

Do legal, regulatory and institutional frameworks matter for banking performance?

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Abstract

Using data of 52 countries' banking systems from 2005 to 2011, this paper contributes by directly addressing the influence of legal, regulatory and institutional environment on banking performance. Using panel data, we find evidence of several important relationships addressing the banking performance, including: (1) a higher degree of legal protection to both lenders and borrowers positively affects the banking system's performance, 2) a positive relationship between the degree of law enforcement and performance, 3) a higher level of credit information provided by a public registry positively affects the performance, 4) neither the regulatory quality nor the control of corruption present a statistically significant effect.

1. Introduction.

The recent "subprime" financial crisis teach us how global financial markets are vulnerable enough and impact several players and investors around the globe. While developed markets were directly exposed to the consequences generated by investment banking collapse (e.g., Lehman Brothers), Banking industry in emerging markets also suffered prejudicial effect derived from systematic risk and the volatility of the stock and foreign exchange markets increased significantly (Baur, 2012). According to The World Bank, the banking industry in some regions fall in efficiency, banking competition, access to credit, among other factors.

In this sense, we hypothesize that the impact of global crisis on banking performance could be moderated by Institutional factors. A clear legal framework, efficient judicial system, solid macroeconomic equilibriums, as well as an adequate supervision, become mechanisms that attenuate the effect of channels of contagion in financial crisis events (Dungey and Gajurel, 2015). Given the aforementioned, the effect of economic fluctuations on financial systems depends, to a great extent, on the structural characteristics of each economy. Aspects such as the size of the capital market, the concentration of the banking industry, the legal and institutional system, among other variables, allow us to understand the differences observed in different countries (De la torre et al., 2012). A worsening of the economic conditions can weaken the solvency of banking systems and with them, the capacity of institutions to sustain the activity of the private sector, exacerbating the bad economic periods.

There is an extensive body of literature that has analyzed the determinants of banking performance (Short, 1979; Berger 1995 a,b; Berger and Humphrey, 1997; Demirguc-Kunt and Huizinga, 2000, among others). More recently, and as a product of the "suprime" crisis, a growing interest has been seen from both the academic world and regulatory bodies to understand the role of different mechanisms of corporate governance in diverse dimensions of banking institutions, such as

bank performance, bank risk-taking and bank lending behaviour, among others (Adams and Mehran, 2012; Ferri et al, 2014; Brown et al., 2015; Garcia-Meca et al., 2015), omitting the possible effect of the legal (legal rights and enforcement) and institutional (information sharing) environments as determinants of the performance of the banking sector. It is such the importance of this last point that, according to information published by Doing Business¹, from 2006 to date, of the 189 economies covered, a total of 330 reforms have taken place in areas related to the obtaining of credit, that is to say the degree of legal protection and the degree of information sharing, a total of 157 reforms in relation to the degree of enforcement of laws and/or contracts, 159 reforms in order to improve the processes of resolving insolvency and 147 reforms aiming to strength the legal protection of minority investors.

Motivated by the seminal work of La Porta et. al. (1998, 1999), different studies have analyzed the diverse ways in which legal systems influence the generation of resources in the capital market and economic growth. On one hand, a series of studies analyze the effect of a greater degree of information sharing in fostering greater access to credit (Pagano and Japelli, 1993; Padilla and Pagano, 1997, among others). On the other hand, some studies analyzed the relationship between the legal protection of the creditor, the strengthening of legal systems and the degree of information sharing and its effect on the volume of private credit available in an economy (Djankov et al 2007; Nketcha Nana, 2014, among others). Finally, it is important to point out the growing body of literature dedicated to studying the relationship between the degree of legal protection of the creditor and the degree of information sharing with propensity of banks to assume risks (Cole and Turk-Ariss, 2008; Houston et al, 2010, among others).

The main objective of this study is to analyze the potential effect of the variables associated with the legal and institutional environment on the performance of the banking industry. Using a sample of 52 countries for the period of 2005-2011, our results show that a greater degree of legal protection and a greater degree of enforcement positively affect the performance of the banking sector. However, our results seem to suggest a substitution pattern between these variables. In the same way, a greater degree of information sharing positively affects the performance of the banking industry. Additionally, our results suggest that a better regulatory quality and control of corruption do not influence the performance of the banking industry.

Our work contributes to the literature in three ways. Firstly, it directly addresses the role of the degree of legal protection, the degree of enforcement of the laws and the degree of information sharing in the performance of the banking industry as a whole. Secondly, the indicators employed from the legal and institutional environment come from sources such as Doing Business and World Governance Indicators which differ in several aspects from the measurements utilized in

¹ Source: <http://www.doingbusiness.com>.

previous studies². Finally, in addition to using a more recent sample, our industry-wide approach complements previous studies of banking performance carried out at the individual bank level and provides new evidence regarding the macro and industry determinants of the bank performance.

In order to reach the proposed objectives, our work is structured in five sections. Following the introduction, the second section reviews the literature related to the distinct mechanisms through which the legal system, the protection of investors and the degree of information sharing are reflected. This review gives way to the formulation of our hypotheses, as well as the presentation of variables and the methodology employed in the analysis, that make up the fourth section. In the fifth section we will present the results we obtained. The work finishes by presenting a summary of our major conclusions.

2. Literature review.

2.1 Creditor Rights

The differences between the legal protection for the investor and for the creditor are important in understanding why the financing structures of companies differ when comparing different countries. In this sense, a series of studies in the field of Law and Finance (La Porta et al., 1998,1999; Levine, 1998,1999; Djankov et al., 2007) have demonstrated the important connection between the legal systems, the legal protection of the investor and the development of capital markets, showing a positive relationship where the main role of a stronger legal framework is the empowerment of borrowers in fulfilling their contracts. This diminishes the cost of external financing, which is the principal mechanism through which an adequate legal framework favors financial development.

In terms of the legal rights of the creditors, these turn out to be more complex than those of the investors. On one hand, there could be multiple creditors with different interests, thus protecting the rights of some creditors could reduce the rights of others. On the other hand, there are two mechanisms that can be implemented when faced with the bankruptcy of a company. These are liquidation and reorganization of the company and both require different and effective legal rights. Along these lines, La Porta et al. (1998) construct an index of legal protection for the creditor, which is the most used in the Law and Finance literature to measure creditors' guarantees in the case of the bankruptcy of a firm. The index consists of four legal components: (1) whether or not there are restrictions imposed on the reorganization, such as the consent of the creditor to the reorganization or restrictions on the payment of dividends; (2) whether creditors are able to obtain possession of assets after the request for reorganization is approved; (3) whether the creditors have priority in the distribution of resources obtained through the process of liquidation; and (4) whether an agent from outside the administration of the company is in charge of directing the firm during the process of reorganization. A value of one is added to the index when

² In section 3, we discuss the advantages offered by these indicators compared to those employed in previous studies.

the laws and regulations of a specific country grant the creditor one of these faculties. Given the aforementioned, the index fluctuates from zero to four, where a greater value of the index reflects a greater degree of legal protection for the creditor. Later, Djankov et al. (2009) extended the database of the index of legal protection for the creditor to include annual data of 129 countries throughout the period 1978 – 2003.

