estudio es investigar si las instituciones financieras de los mercados emergentes ajustan su Tier 1 capital ratio (el ratio de capital con activos ponderados por su riesgo) en forma diferente al Total capital ratio (el ratio de capital con activos a valor contable) aprovechando la mayor opacidad bancaria respecto a los mercados desarrollados (Objetivo 2). Esta investigación también analiza si los bancos en los mercados emergentes y desarrollados ajustan su nivel de riesgo en forma diferente. Esto es de especial interés porque no hay consenso sobre el ratio de capital que los bancos utilizan internamente para tomar decisiones (Jokipii y Milne, 2011). Este estudio proporciona evidencia respecto a si los bancos en los mercados emergentes y desarrollados utilizan el ratio de capital total (basado en las normas de contabilidad) o el Tier 1 capital ratio (sobre la base de los Acuerdos de Basilea) para tomar decisiones y las características del banco que contribuyen a determinar la estructura de capital. Nuestra investigación también busca evidencia de mayor riesgo moral por desvío de riesgos en los mercados emergentes respecto a los mercados desarrollados como consecuencia de la mayor opacidad bancarios de los mercados emergentes. Además, el estudio explora si las instituciones financieras de los mercados emergentes alinean su Tier 1 capital ratio actual con el Tier 1 capital ratio objetivo. Es de especial interés saber si la crisis financiera de 2008/09 tiene un impacto en esas desviaciones (Teixeira et al., 2014).

Así pues, los dos primeros objetivos de este estudio investigan el papel informativo y disciplinador que las pruebas de estrés tienen para determinar la estructura de capital de los bancos y el impacto potencial que la ausencia de pruebas de estrés tiene sobre dicha estructura en los mercados emergentes.

Los objetivos restantes de esta tesis están relacionados con la relación entre el perfil de riesgo de las instituciones financieras con la responsabilidad social empresarial, la actitud del banco frente a las quejas y reclamos de los clientes y su reputación.

La integración de la RSE en la gestión de riesgos no sólo ayuda a la empresa a obtener información acerca de los riesgos actuales que amenazan a la empresa, sino que también ofrece un medio eficaz para mitigarlos (Mengze y Wei, 2013; de la Cuesta-González et al 2006; Kytle y Ruggie 2005). Teniendo en cuenta esto, sostenemos que el perfil de riesgo de la institución financiera (siguiendo el enfoque CAMELS) influirá en la propensión a emitir un informe de RSE, así como la propensión a publicar un informe de sostenibilidad que contiene información de RSE específica del sector financiero de alta calidad. Basados en la teoría de que las instituciones financieras juegan un función social importante en el proceso de inclusión financiera en la economía y que la RSE es considerada en el proceso de diseño de producto y la política de crédito, las instituciones financieras incorporan la gestión del riesgo social y ambiental en su sistema de gestión de riesgos. El tercer objetivo de este estudio es investigar el impacto del perfil de riesgos de de las instituciones financieras sobre la propensión de la empresa para emitir un informe sobre sostenibilidad y la propensión a publicar un informe de sostenibilidad que contiene información de RSE específica del sector de servicios financieros de alta calidad (Objetivo 3). Este estudio contribuye a la literatura existente al encontrar evidencia empírica sobre la existencia de una relación entre la emisión de informes de RSE y la calidad de las revelaciones de RSE específicas del sector de servicios financieros requeridas por el GRI (usando un índice de divulgación de información de RSE específica del sector de servicios financieros que hemos desarrollado (FSSI)) con el tipo de riesgo y la complejidad de las instituciones financieras.

El cuarto objetivo de este estudio es contribuir a la literatura existente mediante la investigación de la gestión de quejas en las entidades financieras españolas y mediante el análisis de la relación entre el perfil de riesgo de las IF y su actitud frente a las quejas y reclamanciones de los clientes y (Objetivo 4). El estudio proporciona una nueva visión de las motivaciones que las instituciones financieras españolas tienen para reaccionar de manera proactiva o reactiva a las quejas de los clientes.

Por último, el quinto objetivo del estudio es investigar la relación entre la reputación del banco y su perfil de riesgo (Objetivo 5).

