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Patterns of Commercial Bank Regulatory Regimes: A Theoretical Framework

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Introduction

There is little reason to doubt that the "safety and soundness" of the banking system is fundamental for socio-economic development.[1] What can be doubted is that state authorities either know how to best mitigate, or always strive to minimize the unfavorable effects of financial instability and resource-allocation inefficiencies. Although the economic theory of regulation (Stigler, 1971; Peltzman, 1976) points to the fact that regulation might serve private- rather than public-interests, little is known about how political and institutional variables shape bank regulatory regimes. In particular, no developed body of theoretical or empirical work has demonstrated why regulation-makers choose the regulations they do in the particular case of the commercial bank industry. This paper is a modest first attempt to provide an analytical framework to understand how and why commercial bank regulatory regimes vary across countries. In combining a micro-level analysis of the regulation maker's[2] choice to supply state intervention in the form of restrictions on the structure and behavior of banks with a macro-level analysis of the institutions, the demand-side interests, and the economic circumstances that influence these choices, it provides some testable empirical hypotheses about the politico-economic determinants of bank regulatory regimes. It finds that even though conventional approaches to regulation generally do a poor job in explaining such a variation, different types of electoral systems and technological advances constitute important determinants of bank regulatory regimes. Proportional representation electoral systems and improvements in information and technology increase the likelihood of regulators choosing a "prudential" type of regulatory framework.

The vulnerabilities of the banking system have long been recognized. By the very nature of the services provided, banks possess a relatively fragile capital structure, which is subject to various risks, including bank runs. According to modern theories of financial intermediation, one of the most important functions banks perform is that of liquidity creation and insurance. By retaining only a fraction of the deposits, financial institutions are able to offer loans, generate

[1] Banks perform a variety of functions, which facilitate economic growth (Levine, 1999; Rajan and Zingales, 2001). These functions include: provision of liquidity insurance (Bryant, 1980; Diamond and Dybvig, 1983); access to the payment system (Gorton and Pennacchi, 1990); transforming assets in terms of their denomination, quality, and maturity; "delegated monitors" (Diamond, 1984; Holmstrom and Tirole, 1996) or the vehicle of information. See Bhattacharya and Thakor (1993) and Freixas and Rochet (1997) for excellent reviews of the literature on financial intermediation.

[2] Although the range of actors who can participate in the process of banking regulation is wide, in this paper, I consider the supplier of regulation (i.e., regulation-maker, regulator, legislator, policy-maker, or government) as a unitary actor. Such a simplification is made in the interest of parsimony.

liquid assets, and make profits. Similarly, by issuing demand deposits and other securities, banks can provide insurance for individuals who face random external shocks to their consumption patterns at different points in time (Gorton and Pennacchi, 1990). The problem is that banks never know – with certainty – how many borrowers will default or how many depositors will need to make withdrawals at a given point in time. If many borrowers happen to default simultaneously or if a large number of depositors decide to withdraw cash at the same time, the bank will face a situation of capital deterioration and risk not being able to repay all of the depositors. At the extreme, the bank will become insolvent and a bank run will ensue. Ultimately, contagion of bank failures will create a systemic crisis in the economy.

Moreover, banks operate in a world of asymmetric information between lenders and borrowers, which may lead to two basic problems: adverse selection and moral hazard. Adverse selection occurs because low-quality borrowers are the ones who are the most willing to pay high interest rates on loans. In this case, banks may select the least desirable type of borrowers. Similarly, moral hazard is aggravated due to the fact that banks operate within a public safety net (i.e., a form of public insurance in case of banking crises). With the certainty of publicly provided emergency funds, bank owners have the incentive to take on riskier activities (with higher probabilities of default), transferring some of the risk of their asset portfolios to taxpayers.

The challenge for governments is, thus, to adopt measures that will allow for efficient allocation of resources, while reducing the incentives for bankers' excessive risk-taking (reducing the probability of banking crises). Indeed, the rationale for current regulations and the last decade of reforms is to allow for healthy competition in banking while improving the discipline of bankers – the so-called "prudential regulation" of banks. However, it is not clear that governments have always adopted this posture. Politico-institutional constraints often stand in the way of implementation of a prudential regulatory scheme (Kane 1989). Policymakers are susceptible to the influence of different groups that seek to influence the design of regulations and their implementation (in other words, governments are targets of "regulatory capture"). Regulators work in an environment of incomplete information about the entities being regulated. Regulation-makers themselves have their own preferences – sometimes referred to as ideology – about what the objectives of banking regulatory policy should be.

Under what conditions can we then expect policymakers to choose prudential regulatory frameworks? This paper addresses this question and it proceeds as follows. Section II defines the concept of bank regulation and presents a typology of bank regulatory regimes (BRRs). Section III examines the traditional approaches to regulation, highlighting their strengths and weaknesses when applied to the specific case of the banking industry. Next, I offer an analytical

framework for understanding cross-country variation in BRRs, while section V discusses the empirical tests of such a framework. The last part of the paper concludes.

Faulty bank regulation and supervision have been at the root of various financial disturbances that have had costly effects for both developed and developing countries. In Latin America, for instance, major financial crises have occurred with increased frequency since the early 1980s. The experiences of banking system collapses in Argentina in 1981 and 2001, Chile in 1981, Mexico in 1995, and Venezuela in 1994 are just a few examples of how disruptive and costly banking crises are to the government and society in general.[3] A theory of bank regulation that could shed some light on the politico-economic sources of bank regulatory policy would, thus, be very welcome!

The Concept of Bank Regulatory Regimes: Definition and Ideal Types

Part of the challenge of identifying patterns of commercial bank regulation is to sketch out how bank regulatory schemes vary across countries. In this paper, I make a distinction between *bank regulation* and *bank regulatory regimes* (BRRs). While the former is the *activity* of a legal authority (i.e., the regulator) to influence, direct, or intervene in the structure and the conduct of banks, the latter is the *outcome* of such an activity given certain economic conditions, domestic/international institutional context, and pressures from the demand-side of regulation.[4] In order to see how the two concepts are related, we can start by considering regulation a dynamic process with at least two stages.

First, the regulation-maker defines the boundaries of a regulatory regime by enacting a set of primary and secondary legislation,[5] constituting the *initiation* phase of the regulatory process. Then, during the *implementation* stage, bank supervisors are responsible for making sure that the

[3] For a good survey of causes and costs of banking crises in Latin America, see Hausmann and Rojas-Suarez (1996); Hoggarth, Reis, and Saporta (2001); and Lindgren et al (1996).

[4] It is not possible to observe regulation directly; all that is observable is the outcome – i.e., the regulatory regime. As a result, one needs to work backwards and infer the determinants of regulation from a given regulatory regime.

[5] Primary legislation includes all banking *laws*, *decrees* or any other norm that requires the approval of Congress and/or the President. Secondary legislation involves those rules and norms enacted directly by the Central Bank and/or the agency responsible for banking supervision.

requirements stipulated by the norms and laws are followed.[6] The implementation of existing rules and norms produces a significant amount of information and patterns of strategic behavior on the part of bankers, which reflect the effectiveness of these norms. This information in turn feeds back into the elaboration of a new set of regulations.[7] Although these two stages are intrinsically related, they are analytically distinguishable. The entire regulatory process is schematically represented in Figure 1.

Insert Figure 1 Here

If we accept that regulation is indeed a process, it follows that regulatory regimes are constantly changing and evolving.[8] These modifications range from small "fine-tunings" in the legislation to major financial reforms revamping various elements of a BRR. As a result, one can think of a bank regulatory regime as a set of banking laws and norms embodying the preferences of the regulation-makers given their ideology, the pressure from domestic interest groups, institutional features, and international demands. More specifically, it is useful to conceptualize ideal types of regulatory regimes. Such a typology would comprise two continuous regulatory dimensions concerning – the banking industry's *structure* and its risk-management *behavior* – the intersection of which would determine four main ideal types: "cost-padding," "laissez-faire," "prudential," and "over-protective" regulatory regimes.

The first continuum (dimension 1) relates to the rules directed at organizing the structure of the banking industry. It ranges from a minimal to a maximum degree of state restriction and it affects the level of competition (and efficiency of the financial services) within a given banking system. For instance, during the period of Import Substitution Industrialization (ISI), most Latin American countries adopted regulations that inhibited high levels of competition in the banking industry. Not only did the state prohibit foreign bank participation but it also restricted the existence of universal banks (i.e., banks that can engage in securities, insurance, and real estate activities). The result was a highly concentrated banking system, in which a small number of

[6] While the initiation phase has traditionally been referred to as "regulation," the implementation stage constitutes what is commonly known as banking "supervision." In this paper, I use the terms regulation and supervision interchangeably.