However, in relation to the studies mentioned initially, Levine (1998) in a cross-country analysis that utilizes the index of legal protection for the creditor proposed by La Porta et al. (1998), argues that a greater soundness of the legal systems is found to be associated with a greater relationship of the rate of private credit with GDP. In this same direction, Djankov et al. (2007), with a sample of 129 countries over the period 1978 - 2003, report evidence of a positive relationship between the rate of private credit on GDP and the legal rights of the creditor, a greater legal protection and the degree of information sharing. Additionally, the authors find that the effect of a sounder legal system is more important in countries with higher incomes. At the same time, but in contrast, Acemoglu and Johnson (2005) argue that the rules and regulations that control the transactions between private individuals, that is to say borrowers and lenders, do not have an effect on the ratio of private credit over GDP. On the other hand, some studies analyze the relative importance between the rights of the creditor and the degree of enforcement on the volume of credits provided by the banking sector. Qian and Strahan (2007), argue that it is the rights of the creditor and not the degree of enforcement that would explain the volume of bank credit. Alternatively, Bael and Goyal (2009) suggest that the degree of enforcement and not the mere existence of a collection of laws is the key aspect that affects the volume of bank credit. Furthermore, and in relation to the four components of the index developed by La Porta et al. (1998), these components mainly protect the creditor dealing with the requirements of other creditors in the process of bankruptcy, but not in the event of a default of the company. In this way, Haselmann et al. (2010) study how the changes in the laws associated with legal protection for the creditor affect the offer of credit from the Banks. On one hand, the results of the authors show that a change in the laws positively affects the offer of credit and, on the other hand, it is the changes in the laws of collateral that have more effect than the changes in the laws of bankruptcy in the offer of credit from the banks. Additionally, and in contrast, Acharya et al. (2011) and, in a similar way, Vig (2013), provide evidence that as the legal protection for the creditor increases, the level of corporate debt diminishes. This contradicts the argument that greater legal protection for the creditor has a positive effect on the volume of bank credit.

Turning to the relationship between legal environment and regulatory systems with the performance of banking institutions, the empirical evidence is scarce. In this sense, Demirguc-kunt and Huizinga (1999) analyze a sample of 80 countries belonging to both developing and developed economies, finding that better contract enforcement and better legal system are related to lower levels of corruption, which is associated negatively with the performance of the banking system. Later, and in a similar way, Demirguc-Kunt et al. (2004) analyzes the influence of bank regulation, market structure and

national institutions on net interest margins and overhead costs for an international sample of 1.400 banks. The authors report that tighter regulations that inhibit the freedom of banking institutions to carry out their business (restrictions on bank entry and activities) improve the performance of bank. Moreover, the authors report that bank regulations become insignificant when controlling for institutional development indicators, and consequently, they argues that bank regulations cannot be analyzed in isolation from the institutional framework. However, Leaven and Majnoni (2005), find that better judicial system and better contract enforcement play a key role in improving the net interest margins through a diminishing of the cost of financial intermediation. In the same vein, Naceur and Omran (2011) suggest that regulatory and institutional framework seem to have an influence on the performance of banks. The authors find that corruption increases both the net interest margins and the costs of intermediation while an improvement in law and order diminishes the cost of funds without affecting the banking performance. Finally, considering that the banks are rational, they tend to grant credit in as much as they obtain equal or greater rates of return.

2.2 Information Sharing

From a theoretical point of view, the degree of information sharing plays a fundamental role in diminishing the adverse selection by banking institutions, in diminishing the moral risk and in imposing a greater discipline on borrowers.

In relation to the problem of adverse selection, Pagano and Japelli (1993) develop a model for the credit market with the objective of analyzing the role of the degree of information sharing in diminishing adverse selection. In the model, each bank possesses private information about credit quality of a determined group of borrowers. Therefore, if the banks share that information, informational asymmetries would be eliminated which would allow banks to improve the pool of selected borrowers, diminish rates of default and, as a consequence, increase the volume of credit provided by the banking sector. Additionally, the model argues that by diminishing the earnings derived from private information, the competition is increased in the credit market and that generates an increase in the volume of credit provided by the banking industry. However, and in relation to this last point, the effect on the volume of lending is uncertain. On one hand, the volume of credit provided by the banking sector can increase for a group of borrowers whose credit risk is low and, on the other hand, decrease for those who possess a higher credit risk, making the net effect uncertain.

However, and in relation to moral risk, Padilla and Pagano (1997) develop a two-period model, with the suppositions of imperfect competition and heterogeneity of the borrowers in the banking industry, where the performance of each loan depends as much on the intrinsic characteristics of each borrower as it does on his or her decision to make the effort or not. Additionally, the model assumes that the banks are able to establish long term relationships with specific borrowers, which allows them to obtain and accumulate valuable information about them. In the initial period, and as a consequence of this privileged position, the banks can obtain informational rents by raising the interest rates charged to their clients. This

increased rate of interest reduces the incentives for the borrower to make efforts to obtain a good performance, fearing that the return from these efforts will be partially appropriated by the bank through higher rates of interest charged in the future. In this way, borrowers tend to make scarce efforts and act poorly in the initial period of the model.

The banks can reduce these incentives by committing themselves, at the end of the first period, to sharing the private information of their clients and in this way causing the borrowers to improve their initial efforts. Greater competition in the banking industry as a product of more information sharing reduces the benefits for the banks in the second period, but not in the first when the banks still have private information. Consequently, a greater degree of information sharing reduces the market power of the banks and informational earnings, thus diminishing interest rates, moral risk and rates of default while increasing the volume of credit provided by the banking sector. One last benefits derived from a greater degree of information sharing is the fact that, as a product of the existence of a historical register of the financial behavior of the borrowers that is available for the banking system as a whole, borrowers tend to fulfill the payment of their financial commitments (Padilla and Pagano, 2000).

