Bank Supervision and Corporate Finance

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Abstract: Which commercial bank supervisory policies ease – or complicate – the external financing obstacles faced by firms? Based on new data from almost 5,000 corporations across 48 countries, this paper provides the first empirical assessment of the impact of bank supervision on firm financing obstacles. We find that countries with supervisory strategies focused on inducing banks to disclose accurate information to the private sector and strategies that do not reduce the incentives of private agent to monitor banks tend to lower the financing obstacles faced by firms and reduce the importance of corruption and special connections in raising external finance. Furthermore, countries with powerful supervisory agencies that have the authority to monitor, influence, and discipline banks directly tend to have firms that rely more on special connections and corruption to obtain bank finance and frequently face greater overall financing obstacles. Finally, we find that creating a supervisory agency that is independent of the government and banks mitigates these adverse consequences of powerful supervisory agencies.

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1. Introduction

Banks provide a substantial proportion of external finance to corporations around the globe. Yet, there have been no previous studies of whether international differences in bank supervision influence the obstacles that corporations face in raising external finance. Furthermore, the International Monetary Fund and World Bank promote the development of powerful bank supervisory agencies with the authority to directly monitor and discipline banks. Yet, there exists no cross-country evidence to support these specific reform recommendations, nor is there evidence on the more general question of which approaches to the supervision and regulation of banks facilitate corporate finance.

This paper (1) documents the relationship between bank supervisory policies and the financing obstacles faced by firms and (2) evaluates competing theories of government regulation. These objectives are inextricably intertwined. In examining the relationship between bank supervisory strategies and corporate financing constraints, we distinguish among specific theories of bank supervision as well as more general theories of the role of government in the economy.

Indeed, core theories of public policy and regulation provide a natural framework for assessing bank supervision. When information costs, transactions costs, and other government policies interfere with the incentives and abilities of private agents to monitor banks, strong official supervision of banks can improve the corporate governance of banks (Stigler, 1971).[1] This "**supervisory power view**" holds that private agents frequently lack the incentives and capabilities to monitor powerful banks (Becker, 1968; Becker and Stigler; 1974). From this perspective, a powerful supervisory agency that directly monitors and disciplines banks will enhance the corporate governance of banks, improve the incentives facing bank managers, and thereby boost the efficiency with which banks intermediate society's savings.

[1] In a world with (i) no information or transactions costs, (ii) governments that maximize social welfare, and (iii) well-defined and efficiently enforced property rights, market participants will achieve efficient outcomes (Coase, 1960). If the prerequisites for this laissez-faire – invisible hand – theory hold, government supervision of banks would be at best irrelevant

The official supervision theory assumes that governments have both the expertise and the incentives to ameliorate information, enforcement, and transaction costs and improve corporate governance of banks.

An alternative to the supervisory power view also draws on core theories of public policy and regulation. The "**political/regulatory capture view**" argues that politicians and supervisors do not maximize social welfare; they maximize their own welfare (Hamilton, et al., 1788; Buchanan and Tullock, 1962; Becker, 1983). Thus, politicians and supervisors may induce banks to divert the flow of credit to politically connected firms, or banks may "capture" politicians and supervisors and induce supervisors to act in the best interests of banks rather than in the best interests of society (Becker and Stigler, 1974; Stigler, 1975; Rajan and Zingales, 2003). This theory suggests that direct supervision of banks may actually reduce the efficiency with which banks allocate credit. Specifically, while powerful supervision may increase the flow of credit to a few well-connected firms, the political/regulatory capture theory holds that powerful supervision will hurt the availability of credit to firms in general.

Economists have attempted to derive mechanisms that simultaneously recognize the importance of market failures, which motivate government intervention, and political failures, which suggest that politicians and regulators do not necessarily have incentives to ease market failures (Becker and Stigler, 1974). From this perspective, the challenge is to create mechanisms that negate the "grabbing hand" of politicians while creating incentives for official agencies to improve social welfare.[2]

In bank supervision, proponents of the "**independent supervision view**" argue that creating an independent agency is a useful mechanism for balancing market and political failures. If supervisors are independent from the government, then this reduces the likelihood that politicians will use powerful

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and potentially harmful to social welfare (Stigler, 1975). Thus, in assessing the empirical relationship between bank supervisory policies and corporate finance, we also provide evidence on this laissez-faire view.

[2] Shleifer and Vishny (1998) use the phrase "grabbing hand" to describe the maximizing behavior of politicians in contrast to the "helping hand" view, which assumes that governments maximize social welfare. These phrases contrast nicely with the "invisible hand" theory, which posits that with (i) no market frictions, (ii) social maximizing governments, and (iii) well-defined and enforced property rights, private agents will produce efficient outcomes. For more on institutional mechanisms to balance government and market failures, see North (1990) and Haber et al. (2003).

supervisors to induce banks to funnel credit to favored ends. Similarly, if the supervisory agency is independent from banks, then this lowers the probability that banks will capture supervisors. Thus, the independent supervision view proposes a compromise to create a supervisory agency that has the power to monitor banks but that is sufficiently independent so that it avoids political/regulatory capture. Under these conditions, independent supervision can enhance the corporate governance of banks and lower firms' external financing obstacles.

The "**private empowerment view**" takes a different approach to confronting market imperfections while recognizing that politicians act in their own interests. The private empowerment view argues that bank supervisory policies should focus on enhancing the ability and incentives of private agents to overcome informational barriers and exert corporate control over banks, not on empowering official supervisors to oversee bank behavior. Thus, this view seeks to limit supervisory power, so that supervisors are unable to manipulate the flow of bank credit toward favored ends. Simultaneously, the private empowerment view seeks to provide supervisors with sufficient power to induce banks to disclose accurate information to the public, so that private agents can more effectively monitor banks (Hay and Shleifer, 1998). Furthermore, this view argues that many empowered bank creditors will be less susceptible to capture by politicians and banks than a single supervisory agency. Thus, special connections and corruption may play less of a role in countries that foster public information disclosure than in countries where supervisors have the power to oversee and influence banks. Besides information disclosure, a second component of the private empowerment view stresses incentives. Private creditors will more effectively exert corporate governance over banks and therefore enhance corporate financing if the government does not distort incentives through excessively generous deposit insurance.

This paper is further motivated by basic finance theory and public policy debates. First, consider theories of corporate finance and financial intermediation. An enormous theoretical literature examines the role of banks, along with shareholders and other financiers, in easing financing constraints and exerting corporate governance (Shleifer and Vishny, 1997). Based on some of these models, empirical research examines how laws concerning shareholders influence corporate finance (e.g., La Porta et al., 2000). Yet, there exists no corresponding work that examines how bank supervision influences corporate finance. Also, theories of financial intermediation provide a mechanism linking bank supervisory approaches to credit availability. Calomiris and Kahn (1991), Flannery (1994), and Diamond and Rajan (2001) develop models in which the fragile structure of banks, i.e., liquid deposits and illiquid assets, serves as an effective commitment device that keeps banks from assuming excessive risks or from shirking on collecting payment from firms. Put succinctly, the sequential service constraint on bank deposits creates a collective action problem among depositors that induces depositors to run if they acquire information that the bank is not monitoring firms and managing risk appropriately. In this context, generous deposit insurance impedes the commitment device (threat of a run) and raises barriers to firm financing (Diamond and Rajan, 2001). Similarly, supervisory policies that induce greater information disclosure by banks and monitoring by market participants will enhance the commitment mechanism and facilitate external finance. This paper is an initial attempt to understand how different supervisory strategies affect the obstacles faced by firms in raising external finance.