[7] The notion of a regulatory process is similar to what Kane (1981) has called the "dialectic" of bank regulation.

[8] This evolutionary process justifies the need for a less static and a more dynamic theory of regulation applied to the banking sector.

domestic banks held a monopoly power in the industry. More recently, within a context of neoliberal economic reforms and technological advances, a process of "deregulation" has taken place, and most of the barriers to entry into banking, foreign participation, and banking activities have been removed. In general, then, higher levels of restrictions and state intervention on the structure of the banking system the lower the level of competition (and efficiency) in the industry. Examples of indicators for measuring the restrictions on the structure of the banking system include: the requirements for entry into banking (i.e., "fit and proper" tests and foreign bank participation), the restrictions on banking activities, and the requisites for banks' ownership.

The second continuum (dimension 2) includes government-imposed restrictions that constrain bankers' tendencies to engage in risky behavior. Without state intervention to reduce the asymmetric information problems between bankers and their clients as well as between governments and bankers, the building of safe and sound banking systems is impaired. Some governments have been rather successful in establishing minimum capital requirements, external auditing schemes, explicit liquidity guidelines, as well as important information disclosure standards. Other countries have struggled to put in place regulations that would reduce moral hazard, adverse selection, and the free-rider problems. Here, these various regulatory indicators fall under the rubric of restrictions on risk-management behavior and it ranges from low to high, depending on who bears the costs of maintaining financial stability. On the one hand, a regulatory framework that imposes the costs of system stability onto bankers is classified as having "high" restrictions on behavior. On the other hand, "low" restrictions on behavior forces taxpayers and bank clients to bear the burden of financial stability by making them pay for banks' bailouts and higher prices of financial services.

Interesting to note is the inherent trade-off between these two dimensions. As governments deregulate the structure of the banking industry allowing for higher levels of competition, the more pressing it will be for these governments to enact regulation geared towards risk-management behavior. To understand why this is the case we need to remember that the main objective of a bank's portfolio management is to strike a balance between liquidity and income (i.e., profitability). Because the rate of return on assets tends to vary inversely with their degree of liquidity, bankers must decide on the distribution of their assets, which will provide both liquidity and income. In highly competitive environments, where markets set interest rates, profits tend to be smaller, creating a perverse incentive for bankers to sacrifice higher levels of liquidity for assets that can yield higher returns and profits. As a result, to the extent that the government deregulates the structure of the banking industry in favor of higher levels of market competition, one can expect more pervasive risk-taking behavior on the part of bankers. To avoid

systemic liquidity problems, the government is, thus, compelled to intervene and manage such risky behavior.

The combination of the two regulatory regime dimensions yields the four ideal types of bank regulatory regimes shown in Figure 2.

Insert Figure 2 Here

Quadrant I represents *cost-padding* regulatory regimes. By imposing restrictions on structural features that reduce the level of competition among financial institutions, governments decrease the operating costs incurred by bankers, and as a result, profits (as reflected in interest rates spreads) tend to be higher in this type of regime.[9] By paying more for loans and receiving less for deposits, banks' clients bear the costs of financial stability. If any bank fails, it is the taxpayers' money that will provide for bail-outs, and consequently, a low-level behavior type of regulation is observed. These regulatory schemes are not necessarily unstable because the very existence of high profits can inhibit bankers' excessive risky-behavior (Rosenbluth and Schaap, 2003; Hellman, Murdock, and Stiglitz, 2000).[10]

Quadrant II represents a *laissez-faire* type of regulation, in which the high levels of competition (due to low restrictions on structure of the banking system) create perverse incentives for bankers to take on more risks without the counterbalancing forces of a high type of behavior regulation. In these circumstances, the moral hazard problem is intense, and not surprisingly, this is the regulatory arrangement that is the least likely to guarantee the health and stability of the financial system, being especially susceptible to banking crises.

In a *prudential* type of regulation (Quadrant III), governments have displaced the regulations on entry into banking, ownership, and activities undertaken by banks, and as a result, high levels of competition are observed. Concurrently, regulations restricting the ability of bankers to conduct transactions with high probabilities of default have been enacted. The moral hazard and adverse selection problems are better mitigated in this type of regulatory regime, and as a result, banks' clients and taxpayers do not have to bear the burden of maintaining financial stability.

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[9] This type of regulatory regime is equivalent to what Rosenbluth and Schaap (2003) call "profit-padding" regulation.

[10] Another reason why this type of regulatory regime is not necessarily unstable is the strictness of "fit and proper tests" for entry into banking. The imposition of stringent entry requirements makes it more difficult for non-experienced, low-capitalized individuals to become bank owners, thus, increasing the stability of the system.

Finally, Quadrant IV – the *over-protective* regulatory regime – is one in which although the government has not liberalized the structure of the banking system, it has put in place restrictions that make bankers' internalize the costs of their excessive risks. This is a case of over-protective (or excessive) government intervention because the low levels of competition do not justify the high levels of restrictions on banks' risky behavior, which make bankers bear the costs of stringent capital, external auditing, and provisioning requirements.

Using the Barth et al (2006) survey of bank regulation and categorical principal components analysis, I categorize 151 countries according to that typology.[11] Figure 2 shows the cross-country variation in BRRs in 2003 and table 1 lists which countries fall under each ideal type. Thirty-two countries are categorized as having a cost-padding bank regulatory regime, of which six are Latin American countries. Similarly, forty countries fall under the laissez-faire type of regulation, including seven countries from Latin America. While the least number of countries present a prudential type of BRR (thirty-one countries in total, and only Argentina is the Latin American representative), the most popular regulatory regime is the over-protective, with 48 countries in total, and 11 countries from Latin America.

Insert Table 1 Here

Traditional Approaches to Regulation

What explains these different forms of government intervention in the banking sector? Four main approaches have traditionally been employed to understand government involvement in the economy.[12] Although these approaches were not developed for the specific case of bank regulation, it is worth assessing their possible strengths and weaknesses when trying to understand variation in BRRs. Until the 1960s, the *positive economic approach* (or the "public-interest theory") was the prevalent theory to clarify when industries would most likely be regulated. It saw state intervention as a mechanism to correct for market failures – such as recurring banking crises, the existence of monopolies, fraudulent accounting, and inequality in accessing financial markets (Mishan, 1969; Musgrave, 1959). According to this approach, governments should maximize social welfare (defined in this case as the soundness of the

[11] See Appendix 1 for a description of the survey questions used in the categorical principal components analysis.

[12] In this paper, the terms "regulation," "intervention," and "involvement" of the state in economy are used interchangeably.

banking system) and serve the "general public's interest" (i.e., poorly informed consumers of financial services and civil society broadly speaking).

Although this approach has been recently resurrected to provide the rationale for the establishment of prudential regulatory standards such as capital adequacy requirements and/or deposit insurance schemes (Kaufman and Kroszner, 1997; Laffont 1994), the public-interest view of regulation can be challenged on both theoretical and empirical grounds. First, the approach assumes that governments are not only willing but they are also capable of addressing the problems related to market failures. In many circumstances, however, regulators do not have the material instruments or the skills necessary to conduct their job adequately (Shleifer and Vishny, 1998). This is a particularly pressing problem in Latin America, where bank supervisory agencies have difficulties finding the resources necessary to recruit, train, and retain qualified personnel. Second, a welfare-maximizing perspective cannot explain a large part of the evolution of regulatory patterns in sectors other than banking (Stigler, 1988), fact that makes one question its explanatory power in the specific case of the banking industry. Finally, many types of restrictions (such as prohibition of foreign participation in the banking system) do not maximize public welfare (defined as maintaining the soundness of the banking system), but rather, enhance the profitability of certain powerful groups within society. In general then, the public-interest approach to regulation does not do a good job in explaining variation in BRRs.