In summary, the theory shows that a greater degree of information sharing reduces the asymmetries of information, the moral risk and the rates of default and increases the incentives for the payment of financial commitments of the borrowers. As a consequence, it is logical to analyze the empirical evidence in relation to these arguments. In this way, a series of studies underpin the arguments presented previously. On one hand, Japelli and Pagano (2002) find that the volume of credit provided by the banking sector is greater and the risk of default lower in countries where there are mechanisms to encourage greater information sharing. On the other hand, Brown and Zehnder (2007), in an experimental study and in a market where there is mobility of borrowers and the relationship with the banks is not entirely feasible, show that the introduction of mechanisms that facilitate information sharing increase the rates of payment of bank debts. Brown et al. (2009), using company level data from a collection of countries in transition from Eastern Europe and the former Soviet Union, show that a greater degree of information sharing diminishes both the rates of default and the cost of credit, as well as increasing the availability of credit.

Notwithstanding the aforementioned, some studies have questioned the effectiveness of a stronger legal system in promoting the availability of bank credit, particularly in countries that do not have more developed legal systems, which would also affect the growth and economic development of them. Along these lines, studies like those of Djankov et al. (2007) and Jappelli and Pagano (2002) suggest that a greater degree of information sharing could be a substitute for a stronger legal system in terms of encouraging a greater level of available bank credit. However, evidence recently provided by Nketcha Nana (2014), does not show a pattern of substitution among the variables mentioned, to the contrary, the results

demonstrate the legal rights, the degree of enforcement, and the degree of information sharing each have an independent effect on the ratio of private credit to GDP.

Based on the empirical evidence presented, it is not possible to infer the existence of a positive relationship between the performance of the banks and information sharing.

2.3 Determinants of bank performance.

Starting from the pioneering work of Short (1979) and Bourke (1989), different studies have attempted to identify the determining principles of banking performance. According to the literature, bank performance can be analyzed at three levels. On the one hand, using bank-level data, some studies have focused on analyzing bank performance in a determined country (Berger et al., 1987; Berger, 1995; Athanasoglou et al., 2008; among others). On the other hand, and considering bank-level data once again, another group of studies has concentrated on analyzing bank performance through cross-country evidence (Molyneux and Thornton, 1992; Demircuc-Kunt and Huizinga, 2000; among others). Finally, and in a smaller number, some studies have utilized country-level data in their analysis through cross-country evidence (Hawtrey and Liang (2008), Albertazzi and Gambacorta (2009), Gelos, 2009, among others). As it to be expected, the results of the studies differ, as they consider different datasets, time periods and countries with differing characteristics at macroeconomic and banking industry levels and in legal and institutional environments.

According to the prior literature (Elyasiani and Zhang, 2015; Liang et al., 2013; Athanasoglou et al., 2008), three measurements of performance are frequently used in this type of studies; Return on assets (ROA), Return on equity (ROE) y Tobin's q (Q). These variables are generally expressed in terms of variables of the banks themselves (idiosyncratic variables), macroeconomic and banking industry factors.

In relation to the variable of the banks themselves, at least four are relevant variables in explaining bank performance: bank size, capital ratio, risk, operational efficiency (Berger and Humphrey , 1997; Pasiouras and Kosmidou, 2007; Goddard et al., 2004; Athanasoglou et al., 2008). It is important to point out the existence of other variables of the banks themselves that have been analyzed by previous studies. Among these variables we can mention the degree of diversification (Chiorazo et al., 2008), demand for deposits (Berger and Bonaccorsi di Patti, 2006) and bank age (Dietrich and Wanzenried, 2011).

In relation to the variables of the macroeconomic environment and the banking industry, the literature has identified the following variables as those that have an impact on performance. On the one hand, and in relation to macroeconomic variables, different studies argue the positive effect of economic growth (Athanasoglou et al.,2008, among others) and an inconclusive effect of both the inflation rate (Perry, 1992) and the real interest rate (Albertazzi and Gambacorta, 2009). In relation to the variables belonging to the industry, the literature has generally centered its analysis on the degree of concentration of the industry and the structure of predominant property in this type of institution. In terms of the potential

effect of the degree of concentration on the performance of the banking industry, the empirical evidence is inconclusive. Bourke (1989) and Molyneux and Thornton (1992), report that a greater degree of concentration in the banking industry positively affects the performance of the banks, which would be explained by the monopolistic returns derived from a greater market power. In contrast, studies such as Berger (1995) and Demirguc-Kunt and Huizinga (2000) find evidence of a relationship that is both negative and statistically significant among the variables in question. Additionally, variables associated with the characteristics of the financial markets of each country have also been analyzed by previous studies, although to a lesser extent. These include: capitalization of the capital market, private credit offered by the private sector and the volatility of the capital market (Gelos, 2009; Demirguc-Kunt et al. (2004); among others).

Finally, we can conclude that the extensive existing literature about the determinants of banking performance provides evidence of the effect of idiosyncratic factors of the banks, macroeconomic and banking industry factors, as well as the diverse mechanisms of corporate governance of the banks on performance. However, there is no clear evidence in relation to the potential effect of the legal and institutional environment on performance, or in relation to its potential mitigating effect when faced with the effects of the subprime crisis.

3. Development of Hypotheses

Based on the arguments already analyzed, we have developed the following hypotheses to deal with factors associated with the legal and institutional environment as well as with the regulatory system that could potentially have an impact on banking performance in a sample of 52 countries.

H1: A greater degree of legal protection is positively related to the bank performance.

H2: A greater degree of information sharing is not necessarily related to bank performance.

H3: A greater degree of enforcement positively affects the bank performance.

H4: A better regulatory system, i.e. a better regulatory quality and a better control of corruption affect positively the bank performance.

4. Sample, variables and methodology

In this section the sample employed to carry out our empirical analysis is described, along with the variables used and the methodology proposed for the study

Sample

In a first stage, the empirical analysis begins with the identification of a collection of countries, classified as developed economies, emerging economies and developing economies, located in different continents that have the available information in the three sources used in the present study. On one hand, the information related to the characteristics of the financial systems of each country was obtained from the latest revised version of *Financial*

Development and Structure Dataset (Demirguc-Kunt *et al.* 2013)³. On the other hand, the macroeconomic statistics of each country were obtained from the information available in *World Development Indicators* from the World Bank. Finally, the information of the legal and institutional environment was obtained from both *Doing Business* and *Worldwide Governance Indicator*. We have obtained an unbalanced panel of 364 observations belonging to 52 countries for the period 2005-2011.

Variables

Based on the prior literature, we have considered as the dependent variable the return on assets (ROA). The inclusion of ROA as a measure of performance is justified as this measure is a proxy for the ability of the banks to manage their assets in such a way as to be able to generate benefits (Garcia-Meca *et al.*, 2015, Liang *et al.*, 2013, among others).