Second, bank supervision is often discussed in the context of avoiding banking crises. To promote stability, the International Monetary Fund and World Bank typically recommend the construction of supervisory agencies with the power to monitor and discipline banks. Yet, Barth, Caprio, and Levine (2004, henceforth BCL) find that this approach does not enhance banking system stability. Moreover, crises cannot be the only criterion because policymakers can essentially eliminate banking

crises through a 100 percent reserve requirement. Thus, an important objective of bank supervision – though often under-stated – is to foster efficient capital allocation; i.e., to finance worthy firms. This is the first paper to assess the impact of bank supervision on the firms' financing obstacles across a cross-section of countries.

Finally, this paper provides information on a ubiquitous policy questions: should government do nothing, empower the private sector, or directly oversee private activities? This paper addresses this concern by investigating different bank supervisory approaches.

This paper uses firm-level data on almost 5,000 firms across 48 countries to examine the impact of bank supervision on the obstacles that firms encounter in raising external capital. The firm-level data come from the World Business Environment Survey (WBES), which was conducted in 1999. This dataset includes information on firm characteristics, including (i) the obstacles that firms face in raising capital, (ii) the degree to which special connections are important to raising bank loans, and (iii) the degree to which bank corruption is important to raising capital. These data are based on survey questions in which firms rank the impediments on a scale from one to four, in which larger values imply greater obstacles and greater needs for special connections and corruption.

The bank supervisory data come from BCL. This database includes information on official supervisory power, such as the ability to intervene banks, replace managers, force provisioning, stop dividends and other payments, acquire information, etc. BCL also have information on the degree of supervisory independence from the government and whether banks can sue bank supervisors. BCL collect information on the degree to which supervisors force accurate information disclosure to the private sector. This includes information on whether bank directors and officials face criminal prosecution for failure to accurately disclose information, whether banks must disclose consolidated

accounts, whether international accounting firms audit banks, etc. Finally, to measure incentives facing private creditors, we use data on deposit insurance design (Demirguc-Kunt and Detragiache, 2003).

Econometrically, we use an ordered probit. The dependent variable is either financing obstacles faced by firms, the need for special connections, or the extent of corruption in raising external finance. The main explanatory variables are measures of (1) supervisory power, (2) the independence of the supervisory agency from the government and banks, (3) the degree to which regulations require information disclosure by banks, and (4) the generosity of the deposit insurance system. We also control for a range of firm-specific and country-specific characteristics.

The results are inconsistent with the supervisory power view and supportive of the political/regulatory capture view. Specifically, we never find that supervisory power eases financing obstacles, lowers corruption, or lessens reliance on special connections. Rather, the results indicate that the power of the supervisory agency to discipline banks is generally positively associated with the financing obstacles faced by firms and always positively associated with firms needing to rely on corruption and special connections to raise external finance.

The data also lend support to the independent supervision view. When the supervisory agency is independent, this is associated with lower obstacles to obtaining external finance. Moreover, independence reduces the negative effects from powerful supervision. As independence rises, the negative effect of powerful supervision dissipates. Thus, the results suggest that independence tends to reduce political control of the supervisory authority and hence political manipulation of the flow of credit to firms.

The paper also presents evidence that supports the private empowerment view. Regulations that force accurate information disclosure lower obstacles to firm financing and lower the importance of corruption in raising external finance. Furthermore, moral hazard – as measured by the generosity of the

deposit insurance system – is also important. Greater moral hazard tends to raise the corporate financing obstacles faced by firms. The data are consistent with the view that governments that force accurate information disclosure to the private sector and do not distort the incentives of banks through excessively generous insurance of bank liabilities will tend to lower financing obstacles.

This paper is related to recent research. BCL conduct a pure cross-country analysis and find that financial development is (1) positively associated with supervisory approaches that force information disclosure and (2) negatively associated with powerful supervisors that directly monitor and discipline banks. In this paper, we use microeconomic data to examine the channels running from bank supervision to corporate finance, rather than examining cross-country connections between bank supervision and banking system size. In a cross-country analysis, La Porta, et al. (2002) find that securities market regulations that induce information disclosure promote stock market development, while securities regulations that rely on official oversight of markets only boost equity market capitalization in countries with efficient government bureaucracies.[3] In this paper, we focus on bank supervision and use firm-level data in assessing the impact of different bank supervisory practices on firms' financing obstacles.

A number of methodological concerns need to be noted. First, individual firms subjectively report financing obstacles. Thus a firm facing the same obstacles in two different countries may report different obstacles for reasons that do not depend on actual constraints. Although it is not clear that this would bias the results in any particular direction, we provide evidence on the validity of the survey information below. Second, the supervisory variables might proxy for other country specific factors. Importantly, however, we get the same results when including official supervisory power and the information disclosure variables simultaneously. Thus, supervisory power and information disclosure

[3] There is a literature on balancing law and regulations to enhance securities market operations. Glaeser, Johnson, and Shleifer (2001) provide theory and examples concerning the incentives facing judges and regulators in monitoring financial markets. More broadly, Glaeser and Shleifer (2001) analyze the reasons underlying the increased use of regulation in the

are not proxying for the same unspecified factor. Also, the results hold even when controlling for many country-specific factors, such as the level of economic development, the degree of overall institutional development, economic growth, macroeconomic stability, overall financial development, differences in political systems, state-ownership of banks, regulatory restrictions on bank activities, and the laws governing the rights of shareholders. Third, banking crises may both intensify financing obstacles and boost official supervisory power, producing a spurious relationship between supervisory practices and firm financing obstacles. When we control for crisis, however, the results do not change.

Finally, some may view the paper as an atheoretical exploration of the relationship between bank supervisory practices and corporate financing constraints. It is true that we do not estimate a single model that explicitly links bank supervisory practices to bank behavior, and then to the corporate financing decisions of firms. We do, however, evaluate broad theories of government regulation along with explicit theoretical predictions regarding some supervisory policies (e.g., Diamond and Rajan, 2001). Also, given the central importance of bank supervisory policies and bank financing around the world, this paper provides initial documentation of the relationships between bank supervision policies and corporate financing constraints that we hope motivate additional theoretical and empirical work.

The remainder of the paper is organized as follows. Section 2 presents the data and the methodology is described in Section 3. Section 4 gives the results and Section 5 concludes.

United States, while Glaeser and Shleifer (2002) develop a theory and provide evidence from England and France concerning why different legal systems evolve to regulate behavior.

2. Data and Summary Statistics

a. Obstacles to firms obtaining external finance: Definitions

To examine the relationship between bank supervisory strategies and corporate financing obstacles, we use data from two main sources: the World Business Environment Survey (WBES) for firm-level data and BCL (2004) for country-level data on bank supervision.

From the WBES, we use information on almost 5,000 firms across 48 countries. While the WBES comprises 80 countries and the BCL database includes data on 107 countries, the limited overlap reduces our sample to 48 countries. The WBES surveyed firms of all sizes; small firms (between 5 and 50 employees) represent 40% of the sample, medium-sized (between 51 and 500 employees) firms are 40% of the sample, and the remaining 20% are large firms (more than 500 employees). The survey comprises mostly firms of the manufacturing, construction and services sectors. We also have information on whether these are government-owned, foreign-owned, or privately-owned firms. The data indicate whether the firm is an exporter and provide information on firm employment, sales, industry, growth, financing patterns, and the number of competitors.

General Financing Obstacle equals the response to the question: "How problematic is financing for the operation and growth of your business?" Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). Table 1 shows that perceived financing obstacles do not only vary across firms within a country, but also across countries. Portuguese firms rate financing obstacles as relatively insignificant (1.73), while firms in Moldova rate financing obstacles as more than moderate (3.44). Overall, 34% of the firms in our sample rate financing as major obstacle, 27% as a moderate obstacle, 19% as a minor obstacle, and 20% as no obstacle.