In trying to improve the leverage of the public-interest models of regulation, a second line of research has focused on political factors to explain when governments are most likely to regulate certain industries. Specifically, the private-interest theory of regulation (or the "rent-seeking/capture theory of regulation") characterizes regulatory schemes as the result of interest group pressures (Stigler, 1971; Becker, 1983; Peltzman, 1976). Because regulation has important wealth distributional effects, different groups within society have an incentive to influence policymakers' regulatory decisions. This approach assumes that regulators maximize political support (i.e., votes), and that well-organized and resourceful groups are better able to persuade regulation-makers to enact policies favorable to their interests. The form and degree of regulation is thus endogenous, being supplied to the extent that the regulated industry demands it.

Examples of the application of the private-interest approach to the financial system in general and the banking industry in particular have been – for the most part – related to the regulatory experience of the United States. Kroszner and Strahan (1999), for instance, find that the interests of the losers' and winners' from the de-regulation of financial institutions' branching restrictions help explain the timing of regulatory change in various U.S. states. Kroszner and Strahan (2000) analyze voting behavior in the U.S. Congress to show that intra-industry (small

vs. big banks) and inter-industry (banks vs. insurance companies) conflicts as well as legislators' ideology play a significant role in the passage of the 1991 Federal Deposit Insurance Corporation Improvement Act. Similarly, Stratmann (2002) find evidence that PAC contributions from banks, investment banks, and insurance companies determine changes in roll-call voting behavior in the enactment of the 1998 financial services reform that repealed the 1933 Glass-Steagall Act. Most recently, Heinemann and Schuler (2004) and Barth et al. (2006) can be cited as the pioneer studies to empirically test the importance of the private-interest approach in explaining bank regulation and supervision across countries.

The difficulty with the private-interest approach to regulation is four-fold. First, its contention that regulatory policies are solely the result of interest group pressures is problematic. In order for an interest group to obtain its preferred regulatory policy, it must be certain that voters elects its ideal legislator, who needs to be willing to implement the kind of policy supported by the interest group as well as capable of ensuring that other legislators, the Executive, and regulators do not deviate from the desired policy outcome. All of that hinges upon the characteristics of political institutions, which not only aggregate groups' preferences but they also determine the extent to which individual legislators can affect the policy status quo (Shepsle and Weingast, 1981). By not recognizing that institutions matter, the private-interest approach ignores various steps in the regulatory process, which are crucial for understanding policy outcomes.

Second, because the approach assumes that regulators are solely concerned with private gains, it does not allow room for regulators to respond to incentives other than campaign finance, votes, and promises of employment in the private sector. In many circumstances, however, regulatory behavior is based on specific policy objectives that are neither the product of a maximization of general public's welfare or the outcome of interest group pressures.[13] Restrictions on reserve requirements are a case in point. Besides being an instrument of bank regulation, it is one of the classic tools of monetary policy. In a context of economic recession, governments might want to conduct an expansionary monetary policy. By decreasing the levels of reserve requirements, monetary authorities can increase money supply and affect the real sector (with an increase in aggregate demand). In this case, the regulatory outcome (i.e., low levels of reserve requirements) is neither the product of interest group pressure nor the outcome of regulators' concern with financial stability.

[13] Just to reiterate, general welfare is here defined as maintaining the soundness of the banking system (i.e., financial stability).

This point highlights a broader issue. What exactly should be the objective of bank regulation? As Bhattacharya, Boot and Thakor (1998) point out this is one of the unresolved questions regarding financial regulation. Governments are generally concerned not only banks' solvency, but also with monetary targets, real output growth, the level of competition in various sectors, and securing resources for social policies. Because the instruments normally used to achieve financial stability can also be employed to pursue other policy purposes, there are important trade-offs that need to be considered when designing bank regulatory schemes.

Indeed, the four ideal types of regulation present distinct policy objectives. While the relaxation of government restrictions in both dimensions of bank regulatory regimes – such as the case of a laissez-faire BRR – aims at promoting the *efficiency* of the banking system, in an over-protective regulatory regime, the imposition of stringent regulation on these dimensions is geared towards the *stability* of the banking system. In prudential regulatory regimes, the main objective is to *protect consumers* of financial services (especially, small depositors), and in cost-padding regimes, bank regulatory goals are largely mixed with *broader social goals* such as the promotion of home-ownership or the direction of credit to a certain sector of the economy. In neither case, the private-interest approach provides any guidance as to what the primary goal of bank regulation should be.

A third challenge to the capture theory of regulation has to do with the way the theory has evolved, which makes rejection of the null hypothesis basically impossible (i.e., the theory is unfalsifiable). The empirical information that is available to identify the most influential interest groups is also the information used to test the theory. For a non-tautological test of the theory, measures of political influence before the regulatory policy is implemented should be correlated with ex-post measures of benefits derived from regulation. The collection of these measures, however, has proven a daunting empirical task, posing a major challenge to researchers.

Finally, some authors have appropriately highlighted the fact that the private-interest theory of regulation cannot account for the world-wide movement towards deregulation and less government intervention in the economy since the late 1980s (Peltzman, 1989; Noll, 1989; Kroszner and Strahan, 1999). Within the purview of the capture theory, deregulation would only occur if there was a decrease in the available rents originated from regulation. However, in the case of banking, it is not clear that major changes in the availability of rents or in the balance of power of interest groups led to a common process of state retrenchment.[14]

[14] For instance, although Mexico and Venezuela had highly concentrated banking industries during the 1990s and a very important "banquero elite," different paths of banking regulatory reforms are observed. In Mexico, we observe movements of deregulation and reregulation, while in Venezuela the process was implemented more swiftly.

The third set of explanations for the patterns of regulation and state intervention underscores the importance of institutions (Irwing and Kroszner, 1999; McCubbins, Noll, and Weingast, 1987). This approach examines how different institutional arrangements aggregate preferences and affect policy outcome. In the specific case of bank regulation, Rosenbluth and Schaap (2003) constitute the cutting-edge work that emphasizes the role of institutions in determining patterns of regulation. They argue that a nation's electoral rules (which may create incentives for politicians to court either the median voter or select groups of voters) shape the nature and extent of regulations. Their main finding is that all else being equal, single-member districts (centripetal systems) privilege the kinds of issues that most people care about, whereas various types of proportional representation (centrifugal systems) create log rolls among smaller groups with more intense preferences. They suggest that a higher level of prudential regulation, which ensures the protection of consumers of financial services, is more likely in centripetal systems.

Although at the theoretical level, I find Rosenbluth and Schaap's (2003) argument convincing, I have two main objections to their study. First, they do not look at legislators' preferences as a possible determinant of patterns of banking regulation. Second, I find their proxy measure of regulation – interest rate spread – faulty. As Brock and Rojas-Suarez (2000) show the determinants of interests rates spreads are rather disparate from those of regulation per se. In order to improve upon their study, not only do I bring in the supply-side of regulation and consider the effects of its interaction with interests, and institutions, but also I propose a new direct measure of bank regulation.

Finally, the last element within the set of possible determinants of financial regulation concerns the role of ideology (Kalt and Zupan, 1984; Hall, 1993).[15] A number of recent works have demonstrated the power of ideas in explaining economic policy choices (Appel, 2000; Murillo, 2002). From this perspective, policy outcomes are the product of a set of ideas and beliefs adopted by government agents (individual legislators, parties, or factions). Yet, the role of ideology has not figured prominently in regulatory studies. The main critique of this approach is that it is extremely difficult to measure the independent effects of ideas and beliefs. If they do indeed exist, it is argued, they are usually enmeshed in interests and other factors that also affect patterns of regulation. For this reason, although a possibility, ideological explanations of bank

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[15] Here, the term "ideology" simply refers to a belief system "advocating a particular pattern of social relationships and arrangements, and/or aimed at justifying a particular pattern of conduct, which its proponents seek to promote, realize, pursue or maintain" (Hamilton, 1987, p. 36).

regulation have not been tested empirically, and works analyzing the effect of ideological factors on financial regulatory regimes are – to my knowledge – nonexistent.

Of course, there are other possible determinants of bank regulatory regimes such as macroeconomic conditions, technological advances, and international financial institutions' pressures (e.g., coming from the World Bank and the International Monetary Fund). Even if they do not get at the politics behind the enactment of different regulatory schemes, these variables may be correlated with patterns of financial regulation, being considered proximate causes of bank regulation. As a result, although the effect of these variables has not been systematically tested, I attempt to incorporate their influence in the analytical framework presented in section IV.