As control variables, and based on those proposed by the literature, we have incorporated a collection of variables that are specific to the banking industry and the macroeconomic environment. In relation to the variables of the banking industry itself, we have incorporated as a competition proxy the variable (BankConc) that represents the degree of concentration in the banking industry. To control for financial structures of the economies, and for the level of their financial development, we have incorporated both the relationship between the capitalization of the stock market over GDP (StockMarketcap) and the relationship between private credit through bank deposits over GDP (PrivateCredit). In both indicators, a higher value would give us information of a market more oriented towards the stock market or the banking industry (Beck and Levine, 2002). Regarding the level of the banking sector development, some studies suggest a negative impact on banking performance, arguing that a larger size of the banking sector would increase its competitive environment, which would eventually drive the performance of banks downward. However, and regarding the stock market development, there is not a consensus about its effect on the profitability of the banking industry, in the sense that a higher stock market development could increase the competition within the banking industry or improve its performance in some stages of the economic development across countries (Demirgüç-Kunt and Huizinga, 1999; Ben Naceur and Omran, 2011). Considering the importance of savings deposits for the banking institutions, we have incorporated a proxy variable of the demand for deposits (BankDeposit) which reflects the business opportunities and represents a stable source of financing for banks. Moreover, being aware that deposit insurances are offered in several countries as part of a financial system safety net to promote stability, and due to this fact deposits are considered

³ This database updated the indicators provided in its last version of April 2013. To ensure a higher quality and consistency, all indicators have been recalculated over the period 1960-2011. The database provides 31 indicators regarding the size, activity, and efficiency of financial intermediaries and markets, as well as related to the financial stability for a set of 203 countries. For more details see Čihák *et al.* (2012).

as a source of agency problems (Berger, 1995), we find it interesting to analyze its possible effect on the performance of banks. In order to capture the instability or the insolvency risk of the banking industry, we have included the variable (Z-Score) which indicates the number of standard deviations that a banking industry's rate of return (ROA) has to drop below its expected value before the banking system suffers an insolvency situation. In other word, if ROA follows a normal distribution, Zscore represents the inverse of the probability of insolvency. Therefore, a higher Z-Score indicates a more stable banking industry (Beck et al.,2009). Finally, we have incorporated the volatility of the stock market which, according to Albertazzi and Gambacorta (2009), captures the evolution in the level of uncertainty and general risk in a specific market. In relation to the group of macroeconomic variables frequently cited in the banking literature that potentially have an impact on the banks performance (Athanasoglou et al., 2008; Perry, 1992), we have included the annual rate of both inflation (Inflation) and growth of GDP (GGDP).

Regarding the group of variables belonging to the legal and institutional environment, which is the central objective of our study, we have incorporated the next set of variables.

On one hand, the index of the strength of legal rights (LegalRights) measures the degree to which a country protects the borrowers and lenders with the aim of facilitating credit activity. The construction of this variable (LegalRights) considers 8 factors related to legal rights in terms of the collateral laws and 2 aspects associated with the bankruptcy laws. The first eight factors bear a close relationship with the rights of the borrower and only the last two factors refer to the rights of the bank. A value of 1 is assigned to each one of them when they are present in the laws of each country and zero when they are not. The advantage of this variable, compared to that used in prior studies, is that it considers the legal protection of both the lender and the borrower, and does not focus solely on the legal protection of the creditor. This is critical in relation to the banking industry as little legal protection for the borrower could inhibit access to credit (Nketcha Nana, 2014).

Additionally, we have incorporated as a proxy variable for the degree of enforcement of the laws or contracts, i.e. to measure the degree of efficiency of the judicial systems in resolving a legal dispute in a specific country, the "RuleofLaw" variable. This variable captures the agents' perceptions of the extent to which the rules of a society are abided by, and particularly the quality of contract enforcement, property rights, and the courts, among other aspects. In other words, this variable reflects the risk of expropriation of private property and the risk that contracts may be ignored. At this point, it is important to point out that previous studies regarding to the banking literature frequently have employed as a proxy variable for legal enforcement the index proposed by Laporta, Lopez-De-Silanes, and Shleifer (2006), which measures basically the effectiveness of the minority shareholders rights.

On the other hand, and in relation to the institutional environment which is measured by the level of credit information sharing, we have incorporated two proxy variables: “CreditRegistry” and “Credit Bureau” which reflect the number of individuals or companies registered in a private (CreditRegistry) and public (Credit Bureau) agency in relation to their credit information (unpaid debts, outstanding credits, and so on) both current and over the last five years. Consequently, these variables reflect the effect of several regulations adopted by countries in order to facilitate the accessibility and the quality of the credit information available in a certain banking industry, whose objective is the support of decision making in the granting of credit. It is important to point out that prior studies have generally employed a *dummy* variable equal to 1 for the existence of a register of public or private credit and zero in its absence, ignoring the adult population’s coverage of which a country maintains credit information by either a private or a public agency. Finally, and aware that the aforementioned legal and institutional arrangements cannot be analyzed in isolation from the regulations present in each country, we have incorporated two proxy variables in order to capture the efficiency of the regulatory systems, The “RegulQuality” measures the perceptions of the ability in which a certain government develops and implements sound policies and regulations to encourage private sector development. In a similar sense, the “ControlCorrupt” reflects the perceptions related to the extent to which public power is exercised for private benefits. All of the variables previously mentioned are found summarized in Table 1⁴.

Table N°1: Definition of variables

<i>Abreviation</i>	<i>Variable</i>	<i>Definition</i>
Dependent variable:		
ROA	Return on Assets	Average Return on Assets (Net Income/Total Assets). Source: Demirgüç-Kunt et al. (2013)
Independent variables:		
<i>Macroeconomic and industry-specific characteristics:</i>		
GGDP	GDP growth	Annual percentage growth rate of gross domestic product. Source: World Development Indicators
Inflation	Inflation rate	Current period inflation rate. Source: World Development Indicators
BankConc	Bank Concentration	Assets of three largest banks as a share of assets of all commercial banks. Source: Demirgüç-Kunt et al. (2013).
StockMarketcap	Stock Market Capitalization	Value of listed shares to GDP. Source: Demirgüç-Kunt et al. (2013)
Z-Score	Bank z-score	Z-score is estimated as $(ROA+equity/assets)/sd(ROA)$; $sd(ROA)$ is the standard deviation of ROA.. Source: Demirgüç-Kunt et al. (2013).
BankDeposit	Bank Deposits to GDP	Demand, time and saving deposits in deposit money banks as a share of GDP Source: Demirgüç-Kunt et al. (2013)
PrivateCredit	Private Credit to GDP	Private credit by deposit money banks as a share of GDP Source: Demirgüç-Kunt et al. (2013)
StockMarketVol.	Stock Market Volatility	Standard deviation of a country stock index divided by average return .