Bank Corruption equals the response to the question: "Is the corruption of bank officials an obstacle for the operation and growth of your business: (1) no obstacle, (2) a minor obstacle, (3) a

moderate obstacle, or (4) a major obstacle? Thus, bigger numbers imply the corruption of bank officials is a bigger obstacle to obtaining financing.

Special Connections equals the response to the question: "Is the need of special connections with banks an obstacle for the operation and growth of your business: (1) no obstacle, (2) a minor obstacle, (3) a moderate obstacle, or (4) a major obstacle? Thus, bigger numbers imply greater need of special connections to obtain financing. Table 2 provides summary statistics and indicates that general financing obstacles is positively correlated with the needs for special connections and corruption.

b. Obstacles to firms obtaining external finance: Justification

The corporate finance literature has used several different approaches to identify firms that are constrained. Fazzari, Hubbard, and Petersen (1988) use a priori reasoning to argue that low-dividend firms are constrained. Rajan and Zingales (1998) use the external financing patterns by US firms as a benchmark for the "natural" dependence of industries on external financing around the world. Demirguc-Kunt and Maksimovic (1998) rely on a financial planning model to identify firms that have access to long-term external financing. As described in Kaplan and Zingales (1997) and by each these authors, there are shortcomings associated with inferring financing obstacles from other firm characteristics.

We use survey responses as indicators of the incidence and severity of financial obstacles for four reasons. First, the survey acquires direct information from firms about perceived obstacles and therefore does not infer the existence of financing constraints from other information. Second, the survey not only has information on general financing obstacles. It also provides information on the specific types of obstacles that firms face, e.g., special connections or corruption. Third, the WBES database has excellent coverage of small and medium size firms (as well as large firms), while other

cross-country studies use data that focus heavily on large corporations. Finally, the WBES has very broad country coverage that is important for linking the firm-level data with the bank supervision data.

As noted in the Introduction, using data based on self-reporting by firms may produce concerns that a firm facing the same obstacles will respond to questions differently in different institutional and cultural environments. If this were pure measurement error, it would bias the results against finding a relationship between bank supervision and firm financing obstacles.

While problems with survey data may bias the results against this paper's conclusions, we (a) control for many country-specific traits in our analyses and (b) present four pieces of information that support the validity of the survey data. First, Hellman et al. (2000) show that in a sub-sample of 20 countries there is a close connection between responses and measurable outcomes. They find no systematic bias in the survey responses.

Second, reported firm financing obstacles are highly, negatively correlated with firm growth. Beck, Demirguc-Kunt, and Maksimovic (2002) show that the negative impact of reported financing obstacles on firm growth hold after controlling for many factors and using instrumental variables to control for endogeneity. Thus, firms' responses to the survey on financing obstacles are capturing more than idiosyncratic differences in how firms rank obstacles.

Third, we examined the connection between reported firm financing obstacles and Wurgler's (2000) measure of the efficiency of investment flows. This is an investment elasticity that gauges the extent to which a country increases investment in growing industries and decreases investment in declining ones. We find the reported financing obstacles are negatively and significantly correlated with this efficiency of investment indicator. Again, the survey data are associated with a measurable outcome: the efficient allocation of capital.

Fourth, we study the link between survey responses regarding firm financing obstacles and industrial expansion. Based on Rajan and Zingales (1998), we examine whether industries that are naturally heavy users of external finance grow faster in economies where firms face lower reported financing obstacles. Thus, we use the same data and specification employed by Rajan and Zingales (1998). We find that externally dependent industries grow faster in countries where firms report lower obstacles. While these observations certainly do not eliminate concerns about the survey data, they suggest that the reported obstacles are closely associated with (i) the growth of externally dependent industries, (ii) the efficient flow of investment, (iii) firm growth, and (iv) measurable corporate financing decisions of the firms themselves.

c. Firm-specific traits

In our analysis of bank supervision and corporate finance, we control for several firm attributes such as ownership. **Government** takes on the value one if the government owns any percentage of the firm, and **Foreign** takes on the value one if foreign entities own any fraction of the firm.[4] Our sample includes 12% government owned firms and 19% foreign firms.

We also control for each firm's business, competitive environment, and size. The regressions include dummy variables for whether the firm is an exporting firm (**Exporter**), whether it is a manufacturing firm (**Manufacturing**), and whether it is a service sector firm (**Services**). The analyses also include the log of the number of competitors that each firm faces (**Number of Competitors**). In sum, 35% of the firms in our sample are in manufacturing and 47% in service, and on average they face 2.3 competitors. Finally, we include the log of sales in USD as indicator of size (**Sales**).

[4] While these simple zero-one indicators of ownership may not capture the varying degrees of influence that arise from different levels of government or foreign ownership, information on the percentage of ownership is available for less than 10 percent of the sample. However, among the firms for which we have data on the percentage of foreign and government ownership, more than two thirds of firms with foreign ownership are majority foreign owned and more than 60% of firms with government ownership are majority state-owned.

The correlation analysis in Table 2 Panel B indicates that government-owned firms, domestically owned firms, non-exporting firms, smaller firms (as measured by sales), and firms with more competitors suffer more financing obstacles.

d. Bank supervisory policies

We use four indicators of supervisory practices to test the empirical validity of the competing hypotheses outlined in the Introduction.

Supervisory Power is constructed from 14 dummy variables that indicate whether bank supervisors can take specific actions against bank management, bank owners, and bank auditors both in normal times and times of distress. This includes information on whether the supervisory agency can force a bank to change its internal organizational structure, suspend dividends, stop bonuses, halt management fees, force banks to constitute provisions against actual or potential loses as determined by the supervisory agency, supersede the legal rights of shareholders, remove and replace managers and directors, obtain information from external auditors, and take legal action against auditors for negligence.[5] Supervisory agencies can use these powers to improve the governance of banks as emphasized by the supervisory power view. The supervisory authority can also use these powers to induce banks to funnel credit to favored ends as emphasized by the political/regulatory capture view. The exact definition of Supervisory Power is provided in the data appendix. We use the first principal component indicator of these variables, which varies between –3.05 (Singapore) and 1.14 (U.S.) with a mean of –0.08, and higher values indicating wider authority for bank supervisors.[6]

[5] Note, we obtain the same results when using a proxy for supervisory power that only includes information on the power of the supervisory agency over the bank and excludes the power of the supervisory agency over external auditors. We prefer the broader measure because the supervisory power view holds that only a supervisory agency that has both the information and the power can improve the corporate governance of banks.

[6] The mean is not exactly equal to zero because we use the raw data available from Barth et al. (2004) on the supervisory indicators. These data are available for a larger number countries than the corresponding data on firm obstacles.

Supervisory Independence indicates independence of supervisors from both banks and the government. **Supervisory Independence-Banks** is a dummy variable that indicates whether supervisors are legally protected against lawsuits brought by banks. **Supervisory Independence-Government** is the sum of three dummy variables indicating the involvement of government in appointment, control and removal of supervisors. Supervisory Independence is the sum of the individual indicators. We examine Supervisory Independence, Supervisory Independence-Banks and Supervisory Independence-Government.

Regarding the theories discussed in the Introduction, the supervisory power view predicts a negative relation between Financing Obstacles and Official Supervisory Power.[7] In contrast, the political/regulatory capture view predicts a positive relationship between Financing Obstacles and Supervisory Power. The independent supervision view predicts a negative relation between Supervisory Independence and financing obstacles and also predicts that independence will reduce the adverse impact of supervisory power on Financing Obstacles.

We use two indicators to measure the tools and incentives of private bank creditors to monitor banks and exercise market discipline.