All in all, it is important to emphasize that even though these four approaches suggest some explanations for why governments intervene in the economy in the first place, they do not offer a theory of how and why governments regulate commercial banks' structure and behavior. At most, these traditional approaches draw attention to different plausible factors determining patterns of financial regulation; yet few works have attempted to gauge their relative importance (one exception is Krozner and Strahan in Mishkin 2001). Thus, further theoretical and empirical work in political economy integrating these strands of the literature would be extremely valuable for understanding the creation, implementation, and change of financial regulation.

Towards a Unifying Approach to Bank Regulatory Regimes

In an attempt to take the first step towards a political economy approach to bank regulation, I propose an analytical framework that can bring together the four traditional approaches and the proximate causes of regulation discussed in Section III. Such a framework is an adaptation of a model used to examine the political economy of trade policies (Lavergne, 1983; Lederman 2005) and it serves to evaluate (and hopefully predict!) the levels of restrictions imposed by governments on the two identified dimensions of bank regulatory regimes. The framework focuses attention on the supply-side of banking regulation and it views BRRs as the product of regulators' decision regarding the level of state restrictions to be imposed on both the structure and the behavior of banks, based on the *perceived* costs and benefits of regulation. The marginal costs and benefits of regulation for the regulation-maker are, in turn, determined by self-

interest and/or national welfare considerations.[16] Interest-group pressures, ideology, economic conditions, and domestic/international institutions are incorporated into the framework as factors that affect regulation-makers' perceptions, and/or limit the options available to them.

From the regulation-maker's point of view, the costs of regulation are determined by the expected losses in national welfare produced by non-prudential types of regulation. These include any efficiency losses generated by the introduction of governmental barriers to the optimal allocation of resources as well as any depositors' losses created by problems of liquidity and solvency of individual banks. If the regulatory policy triggers systemic banking crises and government bail-outs, then the resulting aggregate income losses would also increase the costs of a non-prudential type of regulation.

Conversely, the benefits of regulation would include any potential *economic* welfare gains that can be attained through regulation, **and** any *political* gains that the regulation-maker can achieve from the imposition of restrictions on banks' behavior and structure, including a longer tenure in office.[17] Examples of the former include increased credit for the housing sector or increased resources to fund government initiatives for which regulation-makers chose not to raise taxes or borrow. The latter encompass political campaign contributions provided by bankers or any other form of political support. The intersection of marginal costs (MC) and marginal benefits (MB) constitutes the equilibrium level of restriction the regulation-maker chooses to impose on banks' structure and behavior (see Figure 3).

Insert Figure 3 Here

It is interesting to note the difference in the slopes of the MC and MB curves in each of the dimensions of banking regulatory regimes. While in dimension 1, the MB curve has a negative slope, in dimension 2 the same curve has a positive slope, implying that total benefits perceived by the regulator rises with level of restriction, at an increasing rate. The same occurs with marginal costs. In dimension 1, the MC's slope is positive; in dimension 2, the MC's slope is negative, meaning that total costs increase with restrictions, at a declining rate.

[16] The distinction between policy-makers' self-interest in re-election and the interests of regulators who do not try to use regulation to promote directly their re-election has been emphasized by a few authors such as Baldwin (1989) and Schneider (2004).

[17] By considering both economic and political benefits, the framework here presented is able to adjudicate the insights from both the public- and the private-interest approaches to regulation. In other words, the framework is first step towards a unifying approach to banking regulation.

Within this framework, shifts in the MC and MB curves are a function of the ideology held by the policy-maker, the domestic and international context, the economic environment, as well as the pressures exerted by interest groups (i.e., the demand-side pressures). Suppose, for instance, that the occurrence of a banking crisis changes the regulator's perceptions. The crisis makes the regulation-maker realize that the costs of regulation are higher than she previously believed. Such a realization is represented by a shift upward of the MC curve (on dimension 2), and the result is an increase in the level of restrictions on the behavior of banks. In Figure 3, this increase is represented by the horizontal distance between points F and G. Alternatively, a regulator could potentially change her perceptions of the marginal benefits of prohibiting foreign participation in the banking industry as a result of the so-called "Washington Consensus," which emphasized financial liberalization reforms. This change in perception would provoke a shift down of the MB curve (on dimension 1), and the resulting change in the level of restrictions is shown as the horizontal distance between points A and B (in Figure 3).

If we apply this framework to consider the partial effect of the various potential political and economic factors influencing regulation-makers' perceptions, then it is possible to elaborate some testable hypotheses regarding what types of shifts in the MB and MC we expect to see given observable characteristics of these factors. Table 2 summarizes these expectations.

Insert Table 2 Here

When evaluating the effects of the requests of the demand-side of regulation on regulators' perceptions, it is interesting to consider intra-industry rivalries, inter-industry conflicts, as well as pressures coming from consumers of banking services. Intra-industry rivalries occur when different types of commercial banks (e.g., big vs. small banks or public vs. private banks) present diverging preferences regarding the level of restrictions on either of the two dimensions of BRRs. For example, smaller banks have historically battled to keep or extend restrictions on the structure of the banking system in order to protect themselves against competition from larger and more efficient commercial banks (Flannery, 1984; Jayaratne and Strahan, 1998). Not only have small banks preferred to have foreign bank participation prohibited, but they have also favored to limit the existence of universal banks. At least on dimension 1 of BRRs, there has been an important conflict of interest between larger/more efficient banks and smaller/less efficient ones. Thus, the expectation is that regulators' perceived costs of maintaining high levels of restrictions on dimension 1 increase when the importance and pressure of bigger banks is high. Conversely, because the costs of high levels of restrictions on

dimension 2 are incurred by small and big banks alike, both types of commercial banks would rather see fewer government restrictions on dimension 2. As a result, according to the analytical framework here presented, laissez-faire bank regulatory regimes are more likely to occur when big banks are relatively important. In Section V, the level of concentration (CONCENT) of the banking system – defined as the assets of the three largest banks as a share of assets of all commercial banks – is used as a proxy to measure the relative importance of big banks.

Alternatively, an intra-industry rivalry could take place between public and private banks. When the majority of banks are in the hands of government, chances are that bank regulation will serve broader social-political goals. That is, governments are more likely to use banks as a fiscal resource or as a tool to achieve political support. In this case, restrictions on dimension 1 of BRRs that would guarantee government ownership and limit competition in the banking sector would increase regulation-makers' perceived benefits. Given that any restrictions on dimension 2 impose costs of maintaining financial stability onto bankers, we expect to observe a cost-padding BRR when the relative importance of public banks is high, measured by the fraction of the banking system's assets in banks that are 50% or more government owned (PUBBANKS).

Inter-industry rivalries can also affect the regulation-makers' perceptions regarding the benefits and costs of regulation. A number of countries impose restrictions on whether or not commercial banks can sell stocks and insurance. Nonbank financial institutions (that are specialized in selling stocks and insurance) would prefer to see high levels of restrictions on dimension 1 of regulatory regimes in order to avoid greater participation of commercial banks in the distribution of stocks and insurance. They would also prefer stringent regulation on dimension 2 not only to ensure financial stability but also to impose the costs of stability onto potential competitors. Not surprisingly, the theoretical expectation of the analytical framework is that over-protective BRRs are more likely to occur when the importance of nonbank financial institutions is relatively high. In the empirical tests of the theoretical hypotheses, two alternative measures of the strength of nonbank financial institutions are employed: (1) stock market capitalization to GDP (STOCK), and (2) nonlife insurance premium volume as a share of GDP (INSNONLIFE).

Still considering the requests coming from the demand-side of regulation, it is possible to evaluate the impact of the political clout of consumers of banking services (i.e., depositors and borrowers). When the influence of consumers of banking services on policymakers is high, prudential types of regulatory regimes (which are geared towards the protection of these consumers) are more likely to be enacted. The problem is that such an influence is only rarely empirically observed because consumers of financial services suffer from important collective

action and free-riding problems (Dewatripont and Tirole, 1999). As a result, I expect intra- and inter-industry rivalries to be relatively more important in affecting regulators' perceptions than the pressure coming from consumers of financial services. In this paper, the two proxies for the importance of consumers of financial services include (1) the amount of private credit provided by deposit banks to GDP (PRIVCRED) and (2) the level of domestic credit provided by the banking sector (DOMCRED).