Legal, Regulatory and Institutional Variables

Legal:

⁴ Appendix 1 exhibits the list of countries that compose our sample and a summary of the main variables related to the legal, judicial and institutional environment.

LegalRights	Strength of Legal Rights Index	It measures the degree to which collateral and bankruptcy laws protect the rights both of borrowers and lenders in order to facilitate lending. The index ranges from 0 to 10, with higher scores indicating that these laws are better designed to expand access to credit. Source: http://www.doingbusiness.com .
RuleofLaw	Rule of Law	Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Source: http://www.govindicators.org
<i>Institutional:</i>		
CreditRegistry	Public Credit Registry Coverage	Number of individuals and firms listed in a public credit registry with current information on repayment history, unpaid debts, or credit outstanding. The number is expressed as a percentage of the adult population. Source: http://www.doingbusiness.com .
CreditBureau	Public Credit Bureau Coverage	Number of individuals or firms listed by a private credit bureau with current information on repayment history, unpaid debts, or credit outstanding. The number is expressed as a percentage of the adult population. Source: http://www.doingbusiness.com .
<i>Regulatory:</i>		
RegulQuality	Regulatory Quality	Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Source: http://www.govindicators.org
ControlCorrup	Control of Corruption	Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Source: http://www.govindicators.org

5. Methodology.

To analyze the potential effect of variables related to the legal, judicial and institutional framework on banking performance, we propose equation (1) which takes the following for:

$$ROA_{i,t} = \beta_0 + \beta_1 Legal_{i,t} + \beta_2 Institutional_{i,t} + \beta_3 Regulatory_{i,t} + \sum_{k=1}^8 \delta_k Control_{i,t} + \varepsilon_{i,t}$$

where $Legal_{it}$ represents the proxy variables of the legal environment measured either by “LegalRights” and/or “RuleofLaw”, $Institutional_{it}$ represents the proxy variable of information sharing, i.e. institutional environment, measured by “CreditRegistry” or “CreditBureau”, $Regulatory_{it}$ reflects the proxy variables of the efficiency of the regulatory systems which is measured either by “RegulQuality” or “ControlCorrup”. Finally, $Control_{i,t}$ is the vector of the control variables regarding the macroeconomics and industry-specific determinants. All the aforementioned variables have been detailed previously in table 1 and the subindices i and t indicate the country and year respectively.

Additionally, we define banking performance at the level of each country banking's system, treating each banking system in terms of a single agent (Hawtrey and Liang, 2008). Consequently, equation (1) is estimated employing the two-way fixed effects OLS data panel regressions. We have selected this estimation method since data panel allow us to control by individual heterogeneity of each country. That is, data panel regressions control by unobservable heterogeneity and give us more reliable estimations than other OLS estimations procedures (Arellano, 2003; Baltagy 1995).

1. Results

1.1 Descriptive Analysis

Panel A of Table 2 presents the mean, standard deviation and maximum and minimum values utilized in our analysis. Panel B in Table 2 presents the mean (standard deviation) of the segmented variables according to the superior and inferior third of ROA. Additionally, panel B of Table 2 shows the t statistics for the differences in means, in order to analyze the existence of significant differences in each one of the variables employed in the analysis. In accordance with panel B of Table 2, generally the banking systems with greater profit on their assets present both higher rates of economic growth (GGDP) and higher levels of inflation (Inflation). In relation to the variables of the industry itself, we can observe that the banking systems with lower performance present, on average, higher rates of capitalization of the stock market over GDP (StockMarketcap). Additionally, the markets with lower performance exhibit higher rates of private credit provided by the banking sector in relation to the GDP (PrivateCredit) as well as a greater concentration in the banking industry (CONC). On another aspect of the banking industry, a higher stability in the banking systems (ZSCORE), as well as a lower volatility of the stock markets (SMKVOL), is associated with higher rates of return on assets in the banking industry. In synthesis, the aforementioned suggests that a higher rate of economic growth (GGDP), a lesser volume of private credit granted by the banking sector and higher stability in the banking industry (ZSCORE) accompany a higher performance of banking systems.

In relation to the variables of the legal and regulatory environment, we can observe, on one hand, that the banking systems with lower banking performance (ROA) are accompanied both by a higher degree of legal protection (LegalRights) and by a higher degree of enforcement (RuleofLaw). On the other hand, we can observe that the banking systems with better performance, on average, possess regulatory systems that, on average, exhibit lower both regulatory quality and control of corruption.

Regarding the variables of the institutional framework, specifically the degree of information sharing, significant differences are observed only in the credit information maintained by a private agency (CreditBureau) between those banking systems belonging to the upper or lower third of banking performance. On average, the number of individuals or companies registered in a private bureau (CreditBureau) with respect to their credit history of the last five years is highly

superior for the banking systems that, on average, possess a lower banking performance. In the case of the credit information maintained by a public registry (CreditRegistry), despite the not significant difference, on average, a higher degree of credit information maintained by a public registry is accompanied with lower banking performance.

Table N°2: Panel A reports the mean, standard deviation and minimum and maximum values for the total sample. Panel B reports the mean (standard deviation) and the test of difference of means for each one of the variables used in the segmented analysis for the upper and lower thirds of banking performance.***, **, *, 99,95,90 percent of confidence respectively.

Panel A: Description of the total sample						
Variables	Obs	Mean	Std Dev.	Minimum	Maximum	
ROA	358	1,02	0,90	-2,90	3,81	
GGDP	356	3,17	3,92	-14,07	12,11	
Inflation	352	3,94	3,07	-4,50	18,32	
StockMarketcap	342	61,89	58,23	0,37	431,46	
PrivateCredit	328	79,73	55,56	4,41	237,58	
BankConc	356	65,42	17,64	22,17	100	
BankDeposit	339	67,64	49,30	4,32	302,74	
Z-Score	364	15,32	9,83	-4,56	45,25	
StockMarket Vol.	307	1,49	0,67	0,17	3,99	
LegalRights	364	5,93	2,28	2	10	
Credit Registry	364	9,52	15,63	0	81,3	
Credit Bureau	364	46,52	36,65	0	100	
RuleofLaw	364	0,63	1,01	-1,67	2,00	
RegulQuality	364	0,78	0,83	-1,61	1,99	
ControlCorrup	364	0,67	1,06	-1,41	2,55	
Total Obs.						
Panel B: Descriptors for the upper and lower thirds of return on assets						
	<i>ROA</i>		<i>Diference of means</i>			
	<i>Upper third</i>	<i>Lower third</i>	<i>Upper third Vs lower third (Statistic t)</i>			
GGDP	5,41 (3,44)	-0,26 (3,60)	8,81***			
Inflation	6,88 (4,82)	2,35 (1,94)	6,47***			
StockMarketcap	35,91 (31,08)	66,59 (54,14)	-3,73***			
PrivateCredit	31,19 (18,95)	131,51 (56,21)	-13,34***			
BankConc	60,23 (17,85)	71,56 (15,71)	-3,59***			
BankDeposit	29,96 (13,88)	91,38(33,50)	-13,35***			
Z-Score	12,82 (7,19)	9,29 (7,51)	2,65***			
StockMarket Vol.	1,53 (0,49)	1,87 (0,58)	-3,15***			
LegalRights	4,93 (2,13)	6,46 (2,26)	-3,86***			
Credit Registry	11,73 (11,44)	12,17 (21,98)	-0,14			
Credit Bureau	32,79 (28,09)	48,92 (40,39)	-2,61***			
RuleofLaw	0,24 (0,90)	0,94 (0,96)	-4,17***			
RegulQuality	0,48 (0,78)	0,95 (0,84)	-3,26***			
ControlofCorrup	0,33 (0,96)	0,89 (1,03)	-3,08***			