Information Disclosure is designed to measure the degree to which bank supervision forces banks to disclose accurate information to the public and induces private sector monitoring of banks. Information Disclosure is constructed from nine dummy variables that measure whether bank directors and officials are legally liable for the accuracy of information disclosed to the public, whether banks must publish consolidated accounts, whether banks must be rated and audited, whether banks must be audited by certified international auditors, and whether subordinated debt is allowable (which may

[7] See Polinsky and Shavell's (2000) review of the theory of public enforcement and the discussion in Coase (1988). Also, Spiller and Ferejohn (1992) note that lawmakers do not have sufficient information to anticipate all possible circumstances. Thus, there may be efficiency gains to delegating power to a supervisory agency that has the expertise and resources to set and change the specific rules as events evolve.

create a class of private monitors). The Information Disclosure Index is constructed as a principal component indicator, with higher values indicating more tools and incentives for private bank creditors to monitor banks, ranging from –1.83 (Moldova) to 1.46 (United Kingdom).

Moral Hazard measures the generosity of the deposit insurance scheme and is obtained from Demirguc-Kunt and Detragiache (2003). It includes information on the extent of deposit insurance coverage (i.e., coverage of deposits, foreign exchange deposits, interbank deposits, etc.), whether there is co-insurance, the type and source of funding, membership, etc. It proxies for the incentives -- or the lack thereof -- for depositors to monitor banks. The Appendix provides the precise definitions of Moral Hazard and the Information Disclosure variables.

In terms of theory, the private empowerment view predicts (i) a negative relationship between Information Disclosure and financing obstacles, corruption, and special connections and (ii) a positive link between Moral Hazard and the degree of external financing obstacles. As emphasized, the private empowerment view presumes that there are market failures and that these market failures can be ameliorated though information disclosure that facilitates private sector monitoring and through policies that do not reduce the incentives of private agents to monitor banks.

d. Country-level control variables

To assess the robustness of the relation between bank supervision and firms' access to external financing, we include other country-level variables. We include the growth rate of GDP per capita (**Growth**) since firms in faster growing countries are expected to grow faster and face lower obstacles. We use the inflation rate (**Inflation**) to proxy for monetary instability, conjecturing that firms in more stable environments face fewer obstacles and grow faster (Boyd, Smith, and Levine, 2001).

We also include the level of financial development (**Priv**) since we want to assess the impact of supervision on corporate finance independent of overall financial development. Overall financial

development is positively associated with economic growth (King and Levine, 1993; Levine and Zervos, 1998; Levine, Loayza, and Beck, 2000). Rajan and Zingales (1998) and Demirguc-Kunt and Maksimovic (1998) argue that financial development influences growth by easing the external financing constraints faced by firms. Thus, we examine the independent impact of bank supervision on the financing obstacles faced by firms after controlling for overall financial development and conditions in the macroeconomic economy.

Firms in countries with higher inflation, lower financial development, less independent supervisors and less information disclosure report higher financing obstacles (Table 2 Panel C).

In our sensitivity analyses, we include a variety of country controls. Specifically, we control for (i) GDP per capita, (ii) Institutional Development, which measures the overall level of institutional development, (iii) Banking Freedom, which measures the absence of government regulatory restrictions on bank activities; (iv) State-Owned Banks, which equals the share of a country's bank assets that are held by banks that are more than 50 percent government owned; (v) Shareholder Rights, which is a measure of the legal rights of minority shareholders vis-à-vis management and large shareholders and (vi) the occurrence of a Systemic Banking Crisis. The Appendix defines these variables and we discuss them further when we present the sensitivity analyses.

3. The Empirical Model

To examine bank supervision and corporate finance, we assume that the enterprise's underlying response can be described by the following equation:

$$\text{General Financing Obstacle}_{j,k} = \alpha + \beta_1 \text{Government}_{j,k} + \beta_2 \text{Foreign}_{j,k} + \beta_3 \text{Exporter}_{j,k} + \beta_4 \text{No. of Competitors}_{j,k} + \beta_5 \text{Manufacturing}_{j,k} + \beta_6 \text{Services}_{j,k} + \beta_7 \text{Size}_{j,k} + \beta_8 \text{Inflation}_k + \beta_9 \text{Growth}_k + \beta_{10} \text{Priv}_k + \beta_{11} \text{Supervision}_k + \varepsilon_{j,k}. \quad (1)$$

The j and k subscripts indicate firm and country respectively. The variable Supervision in equation (1) represents one – or more – of the various supervision variables discussed earlier.[8] These supervisory indicators change across the different specifications as we discuss below.

Unlike the underlying variable, the observed variable General Financing Obstacle is a polychotomous dependent variable with a natural order. Specifically, the enterprise classifies the obstacle with k = 1, 2, 3, or 4 if the underlying variable is between α_{k-1} and α_{k+1}., with the α-vector being estimated together with the coefficient vector β. We therefore use the ordered probit model to estimate equation (1). We use standard maximum likelihood estimation with heteroskedasticity-robust standard errors.[9] The coefficients, however, cannot be interpreted as marginal effects of a one-unit increase in the independent variable on the dependent variable, given the non-linear structure of the model. Rather, the marginal effect is calculated as $\phi(\beta'x)\beta$, where ϕ is the standard normal density at $\beta'x$. We use the same estimation procedure when using (a) the importance of special connections for obtaining external finance (Special Connection) and (b) the importance of bank corruption (Bank Corruption) for obtaining external finance as dependent variables.

[8] We also experimented with quadratic terms for supervisory power and information disclosure. Although we find some attenuation at high levels, the direct effects do not change in these specifications.

4. Results

A. Initial Findings

Tables III, IV, and V present a series of basic regression results where the dependent variable is General Financing Obstacles, Bank Corruption, and Special Connection respectively. For each indicator of firm financing obstacles, we include each of the supervisory variables individually and then all together while controlling for firm-specific characteristics and various country-level controls as defined above. We do not provide the estimation results on the firm-specific traits to save space.

The results are consistent with the private empowerment view. Firms in countries with supervisory agencies that force accurate information disclosure by banks face lower general financing obstacles (Table III). Furthermore, corrupt bank officials are less of a constraint on the operation and growth of firms in countries where the supervisory agency forces banks to disclose information to the private sector (Table IV), though there is not a significant relationship between special connections and information disclosure (Table V). The evidence further suggests that incentives are important. Countries with low moral hazard face lower general financing obstacles (Table III). Also, the need for special connections with bankers is less of a constraint on firm growth with less generous deposit insurance (i.e., lower levels of Moral Hazard) as shown in Table V. While moral hazard is not closely connected to corruption (Table IV), the findings in Tables III-IV are strongly supportive of the private empowerment view: firms tend to face lower corporate financing obstacles in countries where private bank creditors have the tools (accurate information) and incentives (less generous deposit insurance) to monitor banks.

The results in Table III – V are (1) inconsistent with the supervisory power view but (2) broadly consistent with the political/regulatory capture view. Supervisory Power never enters negatively in any

[9] Alternatively, we can assume a logistic function for the distribution of e and use a logit model. However, it is difficult to justify the preference of one over the other, and in practice, the two models give very similar results (Greene, 2000).

of the regressions in Tables III - V. This suggests that powerful supervisors, i.e., supervisors that have the power to oversee bank behavior and discipline banks do not lower financing obstacles, reduce the need for special connections, or lower the importance of corruption. These results do not confirm the predictions of the supervisory power view.

Indeed, the results on corruption and special connections provide direct evidence on the conflicting predictions of the supervisory power and political/regulatory capture views. The supervisory power view posits the need for powerful official supervision to minimize favoritism, nepotism, and corruption in banks' lending decisions. In contrast, the political/regulatory capture view holds that politicians or banks will capture official supervisors and thus increase the likelihood of favoritism, nepotism, and corruption. In fact, Supervisory Power enters significantly and positively in the corruption and special connections regressions of Tables IV and V. These results support the political/regulatory capture view, but are inconsistent with the supervisory power view.