The expectations regarding the impact of domestic political institutions on regulation-makers' perceptions follow Rosenbluth and Schaap's (2003) findings and are highlighted in Table 2. Centripetal (i.e., plurality, single-member district) electoral systems privilege the preferences of consumers of financial services, and as a result, promote prudential bank regulatory regimes. Conversely, centrifugal (proportional representation) electoral systems allow log rolls among smaller groups, and consequently, cost-padding regulatory regimes are more likely. Empirical measures of electoral systems (PLURALITY) are taken from Beck et al (2001) with an updated 2005 version.

Similarly, the left/right ideological position of regulation-makers is expected to matter in determining the relative benefits and costs of imposing different BRRs. Regulators with a predominantly left ideological position are expected to use bank regulation for social/re-distributive purposes at the same time that they are more conscious about protecting consumers of financial services. According to the analytical approach here proposed, the more leftist is the regulator's ideological position, the greater the perceived benefits of imposing an over-protective bank regulatory regime. Contrastingly, to the extent that the regulation-maker's ideological position is geared towards the right (pro-business efficiency and against government intervention), the more likely it is that we observe laissez-faire regulatory regimes. The regulator's ideological position is here represented by two alternative variables: (1) the chief executive's party ideological position (EXECRLC) and (2) the largest government party ideological position (GOVRLC).

Finally, the approach proposed in this paper incorporates the effect of three possible proximate causes of bank regulation: pressure from international financial institutions, macroeconomic conditions, and technological advances. In all cases, the perceived benefits of keeping high levels of restrictions on dimension 1 of BRRs decreases, whereas the perceived costs of maintaining high levels of regulation on dimension 2 decreases. The combination of regulators' perceived costs and benefits yield the expectation of a prudential type of bank regulatory regime. Proxies for the proximate causes of bank regulation include: (1) whether or

not a country has signed an agreement with the IMF (UNDERIMF), (2) GDP growth (CHGDP), and (3) the number of internet users per 1,000 people (INTERNET).

What Explains Variation in Bank Regulatory Regimes?

In order to empirically test the hypotheses derived from the analytical approach here proposed, I use a multinomial logistic regression (MNL) whereby regulation-makers choose from four mutually exclusive bank regulatory regimes. Application of the MNL model enables us to estimate the relative effect of each of the politico-economic determinants of bank regulation, and to predict the probability of regulators choosing a prudential type of regulatory regime. Overall, results from the analysis suggest that proportional representation electoral systems and improvements in information and technology increase the likelihood of regulators enacting prudential regulatory regimes.

The sources of the dataset used to estimate the various MNL models are summarized in Table 3. Explanatory variables include proxies for each of the possible determinants of BRRs, usually consisting of eight-year averages prior to 2003. Due to missing information, the sample size ranged from 69 to 83 countries. Eight different models were estimated in order to test for the robustness of the results. The specification of these models and the summary statistics of the independent variables are shown in table 4.

Insert Table 3 & 4 Here

Statistically significant regression coefficients and their z-values from the various MNL models are displayed in table 5. The results show different BRRs as reference category. Hence, the estimated MNL coefficient β_j shows the effect of an independent variable on the likelihood of a regulator choosing a bank regulatory regime *j* relative to the reference category. A positive coefficient implies that an increase in the independent variable increases the probability of a regulator enacting a certain regulatory regime relative to the reference category. In general, the models fit the data reasonably well (see pseudo R-square in table 5).

Insert Table 5 Here

When considering the relative importance of each of politico-economic factor in determining patterns of bank regulatory regimes, the results suggest that electoral systems have a

differential effect on regulators' choice of regulatory regime. However, empirical evidence indicates that the direction of such an effect is contrary to what Rosenbluth and Schaap (2003) had suggested. Given everything else constant, centripetal electoral systems (i.e., plurality and single member districts) are more likely to enact cost-padding regulatory regimes than centrifugal systems (i.e., proportional representation). Such a result is robust to model specification and changes in reference category.

Similarly, advances in technology and information appear to be indispensable for regulators to choose to enact higher restrictions on dimension 2 of bank regulatory regimes. That is evident in the comparisons of prudential vs. cost-padding, over-protective vs. cost-padding, prudential vs. laissez-faire, and over-protective vs. laissez-faire. In all cases, increases in the number of internet users (as a proxy for technological advances) is associated with bank regulatory regimes that present higher levels of restrictions on the behavior of banks, *ceteris paribus*.

In addition, the results of three out of the eight MNL models suggest that the empirical evidence does not corroborate the theoretical expectations regarding the effects of regulators' left/right ideological position. Contrary to the proposed hypotheses, regulation-makers presenting right ideological leanings are more likely to enact over-protective regulatory regimes than left-leaning regulators, who seem to prefer laissez-faire BRRs.

In what concerns pressures from the demand-side of regulation, only the hypothesis regarding intra-industry conflicts between small and big banks are confirmed by the empirical evidence. In three out of the eight models, the coefficient for "concent" is positive and statistically significant when comparing laissez-faire to cost-padding regulatory regimes, indicating that, given higher concentration of the banking system (used as a proxy for the importance of big banks), regulators are more likely to prefer laissez-faire regulatory regimes, holding all else constant. The same can be said to occur when comparing laissez-faire to over-protective regulatory regimes.

Lastly, the empirical results provide some support for the hypotheses regarding the proximate causes of bank regulation. For example, signing an agreement with the International Monetary Fund (used as a proxy for pressure from international financial institutions) increases the perceived benefits of laissez-faire and prudential regulatory regimes when compared to those of cost-padding. Similarly, at least in one of the MNL models, higher levels of economic growth are associated with higher probabilities of prudential BRRs when compared to those of cost-padding and laissez-faire regulatory regimes.

Conclusions

Rather than taking it as given, this paper endogenizes bank regulation, and asks how and why commercial banking regulatory regimes have varied across countries. It offers a typology to understand patterns in BRRs as well as an analytical framework to derive testable hypotheses about the relative importance of various politico-economic factors in determining regulators' perceptions of costs and benefits of regulation. The paper also surveys the traditional approaches used to explain governments' intervention in the economy in order to underscore the need for further theoretical and empirical developments in the political economy of bank regulation.

The empirical findings are revealing (if not surprising!). Except for the demands of big banks, pressure from public banks, nonbank financial institutions and consumers of banking services do not affect regulators' decisions on the level of restrictions imposed on both the structure and the behavior of banks. In this case, the private-interest approach cannot account for much of the variation in BRRs. Electoral systems are good predictors of bank regulatory regimes; however, this paper finds that the direction of their effects is contrary to what previous studies had proposed. In addition, proximate causes of bank regulation are at least somewhat correlated with bank regulatory regimes. Among them, technological advances deserve special attention. Overall, further empirical tests with more sophisticated empirical measures are desirable if we want to corroborate these findings.

Most importantly, the discussions in this paper intended to draw attention to an issue that has been largely under-studied by political scientists. Before we talk about the (positive and negative) consequences of regulatory regimes, we should strive to understand why these regulations exist in the first place. Banks play an extremely important role in socio-economic development; neglecting to study governments' involvement in the banking industry would be a shame.