Sobre la base de los principales objetivos del estudio que se han detallado anteriormente, esta tesis doctoral propone las siguientes preguntas de investigación específicas que se vinculan con los cinco objetivos:

Objetivo 1: Investigar cómo los bancos utilizan los resultados de las pruebas de estrés para ajustar su perfil de riesgo y si las pruebas de estrés juegan un papel disciplinador e informativo para determinar la estructura de capital de los bancos:

1) ¿Cuál es el perfil de riesgo de los bancos que tienden a recibir un impacto más negativo en las pruebas de estrés realizadas por la UE?
2) ¿Cuál es el perfil de riesgo de los bancos que utilizan la información proporcionada por los resultados de las pruebas de estrés de la UE para modificar su Tier 1 capital ratio? ¿Cómo este ratio de capital estresado se relaciona con el ratio de capital que tenía el banco previo a la prueba de estrés?
3) ¿Cuál es el perfil de riesgo de los bancos que muestran una brecha más pequeña entre el ratio de capital actual y el objetivo? Cómo ajustan su ratio de capital actual y objetivo antes y después que los resultados de las pruebas de estrés son publicados? ¿Está relacionado el Tier 1 capital

ratio objetivo con el ratio de capital estresado que se obtiene como resultado de la prueba de estrés?

Objetivo 2: Investigar si las instituciones financieras de los mercados emergentes ajustan el Tier 1 capital ratio de en forma diferente al ratio de capital total, aprovechando la mayor opacidad bancaria que existe en dichos mercados en relación con los mercados desarrollados:

4) ¿Los bancos de los mercados emergentes se aprovechan de la mayor opacidad para ajustar su Tier 1 capital ratio en forma diferenciada?
5) ¿Los bancos en mercados emergentes y desarrollados ajustan su nivel de riesgo en forma diferente?
6) ¿Es el riesgo moral de desvío de riesgo en los mercados emergentes más alto que en los mercados desarrollados como consecuencia de la mayor opacidad que existe en dichos mercados?
7) ¿Las instituciones financieras de los mercados emergentes alinean su Tier 1 capital ratio y Total capital ratio a los ratios objetivo correspondientes? ¿Está su perfil de riesgo relacionado con dicha desviación, teniendo en cuenta la mayor opacidad de los mercados emergentes en relación con la de los mercados desarrollados?
8) ¿Está el perfil de riesgo relacionado con el desvio que existe entre el ratio de capital actual y el ratio de capital objetivo de los bancos de igual forma en las economías emergentes que en los mercados desarrollados?

Objetivo 3: Investigar si el perfil de riesgos de las instituciones financieras influye sobre la propensión de la empresa a emitir un informe de sostenibilidad y en la propensión a publicar un informe de sostenibilidad que contiene información de RSE específica del sector de servicios financieros de alta calidad:

9) ¿Tiene el perfil de riesgo de la institución financiera impacto sobre la propensión de la empresa para emitir un informe de sostenibilidad?
10) ¿Tiene el perfil de riesgo de la institución financiera impacto sobre la propensión a publicar un informe de sostenibilidad que contiene información de RSE específica del sector de servicios financieros de alta calidad?

Objetivo 4: Investigar la gestión de quejas en las instituciones financieras españolas mediante el análisis de la relación entre el perfil de riesgo de la IF y la capacidad de respuesta a las quejas de los clientes:

11) ¿Cuál es el perfil de riesgo de los bancos que reaccionan de forma proactiva a las quejas de los clientes?
12) ¿Cuál es el perfil de riesgo de los bancos que reaccionan de forma reactiva a las quejas de los clientes?

Objetivo 5: Investigar la relación entre el perfil de riesgo de la IF y su reputación:

13) ¿Cuál es el perfil de riesgo de los bancos con mayor reputación?

8.2 Diseño de la investigación y metodología de la tesis doctoral

El negocio bancario está altamente regulado porque las instituciones financieras captan ahorro público y tienen riesgos específicos y complejidades que hacen que sus estados financieros sean opacos y difíciles de analizar por el público en general (Petrella y Resti, 2013; Morgan, 2001). Para entender y monitorear los riesgos específicos en las empresas del sector financiero, el regulador estadounidense diseñó el sistema de evaluación CAMELS, que es comúnmente utilizado por los reguladores de todo el mundo para evaluar la solidez de las instituciones financieras y para evaluar el nivel de riesgo de los bancos (Office of the Comptroller of the Currency, 2013). Los riesgos que este enfoque evalúa son los riesgos específicos de las instituciones

financieras, es decir, el riesgo de capital, la calidad de activos, las habilidades de gestión, el nivel de ingresos y rentabilidad, el riesgo de liquidez y la sensibilidad al riesgo de mercado. El enfoque CAMELS no sólo se utiliza en los EE.UU., sino que tiene una proyección más internacional siendo el enfoque utilizado por los reguladores de todo el mundo. Un ejemplo es el método de *control utilizado por el Banco de España (el regulador español) denominado Risk-Based Supervisory Methodology Approach* basado en el sistema de evaluación CAMELS. Este método ayuda a evaluar qué instituciones son más propensas a desarrollar problemas en el futuro, con el fin de dedicar recursos adicionales de supervisión y para prevenir futuras crisis (Banco de España, 2011).