The results in Tables III-V also advertise the role of supervisory independence. Supervisor independence reduces financing obstacles and the need for special connections with banks. The supervisory independence view also predicts that supervisory independence will reduce the pernicious effects of supervisory power. We explore this below.

The effect of supervisory practices on firms' financing obstacles is not only statistically significant, but also economically relevant. We compute the change in the probability that a firm rates financing obstacles as major (i.e., the probability that a firm rates financial obstacles as a four) when changing bank supervisory policies based on the coefficients in the last regression of Table III. For example, the estimates imply that if a country moves from the 25th percentile of Supervisory Power to the 75th percentile, the probability that a firm rates financing as major obstacle increases from 27% to 29%. The probability decreases from 31% to 26% in the case of Information Disclosure. As another

example, consider Chile and Canada. The Table III regression estimates indicate that if Chile had the Supervisory Power of Canada (-2.15) instead of its own level (0.05), there would be a three percentage point decrease in the probability that Chilean firms rank financing obstacles as major. If Chile had the Supervisory Independence of Canada (4) instead of the current value in Chile (1), the regression estimates predict that there would be a 10 percentage point drop in the probability that Chilean firms rank financing obstacles as major. Finally, the coefficient estimates on Information Disclosure indicate that if Chile had the information disclosure values of Canada (1.05 instead of 0.29), there would be a three percentage point drop in the probability that Chilean firms rank financing obstacles as major. Taken together if Chile adopted the supervisory power, information disclosure policies, and supervisory independence of Canada, there would be a 16 percentage point drop in the probability that Chilean firms would report general financing obstacles as a major constraint on their performance and growth.[10]

B. Robustness to controlling for other country factors

There may exist concerns that the supervisory variables are proxying for other country-specific factors. Countries with different characteristics may choose different supervisory practices. At the same time, these different country-specific traits may drive the financing obstacles faced by firms. Thus, we need to assess whether some third factor is driving both the selection of the supervisory policies and the financing obstacles reported by firms.

We examine a wide-array of country specific factors in Table VI. Specifically, we include the level of real per capita GDP and the Kaufman, Kraay, and Zoido-Lobaton (1999) index of institutional development to assess whether the overall level of economic and institutional development drive the results (Panel A). The Institutional Development index includes information on corruption, the rule of law, the degree of political openness and stability, the quality of the bureaucracy, and the regulatory

[10] Note, we include these examples for illustrative purposes only. These conceptual experiments do not explain how to convince countries to change supervisory policies, and the reforms to Chilean policies contemplated in the experiments are

burden imposed by the state.[11] Not surprisingly, greater institutional development is negatively associated with general financing obstacles and bank corruption. To control for state intervention in the banking industry, we include (i) an indicator of regulatory restrictions on bank activities (Banking Freedom) and (ii) the percentage of the banking industry owned by the government (State-Owned Banks) in panel B. Banking Freedom is negatively linked with bank corruption and the need for special connections, while greater government ownership of banks is positively linked with bank corruption and the need for special connections with banks. Furthermore, we include the La Porta et al. (1998) measure of shareholder protection laws to control for the legal protection of investors (Shareholder Rights). We find that Shareholder Rights enters negatively and significantly (Panel C). Larger values of the shareholder rights index reduces external financing obstacles, lowers the importance of bank corruption as an obstacle to firm growth, and reduces the need for special connections.[12] Finally, we also include a dummy variable indicating whether the country experienced a systemic banking crisis during the 1990s since crises may influence both supervisory policies and financing constraints faced by firms.

As shown in Table VI Panels A – C, this paper's results are robust to the inclusion of these country-specific characteristics. Across all of the regressions, supervisory power is always positively and significantly associated with bank corruption and the need for special connections. Countries where the supervisory agency has the power to oversee bank behavior, remove managers, suspend dividends, stop bonuses, halt management fees, force provisioning, etc., tend to have firms that need to rely more on corruption and special connections to obtain external funding. These findings are inconsistent with the supervisory power view and supportive of the political/regulatory capture view. Furthermore,

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not marginal changes.

[11] We also conducted further robustness checks where we controlled for cross-country differences in political systems. Specifically, we controlled for (i) the degree of checks and balances in the political system by including the number of veto players in the political decision process and (ii) competitiveness of legislative elections. This paper's conclusions are robust to the inclusion of these political variables.

[12] We also ran regressions using Creditor Rights instead of Shareholder Rights. All results hold.

supervisory power is positively and significantly linked with the general financing obstacles faced by firms, except when controlling for broad measures of institutional development or government ownership of banks, which sheds additional, negative light on the supervisory power view.

Furthermore, the robustness checks in Table VI confirm the private empowerment view. Information disclosure is always negatively associated with (i) the financing obstacles felt by firms and (ii) the degree to which corrupt bank officials constrain firm growth. The results on the generosity of deposit insurance regime further support the private empowerment view. Across all of the specification in Table VI, Moral Hazard is positively associated with the financing obstacles felt by firms and the generosity of the deposit insurance system is also positively linked with the need for special connections with banks as a constraint on firm growth.

Finally, note that supervisory independence is negatively associated with general financing obstacles and the need for special connections across all the specifications in Panels A- C of Table VI. Again, this confirms the earlier findings that supervisory independence improves the governance of banks. We now investigate this in greater depth.

C. More on supervisory independence

Table VII examines whether supervisory independence reduces the negative impact of supervisory power. Furthermore, by controlling for the interaction between supervisory power and supervisory independence, we study the specific conditions under which supervisory power exerts a negative impact on firm financing constraints, corruption and the need for special connections. We consider the overall index of supervisory independence. Also, we break apart the two components of the Supervisory Independence index separately into supervisory independence from banks (Supervisory Independence-Banks) and supervisory independence from the government (Supervisory Independence-

Government). We then examine the independent effects of these two components of supervisory independence in the regressions.

The Table VII regressions indicate that when controlling for supervisory independence and the interaction between supervisory independence and supervisory power, supervisory power enters positively and significantly in the general financing, bank corruption, and special connection regressions. Thus, when controlling for the interaction between independence and power, supervisory power exerts a direct, adverse impact on firm financing obstacles.

The results also suggest that supervisory independence reduces the negative impact of supervisory power. The interaction term between supervisory power and supervisory independence enters negatively and significantly in the general financial obstacle and special connection regressions. These results are consistent with the supervisory independence view.

Table VII also presents regressions where we separately examine supervisory independence from the government and banks. There are two main results. First, supervisory independence from banks has a direct, negative impact on the degree to which (i) financing obstacles, (ii) corrupt bank officials, and (iii) the need for special connections with bankers inhibit firm performance. Second, we find evidence that supervisory independence from the government helps alleviate the adverse effect of supervisory power on bank corruption and the need for special connections. Thus, the interaction term between Supervisory Independence-Government and Supervisory Power enters with a negative and significant coefficient in the bank corruption and special connection regressions. These results are inconsistent with the supervisory power view and underline the importance of an independent supervisory body in alleviating both political and regulatory capture.

D. Different samples and estimation procedures

This sub-section presents robustness checks using different sub-samples and estimation procedures.

First, we test whether the results are robust to only including the sub-sample of firms that actually receive bank financing. The full sample might contain firms that have not applied for bank credit, either because they feel discouraged or because they do not see the need. Nonetheless, excluding firms that have not received bank finance does not change this paper's conclusions (Table VIII, columns 1-3).