Figure 1: Bank regulation seen as a process

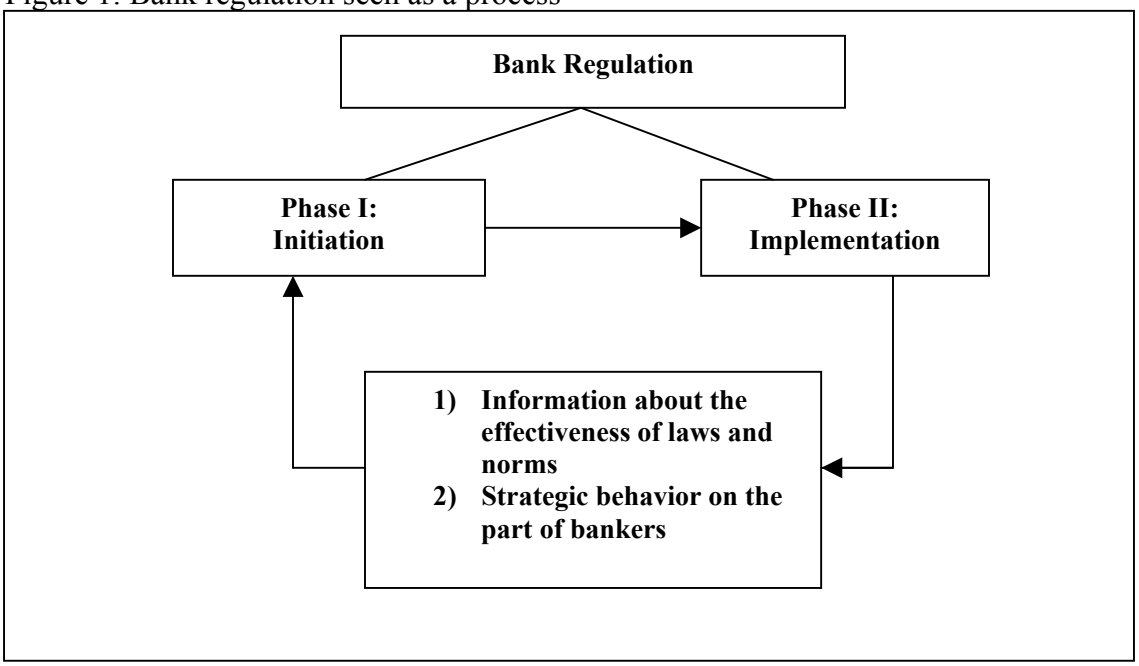


Figure 2: Ideal types of bank regulatory regimes

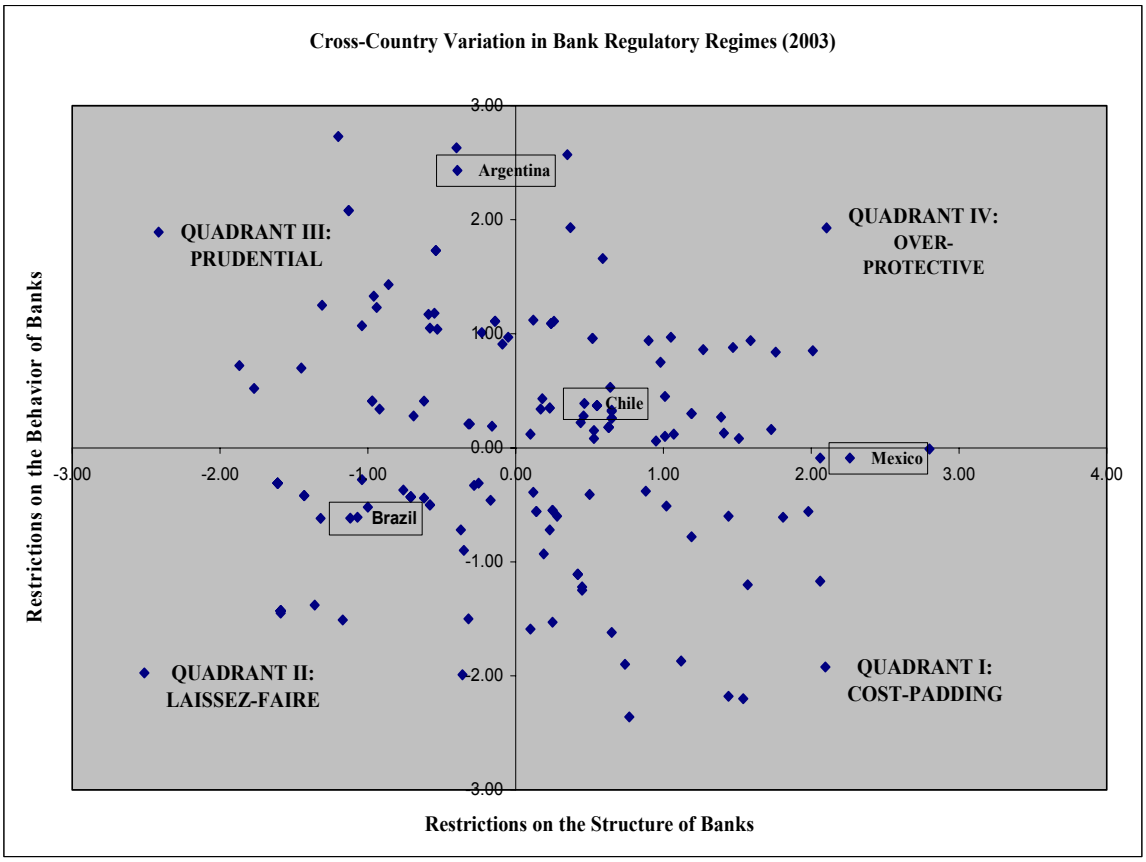
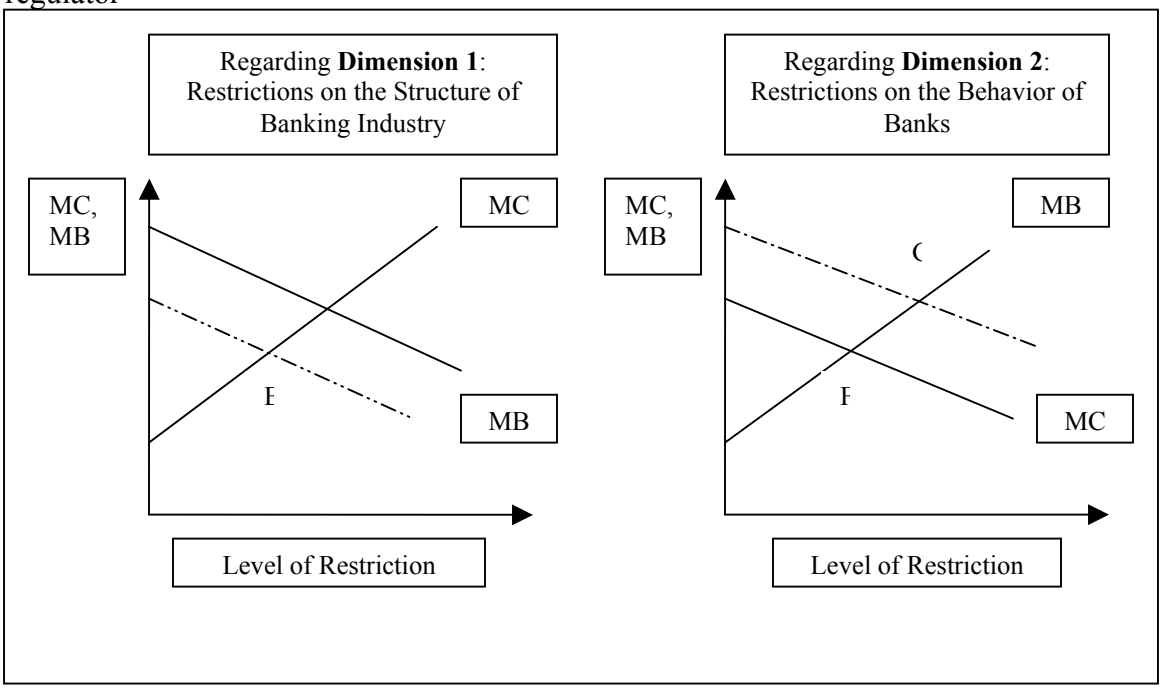


Table 1: List of countries within each bank regulatory regime

Bank Regulatory Regimes			
Cost-Padding (Quadrant I)	**Laissez-Faire (Quadrant II)**	**Prudential (Quadrant III)**	**Over-Protective (Quadrant IV)**
Albania, Azerbaijan, Belarus, Belize, Bolivia, Botswana, Burundi, Colombia, Costa Rica, Egypt, Gambia, India, Italy, Kazakhstan, Kyrgyzstan, Republic of Macedonia, Malaysia, Malta, Mauritius, **Mexico**, Nigeria, Pakistan, Papua New Guinea, Philippines, Qatar, Russia, South Korea, Suriname, Swaziland, Tunisia, Ukraine, Zimbabwe	Anguilla, Antigua and Barbuda, Armenia, Aruba, Bahrain, Benin, **Brazil**, British Virgin Islands, Burkina Faso, Cambodia, Cameroon, Central African Republic, Chad, Common Wealth of Dominica, Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, Grenada, Guernsey, Guinea Bissau, Guyana, Jordan, Kuwait, Macau (China), Madagascar, Mali, Montserrat, Niger, Panama, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Seychelles, South Africa, Tonga, Turkmenistan, United Arab Emirates, Uruguay	**Argentina**, Australia, Belgium, Estonia, France, Germany, Gibraltar, Greece, Hong Kong (China), Ireland, Isle of Man, Israel, Jersey, Latvia, Luxembourg, Namibia, Netherlands, New Zealand, Portugal, Romania, Saudi Arabia, Senegal, Singapore, Slovakia, Sri Lanka, Sweden, Switzerland, Togo, Turks and Caicos Islands, United Kingdom, Vanuatu	Algeria, Austria, Bhutan, Bosnia and Herzegovina, Bulgaria, Canada, **Chile**, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, El Salvador, Fiji, Finland, Ghana, Guatemala, Guinea, Honduras, Hungary, Iceland, Japan, Kenya, Lebanon, Lesotho, Liechtenstein, Lithuania, Republic of Moldova, Morocco, Nicaragua, Norway, Oman, Paraguay, Peru, Poland, Puerto Rico, Samoa (Western), Serbia & Montenegro, Slovenia, Spain, Sudan, Taiwan, Tajikistan, Thailand, Trinidad and Tobago, Turkey, United States, Venezuela
32 countries (6 LACs)	**40 countries (7 LACs)**	**31 countries (1 LAC)**	**48 countries (11 LACs)**

Figure 3: Equilibrium of marginal costs and marginal benefits of regulation for regulator



Source: Adapted from Lederman (2005).