En esta tesis doctoral utilizados el enfoque CAMELS como subrogado del perfil de riesgo de las instituciones financieras.

El Capítulo 2 de esta tesis doctoral aborda empíricamente el perfil de riesgo de los bancos que reciben un impacto más negativo en las pruebas de estrés de la UE, el perfil de riesgo de los bancos que utilizan la información proporcionada por los resultados de las pruebas de estrés publicados para modificar su Tier 1 capital ratio y el perfil de riesgo de los bancos que muestran una brecha más pequeña entre el ratio de capital actual y el objetivo. Los resultados de este capítulo proporcionan respuestas a las preguntas de investigación 1, 2 y 3 (H1, H2 y H3, respectivamente) que coinciden con el Objetivo de Investigación 1. El perfil de riesgo de los banco es representado por el enfoque de riesgo CAMELS. La muestra incluye a los bancos destinatarios de la prueba de estrés de la UE del 2011 llevado a cabo por la EBA con datos financieros disponibles para los años 2010, 2011 y 2012. Para probar H1 y H2 del estudio se utilizan modelos de regresión lineal y para probar H3 el estudio utiliza el Método Generalizado de Momentos (GMM).

En el Capítulo 3 se examina empíricamente cómo los bancos en los mercados desarrollados y emergentes ajustan su estructura de capital, el ratio de capital

que usan los bancos en estos mercados para tomar decisiones, el riesgo moral de desvío de riesgos en estos mercados y los factores determinantes de la brecha entre el ratios de capital objetivo y actual y la relación entre el perfil de riesgo y las velocidades de ajuste correspondiente en ambos mercados, lo que está asociado a las preguntas de investigación de 4 a 8 (H1, H2, H3 y H4, respectivamente) y al Objetivos de Investigación 2. El perfil de riesgo de los banco es representado por el enfoque de riesgo CAMELS. La muestra incluye bancos de los mercados emergentes y desarrollados con datos financieros disponibles para el período 2008-2013. La muestra de bancos de mercados emergentes incluye a los bancos de América Latina (LAC), mientras que la muestra de bancos de mercados desarrollados incluye a los bancos de la Unión Europea (UE). Para probar H1 y H2 se utiliza el Método Generalizado de Momentos y para probar H3 y H4 se utilizan modelos de regresión lineal.

En el Capítulo 4 de la tesis se investiga empíricamente el impacto que el perfil de riesgo de los bancos europeos tiene sobre la propensión a emitir informes de sostenibilidad y la calidad de la información incluida en dichos informes en los bancos abarcados por la prueba de estrés realizada en la UE en el 2014. Los resultados de este capítulo proporcionan respuestas a las preguntas de investigación 9 y 10 (H1 y H2, respectivamente) que coinciden con el Objetivo de Investigación 3. El perfil de riesgo de los banco es representado por el enfoque de riesgo CAMELS. La investigación empírica se realiza sobre una muestra de la muestra de bancos alcanzados por la prueba de estrés realizada en la UE en el 2014 con información disponible en el periodo 2011-2013. Para probar H1 y H2 el estudio utiliza modelos de regresión lineal.

El Capítulo 5 de la tesis investiga empíricamente la relación en entre el perfil de riesgo de las instituciones financieras españolas y la propensión a enmendar o rectificar los errores que se derivan de las quejas y reclamaciones de los usuarios de servicios financieros. Los resultados de este capítulo proporcionan respuestas a las preguntas de investigación 11 y 12 (H1 y H2,

respectivamente), que coincide con el Objetivo de Investigación 4. El perfil de riesgo de los banco es representado por el enfoque de riesgo CAMELS. La muestra incluye las instituciones españolas con información pública disponible para el perído 2005-2012. Para probar H1 y H2 el estudio utilizan modelos de regresión lineal.