Second, the number of firms varies substantially across countries. Though we use an ordered probit estimator with robust standard errors, we assess the robustness of the results using a weighted ordered probit.[13] The weights are the inverse of the number of firms to correct for this potential bias (Table VIII, columns 4-6).[14] The results are robust to this estimation procedure. Supervisory power is positively associated with financing obstacles, the importance of bank corruption, and the need for special connections with banks. Again, we confirm the political/regulatory capture view and reject the supervisory power view. Furthermore, information disclosure is negatively linked with financing obstacles, the importance of bank corruption, and the need for special connections with banks, which confirms the private empowerment view.

Third, it may be argued that the main difference in firm responses is between those that classify obstacles as no obstacles or minor on the one hand and moderate or major on the other hand. Thus, instead of using an ordered probit, we reclassify responses to questions about general financing obstacles, bank corruption as an obstacle to firm growth, and special connections as either zero or one,

[13] Furthermore, we conducted the analyses while excluding all high-income countries as defined by the World Bank. This did not change the conclusions.

[14] Note, it is not appropriate to run a pure cross-country regression while averaging across the financing obstacle variables for each country because (i) the composition of firms varies substantially across countries and (ii) the polychotomous nature of the financing obstacles data suggest the use of an ordered probit, while controlling for individual firm traits.

where one signifies that the obstacles is either moderate or major. Then we run a probit regression. Again, the results confirm the conclusions discussed above (Table VIII, columns 7-9).

5. Conclusion

This paper (1) documents the relationship between bank supervision and the financing obstacles faced by firms and (2) provides evidence on different theories of bank supervision. The results provide four tentative conclusions about which bank supervisory practices work best to ease the external financing obstacles faced by firms.

First, we examined whether power supervisory agencies that have the authority to directly monitor and discipline banks facilitate corporate finance. Here, the answer is a resounding no. Countries with stronger supervisory agencies – countries where supervisory agencies can intervene banks, replace managers, force provisioning, stop dividends, etc. – tend to have firms that face greater financing obstacles than firms in countries where the supervisory agency is less powerful. Even after controlling for firm-specific traits and country-specific characteristics, we find that supervisory power hinders external financing opportunities and raises the need for special connections and corruption. The results are inconsistent with theories that hold that official supervisory agencies will promote social welfare by overcoming the information and enforcement costs faced by private agents. Rather, these findings are consistent with the view that politicians will use powerful supervisory agencies to divert the flow of credit to politically connected firms and that powerful banks will "capture" politicians and induce bank supervisors to support the interests of banks, not the interests of society (Stigler, 1975; Shleifer and Vishny, 1998; Haber et al., 2003; Rajan and Zingales, 2003).

Second, we evaluate whether creating an independent supervisory agency mitigates the adverse effects of having a powerful official regulator. We find evidence consistent with this view. Greater

supervisory independence from the government and from banks tends to lower impediments to obtaining external finance. Furthermore, independence reduces the negative effects from power supervision. As independence rises, the negative impact of powerful supervision on firm financing obstacles dissipates. Specifically, as supervisory independence from the government rises, the adverse impact of powerful supervision on firms' reliance on special connections and corruption in raising capital falls. These findings are consistent with the view that supervisory independence moderates political control of the supervisory agency and therefore reduces political manipulation of the flow of credit to firms.

Third, we examine whether bank supervisory strategies that focus on forcing accurate information disclosure to the private sector facilitate corporate finance. The answer is yes. In countries where bank supervision forces accurate information disclosure by banks, firms tend to face lower obstacles to raising external finance. We also find that greater moral hazard – as measured by the generosity of the deposit insurance regime – tends to raise the financing obstacles faced by firms. The results support the view that forcing accurate information disclosure and not distorting the incentives of private agents tends to lower financial obstacles. These findings are consistent with approaches that simultaneously recognize that private agents face substantive information and enforcement costs when monitoring banks, while also recognizing that politicians and regulators will act in their own interests and not necessarily act to reduce market frictions.

Finally, at a very general level, these results emphasize the importance of both market and political failures. Bank supervision clearly matters. Bank supervisory policies that seek to ameliorate market failures by forcing the accurate disclosure of information reduce the obstacles that firms face in raising external finance. This is not a laissez faire – invisible hand – finding. This result suggests that active bank supervision can help ease information and enforcement costs and enhance corporate finance. Just as clearly, however, the results highlight the importance of theories that emphasize that politicians

act in their own interests. Countries with powerful bank supervisors tend to have firms that face (i) greater financing obstacles and (ii) greater reliance on special connections and corruption in raising capital. Thus, mechanisms that simultaneously recognize the importance of market and political failures – such as creating bank supervisory agencies that focus on forcing accurate information disclosure by banks and easing information disclosure of banks – tend to foster more efficient financial intermediation.

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Table I
Financing Obstacles and Supervisory Practice across Countries

General Financing Obstacle is the response to the question "How problematic is financing for the operation and growth of your business?" Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). Supervisory Power indicates the power of the supervisor vis-à-vis banks; Supervisory Independence the independence of the bank supervisor from government and banks. Information Disclosure is the amount of information available to bank creditors and Moral Hazard indicates the generosity of the deposit insurance scheme. Detailed variable definitions and sources are given in the appendix.

	General Financing Obstacle	Supervisory Power	Supervisory Independence	Information Disclosure	Moral Hazard
Argentina	3.03	-0.30	1	1.13	
Belarus	3.28	-2.24	4	-1.55	
Bolivia	3.04	0.22	2	0.06	
Botswana	2.34	0.82	2	0.97	-2.49
Brazil	2.71	1.00	1	0.97	
Canada	2.07	-2.15	4	1.05	2.86
Chile	2.43	0.05	1	0.29	2.20
Croatia	3.34	0.17	2	0.29	
Czech Republic	3.13	1.00	1	-0.03	
Egypt	3.00	0.38	4	-0.13	-2.49
El Salvador	2.87	0.09	1	0.29	-2.49
Estonia	2.49	0.27	1	0.29	
France	2.76	-1.16	3	0.69	1.16
Germany	2.54	-0.91	4	0.97	1.93
Ghana	3.07	-0.09	4	-1.56	1.71
Guatemala	2.97	-0.28	1	-1.14	-2.49
Honduras	2.85	0.82	2	-0.42	-2.49
Hungary	2.67	1.00	2	-0.43	
India	2.54	-0.36	3	-0.42	2.95
Indonesia	2.86	0.74	2	0.25	-2.49
Italy	2.11	-1.66	2	1.27	2.09
Kenya	2.84	1.00	2	-1.00	3.41
Lithuania	2.88	-0.34	2	0.29	
Malawi	2.74	-0.10	2	-1.25	-2.49
Malaysia	2.65	-0.25	3	0.55	-2.49
Mexico	3.40	-0.17	1	-0.43	3.98
Moldova	3.44	-0.18	2	-1.83	
Namibia	1.91	-0.54		-0.13	
Nigeria	3.14	0.61	2	0.39	3.09
Panama	2.18	1.14	3	-0.13	-2.49
Peru	3.04	0.09	3	0.29	2.34
Philippines	2.68	0.95	1	-0.63	3.33
Poland	2.41	0.58	3	0.29	
Portugal	1.73	1.00	4	0.97	-2.49
Romania	3.30	-0.71	1	0.42	
Russia	3.22	-0.40	2	-1.25	
Singapore	1.85	-3.05	3	0.35	-2.49
Slovenia	2.29	1.00	4	-0.43	
South Africa	2.45	-2.95	2	0.77	-2.49
Spain	2.24	-0.32	3	0.97	
Sweden	1.89	-1.55	3	0.69	-2.49
Thailand	3.11	0.72	2	-0.42	-2.49
Trinidad & Tobago	3.03	-0.91	2	-0.43	
Turkey	3.13	-0.30	4	0.69	3.45
United Kingdom	2.25	0.59	4	1.46	0.73
United States	2.33	1.14	4	0.97	3.39
Venezuela	2.49	1.14	3	-0.43	2.52
Zambia	2.71	0.51	2	-0.13	-2.49

Table II
Summary Statistics and Correlations

Summary statistics are presented in Panel A and correlations in Panel B and C, respectively. General Financing Obstacle is the response to the question "How problematic is financing for the operation and growth of your business?" Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). Special Connection, and Bank Corruption are defined in a similar way. Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Manufacturing and Services are industry dummies. Sales equals the logarithm of sales in US$. Number of Competitors is the logarithm of the number of competitors the firm has. Priv is claims on the private sector by deposit money banks as share of GDP. Growth is the growth rate of GDP. Inflation is the log difference of the consumer price index. Supervisory Power indicates the power of the supervisor vis-à-vis banks. Supervisory Independence is the independence of the bank supervisor from government and banks. Information Disclosure is the amount of information available to bank creditors and Moral Hazard indicates the generosity of the deposit insurance scheme. Detailed definitions and the sources are in the data appendix.