Table 2: Summary of expected influences on regulation-makers' perceptions of regulation

General Influences on Regulators	Factors affecting regulators' "perceptions"	Observable characteristics of each factor	Dimension of BRR	Perceived benefits of keeping high levels of regulation	Perceived costs of keeping high levels of regulation	Expected impact on level of regulation	Expected BRR
Demand-Side Requests	Intra-Industry Rivalry (Small vs. Big Banks)	Importance of Big Banks is High	1 (structure)	Decrease	Increase	Decrease	Laissez-Faire (Quadrant II)
			2 (behavior)	Decrease	Increase	Decrease	
	Intra-Industry Rivalry (Public vs. Private Banks)	Importance of Public Banks is High	1 (structure)	Increase	Decrease	Increase	Cost-Padding (Quadrant I)
			2 (behavior)	Decrease	Increase	Decrease	
	Inter-Industry Rivalry (Nonbank Financial Institutions vs. Banks)	Importance of Nonbank Financial Institutions is High	1 (structure)	Increase	Decrease	Increase	Over-Protective (Quadrant IV)
			2 (behavior)	Increase	Decrease	Increase	
	Pressure from Consumers of Banking Services	High	1 (structure)	Decrease	Increase	Decrease	Prudential (Quadrant III)
			2 (behavior)	Increase	Decrease	Increase	
Domestic Institutions	Electoral Rules	Plurality	1 (structure)	Decrease	Increase	Decrease	Prudential (Quadrant III)
			2 (behavior)	Increase	Decrease	Increase	
		Proportional Representation	1 (structure)	Increase	Decrease	Increase	Cost-Padding (Quadrant I)
			2 (behavior)	Decrease	Increase	Decrease	
Personal Ideology and Ideas	Left/Right Ideological Position	Left (pro-labor, protection of consumers of financial services, use regulation for social/ redistributive purposes)	1 (structure)	Increase	Decrease	Increase	Over-Protective (Quadrant IV)
			2 (behavior)	Increase	Decrease	Increase	
		Right (pro-business, efficiency, economic growth, against government intervention in economy)	1 (structure)	Decrease	Increase	Decrease	Laissez-Faire (Quadrant II)
			2 (behavior)	Decrease	Increase	Decrease	

General Influences on Regulators	Factors affecting regulators' "perceptions"	Observable characteristics of each factor	Dimension of BRR	Perceived benefits of keeping high levels of regulation	Perceived costs of keeping high levels of regulation	Expected impact on level of regulation	Expected BRR
International Institutions	Pressure from International Financial Institutions (such as IMF, BIS)	Increased consensus on financial liberalization ("Washington Consensus")	1 (structure)	Decrease	Increase	Decrease	Prudential (Quadrant III)
		Increased consensus on necessity of capital adequacy requirements (Basel Accords)	2 (behavior)	Increase	Decrease	Increase	
Economic Context	Macroeconomic Crises	Slow economic growth	1 (structure)	Decrease	Increase	Decrease	Prudential (Quadrant III)
			2 (behavior)	Increase	Decrease	Increase	
Technological Context	Technological Advancement	Number of Internet Users	1 (structure)	Decrease	Increase	Decrease	Prudential (Quadrant III)
			2 (behavior)	Increase	Decrease	Increase	

Table 3: Sources and description of explanatory variables used in MNL models

Variable Name	Variable in MNL Model	Description	Source	Time Period
Concentration	concent	Assets of three largest banks as a share of assets of all commercial banks	Beck et al (2000) -- with 2007 update	Average for 1995-2002
Public Banks	pubbanks	What fraction of the banking system's assets is in banks that are: 50% or more government owned as of year-end 2001?	Barth et al (2006)	2001
Stock Market Capitalization to GDP	stock	Value of listed shares to GDP, calculated using the following deflation method: {(0.5)*[Ft/P_et + Ft-1/P_et-1]}/[GDPt/P_at] where F is stock market capitalization, P_e is end of period CPI, and P_a is average annual CPI	Beck et al (2000) -- with 2007 update	Average for 1995-2002
Nonlife Insurance Penetration	insnonlife	Nonlife insurance premium volume as a share of GDP	Beck et al (2000) -- with 2007 update	Average for 1995-2002
Private Credit by Deposit Money Banks to GDP	privcred	Private credit by deposit money banks to GDP, calculated using the following deflation method: {(0.5)*[Ft/P_et + Ft-1/P_et-1]}/[GDPt/P_at] where F is credit to the private sector, P_e is end-of period CPI, and P_a is average annual CPI	Beck et al (2000) -- with 2007 update	Average for 1995-2002
Domestic Credit Provided by Banking Sector	domcred	Domestic Credit Provided by Banking Sector (% of GDP)	Beck et al (2000) -- with 2007 update	Average for 1995-2002
Electoral System	plurality	If Plurality and Proportional Representation, which governs the majority/all of the House seats? (1 if Plurality, 0 if Proportional Representation)	Beck et al (2001) with 2005 update	Average for 1995-2002
Chief Executive's Party Ideological Position	execrlc	Right=1; Left=-1; Center or No Party or Not Applicable=0	Beck et al (2001) with 2005 update	Average for 1995-2002
Largest Government Party Ideological Position	govrlc	Right=1; Left=-1; Center or No Party or Not Applicable=0	Beck et al (2001) with 2005 update	Average for 1995-2002
Under IMF Agreement	underimf	Whether or not a country has signed an agreement with the IMF at a certain year	Vreeland (2003)	Sum of years that the country was under imf agreement from 1988-2002
Macroeconomic Growth	chgdp	GDP growth	World Development Indicators online	Average for 1995-2002
Technological Advances	internet	Internet Users (per 1,000 people)	World Development Indicators online	Average for 1995-2002

Table 4: Model specification and summary statistics of independent variables

Variable	Mean	Std. Dev.	Min	Max	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
concent	0.72	0.19	0.27	1	x		x		x	x		
pubbanks	15.42	21.64	0	96		x		x			x	x
stock	0.46	0.53	0	3.26	x	x			x		x	
insnonlife	0.02	0.01	0	0.10			x	x		x		x
privcred	0.44	0.37	0.02	1.64					x	x	x	x
domcred	60.69	50.49	-39.92	300.46	x	x	x	x				
plurality	0.50	0.49	0	1	x	x	x	x	x	x	x	x
execrlc*	0.02	0.59	-1	1	x	x	x	x	x	x	x	x
underimf	5.16	4.99	0	16	x	x	x	x	x	x	x	x
chgdp	4.00	2.67	-2.11	22.32	x	x	x	x	x	x	x	x
internet	99.32	120.8	0.55	619.4	x	x	x	x	x	x	x	x

* All models were tested with govrlc instead of execrlc and the results were similar.