En el Capítulo 6 se investiga empíricamente el impacto que tiene perfil de riesgo de la IF con su reputación. Los resultados de este capítulo proporcionan respuesta a la pregunta de investigación 13 (H1) que coincide con el Objetivo de Investigación 5. El perfil de riesgo de los banco es representado por el enfoque de riesgo CAMELS. La muestra incluye las instituciones financieras españolas reguladas por el Banco de España, con información disponible para el periodo 2005-2012. En base a la información publicada por el Banco de España respecto de las reclamaciones y quejas presentadas por los clientes de las instituciones financieras, definimos los bancos de mala reputación como el las instituciones financieras que se encuentran entre las diez primeras empresas que recibieron el mayor número de reclamaciones y quejas durante el año. Para probar H1 y H2 del estudio utiliza modelos de regresión lineal.

8.3 Conclusiones de la tesis doctoral

La crisis financiera mundial reciente puso de manifiesto que los reguladores tienen debilidades en la forma de abordar adecuadamente los riesgos y complejidades del sector financiero. La era post-crisis financiera ha traído cambios en las herramientas de monitoreo utilizados por los reguladores de todo el mundo, y específicamente en la UE donde se han llevado a cabo pruebas de estrés, que se han traducido también en cambios en los sistemas de gestión de riesgos de las Instituciones Financieras. Como resultado de la crisis, la reputación de las instituciones financieras se ha visto muy afectada. Así, con el fin de recuperar la confianza de los clientes y mejorar su reputación, las IF se han involucrado en actividades de responsabilidad social empresarial.

El objetivo general de esta tesis es analizar cómo el perfil de riesgo de las IF se relaciona con: a) el impacto que los resultados de las pruebas de estrés tienen sobre el ratio de capital y cómo las IF utilizan estos resultados para ajustarlo, b) la propensión que una IF tiene para emitir un informe de sostenibilidad y la calidad de la información divulgada, c) la reacción proactiva o reactiva de las IF en relación a las quejas de los clientes y, d) la reputación de las IF. El foco de análisis en esta tesis es principalmente el sector de servicios financieros de Europa durante el período 2005-2013.

Las conclusiones generales de la tesis, que se refieren a los objetivos generales definidos, se pueden resumir de la siguiente manera:

Primera conclusión: Las instituciones financieras con bajo riesgo de liquidez, con activos de alta calidad y que son eficientes están mejor preparadas para superar en forma exitosa las pruebas de estrés de la Union Europea.

Para investigar cómo los bancos utilizan los resultados de las pruebas de estrés para ajustar su perfil de riesgo y si las pruebas de estrés juega un rol informativo y disciplinario para determinar la estructura de capital de los bancos (Objetivo 1) utilizamos una muestra de bancos de la Unión Europea (UE) cubiertos por la prueba de estrés del 2011 realizada por la Euroepan Banking Authority (EBA) con datos financieros disponibles para los años 2010, 2011 y 2012. Los resultados muestran una fuerte evidencia de que los bancos con mayor nivel de activos líquidos, con bajos niveles de provisiones para deudores incobrables y que sean eficientes obtienen mejores resultados en las pruebas de estrés en el escenario adverso del 2012.

Nuestros resultados permiten concluir que los bancos de la Unión Europea con activos con menor exposición a los riesgos financieros, que cuentan con una cartera de créditos con bajo nivel de incobrabilidad y que a su vez presentan una estructura de costos eficiente, tienen un perfil de riesgo que les permite

estar más preparados para hacer frente a escenarios financieros adversos y evitar un impacto negativo en el Tier 1 Capital Ratio. Estos hallazgos resultan de gran utilidad para los reguladores a la hora de focalizar sus esfuerzos de supervisión de las instituciones financieras. La EBA utiliza las pruebas de estrés como herramientas regulatorias que le permiten identificar la fortaleza de las instituciones financieras, y por ende del sistema financiero, ante un escenario de crisis. Si los escenarios planteados por el regulador son lo suficientemente adversos como para simular una situación de crisis financiera, nuestros resultados resultan de gran utilidad para los grupos de interés del sistema financiero porque permiten identificar las instituciones financieras que serán menos afectadas en un potencial escenario de crisis. Podemos concluir entonces que las instituciones financieras que invierten en activos más liquidos, los que por definición son menos riesgosos, que tienen una cartera de créditos de buena calidad y que presentan una estructura de costos adecuada son menos afectadas por una crisis financiera.

La primera conclusión de la tesis doctoral identifica el perfil de riesgo de las instituciones financieras de la Unión Europea que recibirán un menor impacto negativo como consecuencia de una crisis financiera.

Segunda conclusión: Las instituciones financieras de la Unión Europea utilizan los resultados de las pruebas de estrés para ajustar sus estructuras de capital, lo que muestra el rol informativo que juegan las pruebas de estrés en la región.