Panel A: Summary Statistics:

	Mean	Median	St.Dev.	Maximum	Minimum	Observations
General Financing obstacle	2.75	3.00	1.13	4.00	1.00	4,712
Special Connection	2.13	2.00	1.06	4.00	1.00	4.300
Bank Corruption	1.62	1.00	0.97	4.00	1.00	3,870
Government	0.12	0.00	0.32	1.00	0.00	4,712
Foreign	0.19	0.00	0.39	1.00	0.00	4,712
Exporter	0.38	0.00	0.49	1.00	0.00	4,712
Sales	10.03	12.90	8.20	25.33	-2.12	4,712
Number of Competitor	0.83	0.69	0.32	2.20	0.00	4, 712
Manufacturing	0.35	0.00	0.48	1.00	0.00	4, 712
Services	0.47	0.00	0.50	1.00	0.00	4, 712
Inflation	0.13	0.07	0.16	0.71	0.00	48
Growth	0.02	0.02	0.02	0.07	-0.03	48
Priv	0.38	0.27	0.31	1.16	0.00	48
Supervisory Power	-0.08	0.07	1.05	1.14	-3.05	48
Supervisory Independence	2.43	2.00	1.06	4.00	1.00	47
Information Disclosure	0.07	0.29	0.81	1.46	-1.83	48
Moral hazard	0.29	1.16	2.65	3.98	-2.49	33
GDP per capita	6,931	3,305	8,929	30,794	154	48
Institutional Development	0.29	0.13	0.68	-1.00	1.53	48
Banking Freedom	3.44	3.6	0.68	5	2	48
State-owned Banks	0.23	0.14	0.24	0.8	0	44
Shareholder Rights	3.16	3	1.26	5.5	1	37
Systemic Banking Crisis	0.35	1	0.49	1	0	31

Panel B: Correlations between firm-level variables

	General Financing Obstacle	Special Connection	Bank Corruption	Government	Foreign	Exporter	Sales	Number of Competitors	Manufacturing
Special Connection	0.30***	1.0000							
Bank Corruption	0.26***	0.41***	1.0000						
Government	0.03**	-0.10***	-0.07***	1.0000					
Foreign	-0.16***	-0.09***	-0.09***	-0.04**	1.0000				
Exporter	-0.06***	-0.07***	-0.10***	0.09***	0.24***	1.0000			
Sales	-0.19***	0.01	-0.11***	-0.22***	0.24***	0.10***	1.0000		
Number of Competitors	0.10***	0.01	0.08***	-0.03*	-0.13***	-0.06**	-0.37***	1.0000	
Manufacturing	0.01	-0.01	-0.04**	0.07***	0.10***	0.34***	0.04**	-0.07***	1.0000
Services	-0.10***	0.01	0.02	-0.08***	-0.04***	-0.25***	0.07***	-0.02*	-0.69***

Panel C: Correlations between country-level variables

	General Financing Obstacle	Inflation	Growth	Priv	Supervisory Power	Supervisory Independence	Information Disclosure	Moral hazard	GDP per capita	Institutional Development	Banking Freedom	State-Owned Banks	Shareholder rights
Inflation	0.45***	1											
Growth	-0.25*	-0.13	1										
Priv	-0.48***	-0.52***	-0.05	1									
Supervisory Power	0.13	-0.07	-0.14	-0.15	1								
Supervisory Independence	-0.38**	0.06	0.28*	0.31**	-0.14	1							
Information Disclosure	-0.49***	-0.42***	0.12	0.49***	-0.11	0.13	1						
Moral Hazard	0.18	0.16	0.11	-0.13	0.09	0.08	0.09	1					
GDP per capita	-0.55***	-0.39***	0.17	0.63***	-0.37***	0.45***	0.57***	0.13	1				
Institutional Development	-0.70***	-0.54***	0.38***	0.62***	-0.22	0.32**	0.59***	0.01	0.80***	1			
Banking Freedom	-0.33**	-0.19	0.08	0.32**	0.08	0.16	0.26*	-0.19	0.29**	0.39***	1		
State-Owned Banks	0.34**	0.47***	0.09	-0.32**	-0.06	0.09	-0.31**	0.05	-0.30**	-0.38**	-0.34**	1	
Shareholder Rights	-0.26	-0.30*	0.08	0.14	-0.14	-0.04	0.16	-0.04	0.09	0.27	0.18	-0.18	1
Banking Crisis	0.23	0.30	-0.33*	-0.14	0.06	-0.11	-0.05	0.26	-0.16	-0.31*	-0.42**	0.21	-0.43**

Table III
Supervision and the General Financing Obstacle

The regression estimated is: General Financing Obstacle = β_1 Government + β_2 Foreign + β_3 Exporter + β_4 Manufacturing + β_5 Services + β_6 Sales +β_7 No. of Competitors +β_8 Inflation + β_9 Growth + β_{10} Priv + +β_{11} Supervision + ε. General Financing Obstacle is the response to the question "How problematic is financing for the operation and growth of your business?" Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Manufacturing and Services are industry dummies. Sales is the logarithm of sales in US$. Number of Competitors is the logarithm of the number of competitors the firm has. Priv is claims on the private sector by deposit money banks as share of GDP. Growth is the growth rate of GDP. Inflation is the log difference of the consumer price index. Supervision is one of four supervisory variables. Supervisory Power indicates the power of the supervisor vis-à-vis banks. Supervisory Independence is the independence of the bank supervisor from government and banks. Information Disclosure is the amount of information available to bank creditors and Moral Hazard indicates the generosity of the deposit insurance scheme. The regression is run with ordered probit. Detailed variable definitions and sources are given in the appendix. P-values are reported in parentheses.

	General Financing Obstacle	General Financing Obstacle	General Financing Obstacle	General Financing Obstacle	General Financing Obstacle
Inflation	0.443	0.640	0.308	-0.410	0.301
	(0.001)***	(0.000)***	(0.015)**	(0.112)	(0.283)
Growth	-9.037	-6.758	-8.518	-16.042	-10.287
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Priv	-0.118	-0.094	-0.113	-0.116	0.038
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.353)
Supervisory Power	0.024				0.046
	(0.150)				(0.020)**
Supervisory Independence		-0.122			-0.103
		(0.000)***			(0.000)***
Information Disclosure			-0.087		-0.136
			(0.000)***		(0.000)***
Moral Hazard				0.025	0.028
				(0.005)***	(0.003)***
Observations	4712	4677	4712	2658	2658

*,**,*** indicate significance levels of 10,5, and 1 percent, respectively.