Table 5: Results from multinomial logistic regressions

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Reference Category: Quadrant I								
Quadrant II								
concent	6.83*		7.39*		7.15**			
	(1.93)		(1.76)		(1.99)			
domcred			0.03*	0.04**				
			(1.90)	(1.97)				
underimf			0.31*	0.33**				0.29*
			(1.74)	(2.04)				(1.74)
plurality				-2.86*				-2.61*
				(-1.71)				(-1.70)
privcred								5.91*
								(1.66)
Quadrant III								
plurality	-2.88***	-3.05***	-2.59**	-3.42***	-2.69**	-2.73**	-3.01***	-3.50***
	(-2.91)	(-2.84)	(-2.55)	(-2.87)	(-2.58)	(-2..52)	(-2.71)	(-2.86)
internet	0.01*	0.01**		0.01*	0.02**	0.01*	0.02**	0.02**
	(1.94)	(2.03)		(1.71)	(2.16)	(1.92)	(2.38)	(2.11)
underimf						0.26*		0.31**
						(1.89)		(2.01)
chgdp								0.76*
								(1.88)
Quadrant IV								
plurality	-1.6**	-1.51*	-1.85**	-2.63**	-1.59**	-1.81**	-1.49*	-2.58**
	(-2.06)	(-1.91)	(-2.15)	(-2.55)	(-2.01)	(-2.06)	(-1.90)	(-2.51)
internet	0.01**				0.01**	0.01*	0.01*	
	(2.03)				(2.25)	(1.74)	(1.90)	
pubbanks				-0.07**				-0.07**
				(-2.41)				(-2.26)

Table 5: Continuation

Reference Category: Quadrant II	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Quadrant I								
concent	-6.83*		-7.39*		-7.15**			
	(-1.93)		(-1.76)		(-1.99)			
domcred			-0.03*	-0.04**				
			(-1.90)	(-1.97)				
underimf			-0.31*	-0.33**				-0.29*
			(-1.74)	(-2.04)				(-1.74)
plurality				2.86*				2.61*
				(1.71)				(1.70)
privcred								-5.91*
								(-1.66)
Quadrant III								
internet	0.02*	0.02**		0.03*	0.02*		0.02**	0.03**
	(1.76)	(2.07)		(1.84)	(1.70)		(1.99)	(2.03)
chgdp						0.80*		0.99*
						(1.79)		(1.85)
Quadrant IV								
concent	-6.26*				-5.79*			
	(-1.87)				(-1.72)			
internet	0.02*	0.02*			0.02*			0.02*
	(1.73)	(1.73)			(1.67)			(1.65)
underimf		-0.19*						
		(-1.65)						
domcred			-0.03*	-0.03*				
			(-1.80)	(-1.67)				
execrlc						1.66*	1.38*	1.94**
						(1.70)	(1.66)	(1.99)
privcred								-6.02*
								(-1.81)

Table 5: Continuation

Reference Category: Quadrant III	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Quadrant I								
plurality	2.88***	3.05***	2.59**	3.42***	2.69**	2.73**	3.01***	3.50***
	(2.91)	(2.84)	(2.55)	(2.87)	(2.58)	(2.52)	(2.71)	(2.86)
internet	-0.01*	-0.01**		-0.01*	-0.02**	-0.01*	-0.02**	-0.02**
	(-1.94)	(-2.03)		(-1.71)	(-2.16)	(-1.92)	(-2.38)	(-2.11)
underimf						-0.26*		-0.31**
						(-1.89)		(-2.01)
chgdp								-0.76*
								(-1.88)
Quadrant II								
internet	-0.02*	-0.02**		-0.03*	-0.02*		-0.02**	-0.03**
	(-1.76)	(-2.07)		(-1.84)	(-1.70)		(-1.99)	(-2.03)
chgdp						-0.80*		-0.99*
						(-1.79)		(-1.85)
Quadrant IV								
stock	-2.47**	-2.54**						
	(-2.09)	(-2.14)						
plurality		1.54*						
		(1.71)						
pubbanks				-0.05*			-0.04*	-0.06**
				(-1.75)			(-1.81)	(-1.96)
privcred					-3.76**	-4.38**	-3.89**	-4.23**
					(-2.14)	(-2.53)	(-1.99)	(-2.26)
underimf							-0.21*	
							(-1.67)	

Table 5: Continuation

Reference Category: Quadrant IV	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Quadrant I								
plurality	1.60**	1.51*	1.85**	2.63**	1.59**	1.81**	1.49*	2.58**
	(2.06)	(1.91)	(2.15)	(2.55)	(2.01)	(2.06)	(1.90)	(2.51)
internet	-0.01**				-0.01**	-0.01*	-0.01*	
	(-2.03)				(-2.25)	(-1.74)	(-1.90)	
pubbanks				0.07**				0.07**
				(2.41)				(2.26)
Quadrant II								
concent	6.26*				5.79*			
	(1.87)				(1.72)			
internet	-0.01*	-0.02*			-0.02*			-0.02*
	(-1.73)	(-1.73)			(-1.67)			(-1.65)
underimf		0.19*						
		(1.65)						
domcred			0.03*	0.03*				
			(1.80)	(1.67)				
execrlc						-1.66*	-1.38*	-1.94**
						(-1.70)	(-1.66)	(-1.99)
privcred								6.02*
								(1.81)
Quadrant III								
stock	2.47**	2.54**						
	(2.09)	(2.14)						
plurality		-1.54*						
		(-1.71)						
pubbanks				0.05*			0.04*	0.06**
				(1.75)			(1.81)	(1.96)
privcred					3.76**	4.38**	3.89**	4.23**
					(2.14)	(2.53)	(1.99)	(2.26)
underimf							0.21*	
							(1.67)	
Log Likelihood	-78.998	-76.870	-71.414	-64.282	-72.896	-65.353	-70.787	-57.681
LR Chi-square	55.66	55.10	45.66	52.26	57.58	50.45	56.90	58.08
Pseudo R-square	0.26	0.26	0.24	0.29	0.28	0.28	0.29	0.33
Sample Size	83	82	75	72	79	72	78	69

z-values are between parentheses

*p<.10; **p<.05; ***p<.01

Appendix 1
Barth et al (2006) Survey Questions used for Measuring for Bank Regulatory Regimes

Dimension 1: Restrictions on the *structure* of the banking system.

1) Are foreign entities prohibited from entering through acquisition, subsidiary or branch?

a. *(1) No prohibitions*
b. *(2) Prohibitions are imposed in only one type of entrance (acquisition, subsidiary, or branch)*
c. *(3) Prohibitions are imposed in two types of entrance*
d. *(4) Prohibitions are imposed in all three types of entrance*

2) What is the level of regulatory restrictiveness for bank participation in securities activities (the ability of banks to engage in the business of securities underwriting, brokering, dealing, and all aspects of the mutual fund industry)?

e. *(1) Unrestricted:* a full range of activities in securities can be conducted directly in the bank
f. *(2) Permitted:* a full range of securities activities can be conducted, but all or some must be conducted in subsidiaries
g. *(3) Restricted:* less than a full range of securities activities can be conducted in the bank or subsidiaries
h. *(4) Prohibited:* securities activities cannot be conducted in either the bank or subsidiaries.

3) What is the level of regulatory restrictiveness for the non-financial firms' ownership of commercial banks?

i. *(1) Unrestricted:* non-financial firms may own 100 percent of the equity in a bank or vice-versa
j. *(2) Permitted:* unrestricted with prior authorization or approval
k. *(3) Restricted:* limits are place on ownership, such as a maximum percentage of a bank's capital or shares
l. *(4) Prohibited:* no equity investment in a bank.

4) Prompt Corrective Action: whether the Law establishes pre-determined levels of bank solvency deterioration which forces automatic enforcement actions such as intervention.

m. Does the Law establish pre-determined levels of solvency deterioration which forces automatic actions (like intervention)? *(Yes=2; No=1)*

Dimension 2: Restrictions on the risk-management *behavior* of banks.

1) Are interest rate controls on bank deposits and/or loans freely determined by the market? (The original answers to this question are coded so that higher numbers indicate "yes" – i.e., fewer restrictions imposed by governments. They were taken from the *Free World Dataset*, 2003). For the purposes of this paper, the original coding was changed, and countries were ranked according to quartiles:

   n. *(1) First quartile with minimum restrictions*
   o. *(2) Second quartile*
   p. *(3) Third quartile*
   q. *(4) Fourth quartile with maximum restrictions*

2) Does the minimum capital ratio vary as a function of an individual bank's credit risk? *(Yes=2; No=1)*

3) Provisioning Stringency. Is there a legal definition of a "non-performing" loan? *(Yes=2; No=1)*

4) External Auditing Requirements. Are specific requirements for the extent or nature of the audit spelled out? *(Yes=2; No=1)*

5) Sources of Deposit Insurance Funds:
   a. Is the deposit insurance scheme funded by:
      i. *(1) not funded?*
      ii. *(2) the government?*
      iii. *(3) government and banks?*
      iv. *(4) solely by banks?*

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