Los resultados de la tesis doctoral también proporcionan evidencia de ajuste de la estructura de capital de las instituciones financieras de la Unión Europea a través de aumento de capital y disminución de activos en el año en que los resultados de las pruebas de estrés se publican (2011) y también encontramos evidencia de que los bancos revierten en 2012 este ajuste potencialmente excesivo, mediante un desvio hacia activos de mayor riesgo y el aumento,

como consecuencia, de los activos ponderados por riesgo, ya que no muestran mayor Tier 1 capital ratio a pesar de que aumentan el capital.

Basados en estos resultados podemos concluir que las instituciones financieras de la Unión Europea utilizan los resultados de las pruebas de estrés publicados para ajustar su estructura de capital aumentando el capital y reduciendo los activos, lo que produce un aumento en su Tier 1 capital ratio. Esto muestra una tendencia de las instituciones financieras a crear un buffer de capital en el año en que los resultados de las pruebas de estrés test son publicados. También concluimos que en el año posterior a que los resultados son publicados, las instituciones financieras revierten el aumento de su Tier 1 capital ratio desviando sus inversiones hacia activos más riesgosos. Esta actitud de las instituciones financieras nos permite concluir que efectivamente los resultados de las pruebas de estrés juegan un rol informativo en las instituciones financieras ya que son considerados por la gerencia para tomar decisiones respecto a su estructura de capital y el nivel de riesgo asumido.

La segunda conclusión de la tesis doctoral muestra que las instituciones financieras de la Unión Europea utilizan los resultados de las pruebas de estrés realizadas por la European Banking Authority para modificar su estructura de capital, lo que evidencia el rol informativo que tienen las pruebas de estrés en la región.

Tercera conclusión: Las instituciones financieras de la Unión Europea utilizan los resultados de las pruebas de estrés para alinear su Tier 1 capital ratio actual al Tier 1 capital ratio objetivo, lo que muestra el rol disciplinario que juegan las pruebas de estrés en la región.

Los resultados también muestran que los bancos de la Unión Europea alinean su Tier 1 capital ratio actual al Tier 1 capital ratio objetivo después de que se dan a conocer los resultados de las pruebas de estrés realizadas por la European Banking Authority (EBA). Las instituciones financieras alinean su ratio de

capital actual al ratio de capital objetivo en un período de 3 años y en forma racional, ya que las instituciones financieras cuyo ratio actual es superior al objetivo lo disminuyen, mientras que las instituciones financieras cuyo ratio de capital actual es inferior al objetivo lo aumentan.

Esto nos permite concluir que las pruebas de estrés juegan un papel disciplinador con los bancos y que los resultados de las pruebas de estrés publicados proporcionan información útil a los bancos, la cual se incorpora en el proceso de toma de decisiones. Esta actitud es racional, ya que los bancos sobrecapitalizados respecto a su ratio de capital objetivo incurren en costos adicionales al mantener capital en exceso, lo que además resulta ineficiente; mientras que las instituciones financieras subcapitalizadas respecto a su ratio de capital objetivo incurren en riesgo de incumplimiento y quedan expuestas a recibir penalizaciones por parte del regulador, lo que incrementará el costo de capital adicional que necesitará el banco para cumplir con los mínimos exigidos por el regulador.

Nuestras conclusiones ayudan a los reguladores a centrar sus esfuerzos de regulación sobre los bancos que muestran perfiles de riesgo que tienden a recibir resultados más negativos en este tipo de prueba de estrés y también ayudan a entender el perfil de riesgo de los bancos que utilizan estrategias de gestión de riesgo de modificar su estructura de capital después que los resultados de las pruebas de estrés se dan a conocer.

La tercera conclusión de la tesis doctoral muestra que las pruebas de estrés realizadas por la European Banking Authority juegan un rol disciplinario en las instituciones financieras de la Unión Europea, ya que las lleva a ajustar su ratio de capital actual a su ratio de capital objetivo.

Cuarta conclusión: Las instituciones financieras de los mercados emergentes (América Latina) ajsutan sus ratios de capital en forma diferente a las instituciones financieras de los mercados desarrollados (Unión Europea) debido a una mayor opacidad del mercado.