1.2 Explanatory Analysis

The estimations for the contrast of our proposed hypotheses are collected in Table 3, which shows the results for the different estimations carried out by equation (1), considering separately in each estimation (columns 1 to 7) the individual and interacted effects of the variables related to the legal and institutional environment. In this step, we only analyze the potential effect of “LegalRights” as a proxys of legal environment. In this way, the effect that the control variables linked to both the macroeconomic environment and the banking industry have is analyzed, and especially the effect of the variables of the legal and institutional environment with respect to our variable of performance measured as the return on assets (ROA).

Table N°3: Determinants of Banking Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Total	Total	Total	Total	Total	Total	Total
LegalRights	0.092** (2.655)			0.071** (2.060)	0.095*** (2.757)	0.074** (2.12)	0.094*** (2.87)
CreditRegistry		0.013* (1.954)		0.011* (1.721)		0.009 (1.40)	
CreditBureau			0.002 (0.347)		0.002 (0.463)		0.002 (0.04)
LegalRights* UpCreditRegistry						0.073* (1.62)	
LegalRights* UpCreditBureau							0.041 (1.38)
BankConc	-0.020*** (-4.686)	-0.020*** (-5.198)	-0.020*** (-4.628)	-0.020*** (-5.140)	-0.020*** (-4.666)	-0.020*** (-5.11)	-0.020*** (-4.54)
StockMarketcap	0.001 (0.373)	0.001 (0.285)	0.001 (0.517)	0.001 (0.211)	0.001 (0.343)	0.001 (0.20)	0.001 (0.24)
Z-Score	0.029** (2.467)	0.028** (2.475)	0.028** (2.434)	0.028** (2.472)	0.028** (2.431)	0.029** (2.48)	0.030** (2.46)
GGDP	0.040* (1.61)	0.041* (1.63)	0.042* (1.673)	0.038 (1.495)	0.040* (1.62)	0.037 (1.46)	0.041* (1.61)
Inflation	0.074** (2.246)	0.069** (2.066)	0.076** (2.234)	0.070** (2.099)	0.075** (2.235)	0.070** (2.12)	0.076** (2.24)
BankDeposit	0.010* (1.67)	0.010* (1.741)	0.009 (1.565)	0.010* (1.766)	0.010* (1.64)	0.010* (1.71)	0.01* (1.65)
PrivateCredit	-0.020*** (-4.953)	-0.021*** (-5.344)	-0.020*** (-4.847)	-0.021*** (-5.329)	-0.020*** (-4.957)	-0.021*** (-5.28)	-0.020*** (-4.84)
StockMarket Vol	-0.089 (-1.060)	-0.083 (-0.978)	-0.073 (-0.822)	-0.091 (-1.068)	-0.084 (-0.948)	-0.091 (-1.07)	-0.082 (-0.93)
.t1						0.147** (2.28)	0.134*** (3.05)
Observations	241	241	241	241	241	241	241
R-squared	0.578	0.578	0.574	0.580	0.578	0.581	0.580
Number of c	41	41	41	41	41	41	41
Country FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES

t1 is a test of lineal restrictions of the joint significance of “LegalRights” variables and separately with the interacted variables “LegalRights*UpCreditRegistry” (column 6) and “LegalRights*UpCreditBureau” (column 7) Robust t-statistics in parentheses*** p<0.01, ** p<0.05, * p<0.1

On one hand, and in relation to the group of macroeconomic variables used (GGDP, Inflation), the results presented in the columns in table 3 show a relationship that is both positive and statistically significant between economic growth (GGDP) and banking performance (ROA), which is in concordance with that shown by previous studies in the sense that greater economic growth favors the demand for credit, diminishes the provisions for credit losses and favors incomes for

activities different to the banking core business. In other words, it favors the incomes coming from diversification which includes activities such as trading and securitization, brokerage commissions, advisory fees and so on (Flamini et al. (2009), Goddard et al. (2004), among others). In a similar way, the inflation rate present in an economy is related in a positive and significant way with bank performance. This result supports the argument that banks are capable of anticipating inflation expectations and adjusting their income before their cost, and consequently, improving their performance (Demirgüç-Kunt et al., 2004; Perry, 1992).

In relation to the control variables of the banking industry itself, and with respect to the variables associated with the financial development of each country (PrivateCredit and StockMarketcap), the results presented in table 3 show a statistically significant relationship only between private credit and the performance of the banking industry. On one hand, it is observed that the effect of private credit provided by the banking sector through bank deposits (PrivateCredit) on the performance of the banks (ROA) is negative and statistically significant. This would suggest that at a greater depth of the banking credit market lower rates of profitability on assets would be expected (ROA), as a product of greater competition and offer of credit in the banking industry, which is in line with the arguments of Naceur and Omran, (2011), Demirguc-kunt and Huizinga (1999), among others. On the other hand, the capitalization of the stock market (*STMKTCAP*) shows a positive but not statistically significant influence on the performance of the banks. However, this positive effect would support the argument that those banks who operate in countries with developed stock markets face better customers in terms of credit risk, which implies lower credit losses and, thus, obtain a better performance (Naceur and Omran, 2011; Naceur and Goaied; 2008). Along the same lines, the income coming from activities that are distinct to the credit activity itself, incomes other than interests, or from diversification would be favored by a better performance from the stock market, which would positively affect the performance of the banks.