Para investigar si las instituciones financieras de los mercados emergentes ajustan el Tier 1 capital ratio (T1CR, el ratio de capital ponderado por riesgo) en forma diferente al Total capital ratio (TCR, el ratio de capital a valor contable) aprovechando la mayor opacidad respecto a los mercados desarrollados (Objetivo 2) utilizamos una muestra de bancos de mercados emergentes y desarrollados con datos financieros disponibles para el período 2008-2013. La muestra de bancos de mercados emergentes incluye a los bancos de América Latina (LAC), mientras que la muestra de bancos de mercados desarrollados incluye a los bancos de la Unión Europea (UE). Encontramos evidencia de ajuste diferente de la estructura de capital en los bancos de la UE y LAC: los bancos de la UE ajustan su T1CR y TCR en conjunto mientras que los bancos de LAC los ajustan de manera diferenciada.

Como T1CR y TCR se calculan siguiendo diferentes políticas, políticas de Basilea y las normas contables respectivamente, concluimos que los bancos de LAC siguen estrictamente estas reglas para calcular sus ratios de capital basados principalmente en la normativa de Basilea y la información contable porque no hay otra información disponible a considerar en el cálculo debido a la mayor opacidad en el mercado de LAC, geenrada en parte por la ausencia de pruebas de estrés en el sector financiero. Por el contrario, los bancos de la UE cuentan con información adicional en un mercado más transparente y ajustan sus ratios de capital de acuerdo con esa información adicional y no en la información contable. Concluimos entonces que las instituciones financieras de EU utilizan el T1CR como TCR en forman indistinta para tomar decisiones sobre su estructura de capital y el nivel de rieso a asumir, mientras que las

instituciones financieras de LAC utilizan ambos ratios en forma diferenciada en su proceso de toma de decisiones.

La cuarta conclusión de la tesis doctoral muestra que las instituciones financieras de los mercados emergentes, que son más opacos, ajustan en forma diferenciada el ratio de capital calculado en base a los activos ponderados por su riesgo respecto al ratio de capital calculado en base a los activos totales, mientras que las instituciones financieras de los mercados desarrollados los ajustan en forma conjunta.

Quinta conclusión: Las instituciones financieras de los mercados emergentes (Amércia Latina) presentan ratios de capital mayores que las instituciones financieras de los mercados desarrollados (Unión Europea), pero son más riesgosas.

Nuestros resultados muestran que los bancos de América Latina (LAC) estan sobrecapitalizadas mientras que los bancos de la Unión Europea (UE) están descapitalizados en relación con su capital objetivo, ya sea medido como Tier 1 capital ratio (T1CR, el ratio de capital ponderado por riesgo) o como Total capital ratio (TCR, el ratio de capital a valor contable). Por otra parte, el nivel de riesgo actual (medido como el ratio entre activos ponderados por su riesgo sobre activos totales) promedio en las instituciones financieras de LAC (90,10%) está cercano a su nivel objetivo (91,70%) mientras que en EU el nivel de riesgo promedio actual (64,10%) está por encima del objetivo (55,40%).

En base a estos resultados concluimos que las instituciones financieras de LAC presentan niveles de capitalización superiores a las instituciones financieras de EU, pero sin embargo, el nivel de riesgo asumido por las primeras es muy superior al asumido por las segundas. Esta conclusión, analizada en forma conjunta con la conclusión anterior nos permite entender que el mayor riesgo moral de desvío de riesgo lleva a las instituciones financieras de LAC a asumir

mayores niveles de riesgo que las instituciones financieras de la EU, en parte por la mayor opacidad de los mercados financieros y porque la crisis del 2008/2009 impactó en forma más leve en LAC que en la EU, lo que permitió a las instituciones financieras de LAC tener un acceso más rápido al capital que el que tuvieron las instituciones financieras de la EU.

Las partes interesadas del sector financiero en LAC, en especial los reguladores, deben tener en cuenta nuestras conclusiones, ya que el nivel de capitalización de las instuciones financieras de LAC respecto a las instituciones financieras de EU es en promedio un 15% superior, mientras que el nivel de riesgo asumido es un 41% superior en las primeras respecto a las segundas. Esta situación muestra una debilidad de las institucions financeiras de LAC ante un potencial escenario de crisis financiera.

La quinta conclusión de la tesis doctoral muestra que las instituciones financieras de los mercados emergentes presentan mayor nivel de capitalización en relación a las instituciones financieras de los mercados desarrollados, pero se encuentran peor posicionadas frente a una crisis financiera ya que presentan elevados niveles de riesgo asumido.

Sexta conclusión: Las instituciones financieras de la Unión Europea con mayor cartera de créditos, con alto nivel de depósitos y que obtienen mayor renta de sus clientes emiten informe de responsabilidad social empresarial.

Para investigar el impacto del perfil de riesgos de una institución financiera sobre la propensión para emitir un informe de sostenibilidad y en la propensión a publicar un informe de sostenibilidad que contiene información de RSE específica del sector financiero de alta calidad (Objetivo 3) utilizamos una muestra de bancos cubiertos por las pruebas de estrés que la EU realizó en 2014 con información financiera disponible para el período 2011-2013. Nuestros resultados indican que las instituciones financieras con menor riesgo

de capital, riesgo de liquidez superior (mayor cartera de créditos), una mayor sensibilidad al riesgo de mercado y una mayor rentabilidad en el negocio bancario tienden a emitir un informe de responsabilidad social empresarial (RSE).

Basados en estos resultados concluimos que las instituciones financieras que presentan una mayor cartera de créditos y un mayor número de depostiantes enfrentan mayores demandas de sus clientes para presentar una actitud socialmente responsable debido a la mayor visibilidad que tienen en los mercados, lo que las lleva a emitir un informe de responsabilidad social empresarial. Adicionalmente, debido a que estas instituciones financieras también presentan un alto nivel de rentabilidad, no tienen limitaciones financieras para emitir un informe de responsabilidad social empresarial.

Los informes de responsabilidad social empresarial son utilizados entonces por las instituciones financieras europeas con un número significativo de clientes para satisfacer sus demandas de información, lo que puede ser interpretado como una estrategia comunicacional que puede ser llevada a cabo porque tienen los fondos disponibles para hacerlo, ya que son instituciones financiera rentables.

La sexta conclusión de la tesis doctoral identifica el perfil de riesgo de las instituciones financieras de la Unión Europea que emiten un informe de responsabilidad social empresarial.

Séptima conclusión: Entre las instituciones financieras de la Unión Europea que emiten un informe de responsabilidad social emprearial, las que son menos rentables y aseguran el informe con un auditor no Big 4 revelan información de responsabilidad social empresarial específica del sector financiero de mayor calidad.

Adicionalmente, los resultados de la tesis doctoral muestran que entre los bancos que emiten un informe de responsabilidad social empresarial (RSE), los

que tienen una cartera de préstamos mayor, mayores nivel de otros pasivos que devengan intereses, y una menor rentabilidad en el negocio bancario, publican un informe de sostenibilidad que contiene información de RSE específica del sector financiero (SF) de mayor calidad. En cuanto al efecto del tipo de aseguramiento del informe de RSE, cuando PricewaterhouseCoopers (PwC) y Ernst & Young (EY) aseguran el informe y cuando no existe aseguramiento, la calidad de la información de RSE específica del sector financiero revelada es de menor calidad.

Basados en estos resultados concluimos que la contratación de un asegurador de mayor calidad como PwC y EY para llevar a cabo el aseguramiento del informe de RSE es una estrategia para reducir los costos de transacción y sirve como una protección para revelar información de RSE de menor calidad, que puede resultar menos costosa generar. Nuestras conclusiones tienen importantes implicaciones para los accionistas, inversores y analistas que pueden considerar los informes de RSE como un vehículo que usan las IF para mostrar un comportamiento ético. Las partes interesadas deben tener presente que las IF podrían utilizar la emisión de informes de RSE para mejorar su reputación y como una oportunidad para hacer más negocios, especialmente en un período posterior a una crisis financiera. Los resultados pueden ser considerados por los reguladores para evaluar si las actividades de RSE relacionados deberían ser incluídas en el sistema de calificación de riesgos CAMELS (un sistema de evaluación de riesgos específicos de las instituciones financieras).

La séptima conclusión de la tesis doctoral identifica el perfil de riesgo de las instituciones financieras de la Unión Europea que revelan información de responsabilidad social empresarial específica del sector financiero de mayor calidad en su informe de responsabilidad social empresarial.

Octava conclusión: Las instituciones financieras españolas con menor cartera de créditos, com mayor nivel de rentabilidad y que emiten informe de responsabilidad social empresarial presentan una actitud proactiva frente a las quejas de sus clientes, mientras que las instituciones financieras con mayor cartera de créditos presenta una actitud reactiva.