Additionally, with respect to the degree of competition through the degree of the banking market concentration (BankConc), we can observe a negative and statistically significant effect in all the estimations presented in table 3. This result supports the arguments primarily provided by Berger (1995) and supported by several papers later, in the sense that once incorporated the quality of the legal and institutional environment, a higher degree of banking concentration negatively affects the performance of banking institutions. Based on Berger (1995), our results support the argument that a higher operational efficiency will mean that banks pass their lower costs on to their customers through lower loan interest rates and higher deposit interest rates, which eventually will negatively affect the net interest margin and consequently the banking performance. Another factor frequently cited in the banking literature, the demand for deposits (BankDeposit) represents a business opportunity for banking institutions. Our results, a positive and statistically significant effect, are in line with the

argument that customer deposits represent a stable and cheaper financial resource compared to other alternatives of financing (Trujillo-Ponce, 2013; Berger & Bonaccorsi di Patti, 2006).

Regarding the influence of the stability of the banking industry on its performance, table 3 exhibits a positive and statistically significant effect. These results reveal the importance of a stable and solid banking industry, which reflect both the quality of the regulatory framework and the role of the supervisory authorities. A lower probability of insolvency from the banking institutions, translated into a higher Z-Score, would allow them access to lower cost of funds which would entail a higher net interest margin and, consequently, a higher return on assets. In a similar way, an important aspect to also analyze is the possible effect of the degree of uncertainty of the capital market, and the economy as a whole, on the performance of the banking industry. Given the aforementioned, the “StockMarketVol” variable, which captures the volatility of the local stock market, presents a negative but not statistically significant relationship on ROA. However, the negative relationship could be explained by a greater level of provisions for credit losses, product of a greater degree of uncertainty present in the economy, that affects the performance of the banks negatively.

However, and in relation to the main variables of our study, we can appreciate that on incorporating the degree of legal protection (LegalRights) separately, we can observe in column (1) a positive and statistically significant effect on ROA, which maintains the rest of the estimations in Table 3. This effect is coherent with our hypothesis H1, in the sense that a greater degree of legal protection both for the borrower and the lender would permit, on one hand, the obtaining of better collaterals, the forcing of the payment of the debt, the diminishing of the amount of unpaid debts and the increase in the rates of recuperation of loans conceded in the event of a default of the borrower. In addition, due to the negative consequences for the administration of a company to face financial difficulties, product of a greater degree of legal protection where the creditors can even force a change in the administration during the process of reorganization of a firm, the borrowers may present less willingness to take risks (Acharya, Amihud and Litov; 2009).

For its part, and regarding our first proxy variable of information sharing, column 2 allows us to observe a positive and statistically significant relationship between the coverage of a public credit registry (CreditRegistry) and the performance of the banks (ROA). Specifically, a higher degree of credit information related to individuals and firms maintained by a public registry affects banking performance positively. This relationship is not coherent with our hypothesis H2 and, based on the related literature, this result allow us to infer that a greater degree of information sharing improves the group of borrowers to whom credit is given (Pagano and Japelli, 1993), improves and diminishes the moral risk of the borrowers (Padilla and Pagano, 1997), as well as imposes greater discipline and better payment behavior in borrowers (Padilla and Pagano, 2000). However, and regarding our second proxy variable, column 3 shows us a positive but not significant relationship between the coverage of a private credit bureau (CreditBureau) and the performance of the banks (ROA). These results maintain in

estimation including simultaneously the effect of both the degree of legal protection and, separately, each proxy variable of information sharing already analyzed (columns 4 and 5). At this point, our results give us some hints related to the relevance of a public registry over a private bureau in maintaining a record of credit information, both current and past of individuals and firms, which supports the banking institutions in their lending process. Finally, these results are in line with Pagano and Japelli's (1993) predictions in terms of eliminating informational asymmetries and diminishing adverse selections, that would allow banks to improve the pool of selected borrowers, diminish rates of default and, consequently, encourage banking performance.

Additionally, in column 6 we can observe that the interacted of the degree of legal protection (LegalRights) and the upper third of coverage of a public credit registry (UpCreditRegistry) possess a positive and statistically significant effect on ROA, which indicates that the degree of the effect of legal protection is even more pronounced at higher levels of credit information maintained by a public registry. Moreover, we ran the test "t1" of lineal restrictions in order to contrast the importance of the sum of coefficients for "LegalRights" and for the crossed variable of the upper third of coverage of a public credit registry (LegalRights*UpCreditRegistry). The test confirms that the sum of the coefficients is positive and statistically significant, and thus the net effect of the degree of legal protection at higher levels of credit information maintained by a public registry is better performance. However, and as we could anticipate from column (3) and (5), column (7) shows us that the interacted of the degree of legal protection (Legal Rights) and the upper third of coverage of a private credit bureau (UpCreditBureau) possess a positive but not statistically significant effect on ROA.

All in all, it is important to mention that results revealed by table 3 regarding the variables linked to the legal and institutional environment, affect the performance of banks in three ways. Firstly, the degree of legal protection both for lenders and borrowers has a positive and statistically significant effect on banking performance. Secondly, in spite of the positive effect of the existence both a public or private agency of credit information, it is the degree of credit information maintained and provided by a public agency which possesses a significant influence on the performance of the banks. Finally, there is a complementary relationship between the strength of legal rights and the credit information available on the performance of banks. Specifically, the effect of the degree of legal protection is even more pronounced at higher levels of credit information maintained by a public registry.

In this point, it is interesting to include in the analysis the potential effects the degree of law enforcement and some dimensions related to regulatory systems efficiency, which shape the legal and institutional environment where banking institutions carry out both their operations and relationships with customers, regulatory authorities and supervisory entities, among other agents. In this sense, the quality of contract enforcement (RuleofLaw), policies and regulations that aim to promote private sector development (RegulQuality) and the control of corruption (ControlCorrup) are dimensions that

potentially could be related to either the strength of legal rights or the degree of credit information available in a certain economy as well affect the banking performance. In effect, table 4 shows the results for the different estimations carried out by equation (1), including the aforementioned variables, which were previously defined in section 4. In effect, and in order to complement the analysis of the effect of the degree of legal rights, columns (1) to (3) show the effect of the proxy variable for the degree of enforcement (RuleofLaw). In a similar way, Columns (4) to (7) report the effect of the variables related to the efficiency of regulatory systems. Specifically, columns (4) and (5) show the effect of the regulatory quality and columns (7) and (8) report the effect of the control of corruption. On the one hand, columns (1) to (4) allow us observe a positive and statistically positive relationship between the degree of enforcement and the performance of banks. The results of our estimations show us that when the influence of the degree of enforcement on ROA is analyzed separately (column 1), the size of the estimated coefficient is 0.789 and statistically significant at 5 percent. However, when the degree of legal protection is incorporated in the analysis, the effect of “RuleofLaw” falls both in size (0,733) and in statistical significance (significant at 10 percent), and in contrast with the results exhibited by table X, the effect of “LegalRights” it is not statistically significant. The aforementioned would suggest a substitution pattern between the degree of laws enforcement and the degree of legal protection both of borrowers and lenders and that the key variable that affects the performance of the banking institutions is the degree of enforcement and not the mere existence of a collection of laws. Along the same lines, when we analyze the effect of the degree of enforcement on ROA but controlled by the degree of credit information maintained by a public registry, column 3 shows a positive and statistically significant effect on ROA of both variables. Finally, when the influence of the degree of legal protection, the degree of enforcement and the degree of credit information maintained by a public registry are included simultaneously in the same regression, column (4) displays the same results exhibited by previous columns. In conclusion, a better enforcement system, i.e. a lower risk that contracts may be unfulfilled and/or a lower risk of expropriation of private property affect positively, among other aspects, affect positively the performance of banking institutions.