Para investigar la gestión de quejas en las instituciones financieras españolas mediante el análisis de la relación del perfil de riesgo de las instituciones financieras (IF) y su capacidad de respuesta a las quejas de los clientes (Objetivo 4) utilizamos una muestra que incluye las instituciones financieras españolas con información financiera disponible para el período 2005-2012. En relación a las IF que tienden a enmendar (AMEND), los resultados muestran que las IF que emiten un informe de responsabilidad social empresarial (RSE), son ineficientes (tienen estructuras grandes y complejas), tienen alta liquidez, son altamente rentables en el negocio bancario (cobran altas comisiones e intereses a los clientes) y son sensibles al riesgo de mercado tienden a enmendar los errores. En cuanto a las rectificaciones (RECTIF), los resultados muestran que las IF que emiten un informe de RSE, que tienen provisiones para deudores incobrables más bajas, y que tienen carteras de préstamos más grandes tienden a rectificar sus errores.

Estos resultados nos permiten concluir que las instuticiones financieras que tienen una mayor cartera de préstamos y los mismos son de alta calidad, esperan la decisión del regulador respecto a la necesidad de rectificar el error, y una vez que el regulador falla a favor del cliente, la institución financiera procede a rectificar el error. Las instituciones financieras que muestran una actitud socialmente responsable emitiendo un informe de responsabilidad empresarial tienden a tener esta actitud positiva frente a sus clients.

Estos resultados ayudan a los reguladores a entender las características de las IF que tienen en cuenta los informes que los reguladores emiten sobre quejas y reclamaciones de los clientes. Nuestras conclusiones también son útiles para

que los clientes puedan identificar a las IF con una mayor orientación hacia el cliente.

La octava conclusión de la tesis doctoral identifica el perfil de riesgo de las instituciones financieras españolas que tienen una actitud reactiva o proactiva frente a las quejas y reclamaciones de sus clientes.

Novena conclusión: Las instituciones financieras españolas que son ineficientes, que presentar un mayor riesgo de capital y mayor rentabilidad en el negocio bancario, que tienen una mayor cartera de préstamos y que emiten informe de responsabilidad social empresarial tienen menor reputación.

Para investigar la relación entre la reputación del banco y su perfil de riesgo (Objetivo 5) utilizamos una muestra que incluye las instituciones financieras españolas reguladas por el Banco de España, con información pública disponible para el perído 2005-2012. Nuestros resultados muestran que las instituciones que se encuentran en una posición débil de capital, con una cartera de crédito mayor, que son ineficientes, que presentan un alto nivel de rentabilidad y que emiten informe de responsabilidad social empresarial (RSE) tienen menor reputación.

Estos resultados nos permiten concluir que las instituciones financieras con riesgos de capital y liquidez altos, que son ineficientes pero que obtienen una renta significativa de sus clientes a través de los altos honorarios, comisiones y tasas de interés provocan insatisfacción entre ellos, situación que podría dar lugar a que dichos clientes decidan cambiar de banco. Adicionalmente, los resultados nos permiten concluir que las instituciones financieras que emiten un informe de RSE tienen baja reputación, lo que implica que pueden usar la emisión de estos informes como una estrategia para mejorar su reputación.

Nuestros resultados contribuyen a la literatura y al debate normativo sobre la relación entre la satisfacción del cliente, la reputación corporativa, la RSE y gestión de riesgos en el sector de servicios financieros. De hecho, los resultados muestran el perfil de riesgo de las instituciones financieras que tienen menor reputación en el sector de servicios financieros español. Nuestros resultados podrían ayudar a los reguladores a comprender el papel que la reputación tiene en el sector de los servicios financieros y podrían ser útiles para evaluar si la satisfacción del cliente y la reputación de las instituciones financieras deben ser evaluadas en el sistema de calificación de riesgos CAMELS (un sistema de evaluación de riesgos específicos de las instituciones financieras).

La novena conclusión de la tesis doctoral identifica el perfil de riesgo de las instituciones financieras españolas que tienen menor reputación.

Las conclusiones de la tesis doctoral permiten identificar el perfil de riesgo de las instituciones financieras de la Unión Europea que tienden a recibir un impacto más negativo en una crisis financiera, que utilizan los resultados de las pruebas de estrés para ajustar su estructura de capital y como este ajuste difiere en las instituciones financieras de los mercados emergentes como consecuencia de un mayor nivel de opacidad de dichos mercados. Adicionalmente, las conclusiones identifican el perfil de riesgo de las instituciones financieras euroepas que tienden a emitir un informe de responsabilidad social empresarial, de las instituciones financieras españolas que tienen una actitud proactiva o reactiva frente a las quejas y reclamaciones realizadas los clientes y el perfil de riesgo de las instituciones financieras españolas que tienen una menor reputación.