Table N°4: Determinants of Banking Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Total	Total	Total	Total	Total	Total	Total	Total
RuleofLaw	0.789**	0.733*	0.755*	0.726*				
	(2.01)	(1.78)	(1.89)	(1.75)				
Legal Rights		0.049		0.028		0.048*		0.039*
		(1.47)		(0.92)		(1.76)		(1.73)
Credit Registry			0.012**	0.011*		0.011*		0.013*
			(2.04)	(1.81)		(1.73)		(1.95)
RegulQuality					0.381	0.357		
					(1.39)	(1.28)		

ControlCorrup							0.354	0.387
							(1.28)	(1.30)
BankConc	-0.019***	-0.019***	-0.019***	-0.019***	-0.020***	-0.020***	-0.019***	-0.019***
	(-4.40)	(-4.45)	(-4.88)	(-4.86)	(-4.74)	(-5.11)	(-4.72)	(5.27)
Stock Marketcap	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.32)	(0.26)	(0.06)	(0.05)	(0.30)	(0.20)	(0.41)	(0.06)
Z-Score	0.030**	0.031**	0.030***	0.030***	0.026**	0.029**	0.028**	0.028**
	(2.67)	(2.64)	(2.66)	(2.64)	(2.51)	(2.48)	(2.47)	(2.46)
GGDP	0.039*	0.039*	0.036	0.036	0.039*	0.037	0.038*	0.034
	(1.68)	(1.66)	(1.56)	(1.54)	(1.70)	(1.46)	(1.68)	(1.47)
Inflation	0.073**	0.073**	0.067**	0.068**	0.073**	0.070**	0.074**	0.068**
	(2.233)	(2.32)	(2.11)	(2.14)	(2.23)	(2.12)	(2.27)	(2.05)
BankDeposit	0.009	0.009*	0.009*	0.009*	0.009	0.010*	0.008	0.009
	(1.58)	(1.65)	(1.74)	(1.75)	(1.60)	(1.71)	(1.38)	(1.55)
PrivateCredit	-0.021***	-0.021***	-0.022***	-0.022***	-0.020***	-0.021***	-0.020***	-0.021***
	(-5.76)	(-5.81)	(-6.32)	(-6.31)	(-5.18)	(-5.28)	(-4.99)	(-5.58)
StockMarket Vol	-0.082	-0.087	-0.088	-0.090	-0.076	-0.091	-0.065	-0.072
	(-1.05)	(-1.11)	(-1.12)	(-1.14)	(-0.89)	(-1.07)	(-0.78)	(-0.86)
Observations	244	244	244	244	244	244	244	244
R-squared	0.583	0.584	0.586	0.586	0.576	0.581	0.576	0.583
Number of c	41	41	41	41	41	41	41	41
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Robust t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Turning to the potential effect of the variables related to the efficiency of the regulatory systems, columns (5) to (8) show that neither the regulatory quality nor the control of corruption presents a statistically significant effect. However, these estimations continue displaying a positive and statistically significant effect both of the strength of legal rights and the degree of credit information maintained by a public registry, which in the case of the degree of legal protection differs when the contract enforcement is included (Columns (2) to (4)). Finally, and regarding the variables to the banking industry and the macroeconomic environment, the results exhibited in table 4 remains equal to those reported in the initial estimations presented in table 3.

Conclusions

The financial crisis of 2007 exposed a series of failings throughout financial markets and generated new lines of research to comprehend the way in which banking institutions function. In response to this, a series of studies have focussed on analyzing the influence of corporate governance of the banking institutions both in their responsibility in unleashing the subprime crisis and in diverse aspects of banking institutions, performance amongst them. However, variables associated with the legal and institutional environment are key when it comes to analyzing the dimensions of corporate governance

(Claessens and Yurtoglu, 2012). The objective of this study was to analyze the potential impact of the variables associate with the legal, regulatory and institutional environment. Our results show the significant effect of the degree of legal protection, the degree of enforcement of the laws and the degree of information sharing on the performance of the banks. This is of vital importance for governmental entities that are responsible for maintaining a legal and institutional framework that promotes the development of financial markets and economic growth.

On one hand, our results make clear the importance of a legal framework that strengthens the legal protection for both creditors and borrowers. A greater degree of legal protection allows banking systems to improve the quality of the collaterals, improve the rates of recovery of debts in the event of a default of the borrower and even force the payment of the debt, which positively affects the banking performance. Furthermore, a greater degree of legal protection can impose a greater degree of discipline on the borrower, i.e. the administration of the company, which is then reflected in less willingness to assume risks when faced with the possibility of a change of administration in case of default.

Additionally, a legal framework that favors legal protection of both creditors and borrowers must also provide the necessary conditions to facilitate the enforcement of laws and / or contracts. Along these lines, our results show that a greater degree of enforcement of contracts and / or laws positively affects the performance of the banks. Furthermore, our results seem to suggest a substitution pattern between the degree of legal protection and the degree of laws enforcement.

On the other hand, an institutional framework that promotes the existence of public rather than private entities for the registry and availability of credit information, for both companies and individuals, would have a positive effect on the performance of the banking industry. This is in line with Paganoi and Japelli's (1993) predictions in terms of eliminating informational asymmetries and adverse selections. Furthermore, this result is sustained by improving and diminishing the moral risk of borrowers (Padilla and Pagano, 1997) as well as by imposing greater discipline and better payment behavior on companies and / or individuals (Padilla and Pagano, 2000),

Additionally, and regarding the efficiency of the regulatory systems, neither the regulatory quality nor the control of corruption present a statistically significant effect on banking performance.

Finally, the entities responsible for the regulation and supervision of the banking sector must focus their interest as much in promoting a collection of good practices of corporate governance in banking institutions as in providing an adequate legal and institutional framework in order to give stability and confidence to the banking system, which is critical for the good functioning of the economy as a whole.

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