Table IV
Supervision and Bank Corruption

The regression estimated is: Bank Corruption = β_1 Government + β_2 Foreign + β_3 Exporter + β_4Manufacturing + β_5 Services + β_6 Sales +β_7 No. of Competitors +β_8 Inflation + β_9 Growth + β_{10} Priv + +β_{11} Supervision + ε. Bank Corruption is the response to the question "Is the corruption of bank officials an obstacle for the operation and growth of your business?" Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Manufacturing and Services are industry dummies. Sales is the logarithm of sales in US$. Number of Competitors is the logarithm of the number of competitors the firm has. Priv is claims on the private sector by deposit money banks as share of GDP. Growth is the growth rate of GDP. Inflation is the log difference of the consumer price index. Supervision is one of four supervisory variables. Supervisory Power indicates the power of the supervisor vis-à-vis banks; Supervisory Independence the independence of the bank supervisor from government and banks. Information Disclosure is the amount of information available to bank creditors and Moral Hazard indicates the generosity of the deposit insurance scheme. The regression is run with ordered probit. Detailed variable definitions and sources are given in the appendix. P-values are reported in parentheses.

	Bank corruption	Bank corruption	Bank corruption	Bank corruption	Bank corruption
Inflation	0.460	0.255	0.197	1.008	1.730
	(0.003)***	(0.096)*	(0.186)	(0.000)***	(0.000)***
Growth	-8.296	-9.116	-8.746	-11.424	-7.399
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.002)***
Priv	-0.067	-0.070	-0.067	0.019	0.327
	(0.000)***	(0.000)***	(0.000)***	(0.638)	(0.000)***
Supervisory Power	0.130				0.174
	(0.000)***				(0.000)***
Supervisory Independence		-0.010			0.033
		(0.633)			(0.277)
Information Disclosure			-0.076		-0.444
			(0.007)***		(0.000)***
Moral Hazard				-0.010	-0.009
				(0.361)	(0.469)
Observations	3870	3835	3870	2259	2259

*,**,*** indicate significance levels of 10,5, and 1 percent, respectively.

Table V
Supervision and the Need for Special Connection

The regression estimated is: Special Connection = β_1 Government + β_2 Foreign + β_3 Exporter + β_4Manufacturing + β_5 Services + β_6 Sales +β_7 No. of Competitors +β_8 Inflation + β_9 Growth + β_{10} Priv + +β_{11} Supervision + ε. Special Connection is the response to the question "Is the need of special connections with banks an obstacle for the operation and growth of your business?" Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Manufacturing and Services are industry dummies. Sales is the logarithm of sales in US$. Number of Competitors is the logarithm of the number of competitors the firm has. Priv is claims on the private sector by deposit money banks as share of GDP. Growth is the growth rate of GDP. Inflation is the log difference of the consumer price index. Supervision is one of four supervisory variables. Supervisory Power indicates the power of the supervisor vis-à-vis banks; Supervisory Independence the independence of the bank supervisor from government and banks. Information Disclosure is the amount of information available to bank creditors and Moral Hazard indicates the generosity of the deposit insurance scheme. The regression is run with ordered probit. Detailed variable definitions and sources are given in the appendix. P-values are reported in parentheses.

	Special Connection	Special Connection	Special Connection	Special Connection	Special Connection
Inflation	-0.347	-0.389	-0.511	-1.084	-0.373
	(0.010)**	(0.004)***	(0.000)***	(0.000)***	(0.186)
Growth	-7.064	-6.489	-7.597	-13.948	-8.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Priv	-0.091	-0.082	-0.094	-0.085	0.079
	(0.000)***	(0.000)***	(0.000)***	(0.019)**	(0.075)*
Supervisory Power	0.085				0.095
	(0.000)***				(0.000)***
Supervisory Independence		-0.062			-0.117
		(0.001)***			(0.000)***
Information Disclosure			-0.013		-0.082
			(0.596)		(0.044)**
Moral Hazard				0.032	0.027
				(0.001)***	(0.007)***
Observations	4300	4265	4300	2434	2434

*,**,*** indicate significance levels of 10,5, and 1 percent, respectively.

Table VI
Supervision and Financing Obstacles – Controlling for Legal and Regulatory Variables

The regression estimated is: Financing Obstacle = β_1 Government + β_2 Foreign + β_3 Exporter + β_4 Manufacturing + β_5 Services + β_6 Sales + β_7 No. of Competitors + β_8 Inflation + β_9 Growth + β_{10} Priv + β_{11}X + β_{12} Supervision + ε. Financing Obstacle is either the General Financing Obstacle, Special Connection or Bank Corruption. Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Manufacturing and Services are industry dummies. Sales is the logarithm of sales in US$. Number of Competitors is the logarithm of the number of competitors the firm has. Priv is claims on the private sector by deposit money banks as share of GDP. Growth is the growth rate of GDP. Inflation is the log difference of the consumer price index. Supervision is a vector of four supervisory variables. Supervisory Power indicates the power of the supervisor vis-à-vis banks; Supervisory Independence the independence of the bank supervisor from government and banks. Information Disclosure is the amount of information available to bank creditors and Moral Hazard indicates the generosity of the deposit insurance scheme. X is one of six variables. GDP per capita in real US$ is included in logs; Institutional Development is the average of six variables indicating the institutional environment of a country; Banking Freedom indicates the absence of government interference in banking; State-Owned Banks is the share of assets in banks that are majority-owned by the government in total banking assets; Shareholder Rights is an indicator of minority shareholder rights vis-à-vis blockholders and management. Systemic Banking Crisis is a dummy variable that takes on the value one if the country has suffered a systemic banking crisis during the 1990s. The regression is run with ordered probit. Detailed variable definitions and sources are given in the appendix. P-values are reported in parentheses.

Panel A:

	General Financing Obstacle	Bank Corruption	Special Connection	General Financing Obstacle	Bank Corruption	Special Connection
Inflation	0.322	2.032	-0.450	0.151	1.468	-0.424
	(0.254)	(0.000)***	(0.113)	(0.594)	(0.000)***	(0.138)
Growth	-10.165	-5.405	-8.571	-6.607	2.664	-6.667
	(0.000)***	(0.025)**	(0.000)***	(0.002)***	(0.329)	(0.002)***
Priv	0.049	0.427	0.043	0.104	0.463	0.099
	(0.288)	(0.000)***	(0.372)	(0.019)**	(0.000)***	(0.035)**
GDP per capita	-0.019	-0.189	0.066			
	(0.558)	(0.000)***	(0.050)**			
Institutional Development				-0.245	-0.597	-0.083
				(0.000)***	(0.000)***	(0.224)
Supervisory Power	0.042	0.124	0.111	0.024	0.113	0.087
	(0.046)**	(0.000)***	(0.000)***	(0.245)	(0.000)***	(0.000)***
Supervisory Independence	-0.099	0.072	-0.131	-0.065	0.122	-0.104
	(0.000)***	(0.024)**	(0.000)***	(0.017)**	(0.000)***	(0.000)***
Information Disclosure	-0.119	-0.279	-0.140	-0.081	-0.306	-0.062
	(0.012)**	(0.000)***	(0.005)***	(0.045)**	(0.000)***	(0.155)
Moral Hazard	0.029	0.004	0.024	0.029	0.004	0.028
	(0.002)***	(0.729)	(0.018)**	(0.002)***	(0.730)	(0.006)***
Observations	2658	2259	2434	2658	2259	2434

Panel B:

Inflation	0.321	1.861	-0.329	0.300	1.558	-0.523
	(0.253)	(0.000)***	(0.243)	(0.297)	(0.000)***	(0.076)*
Growth	-10.378	-8.834	-8.306	-10.368	-10.231	-9.915
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Priv	0.039	0.348	0.084	0.059	0.359	0.095
	(0.340)	(0.000)***	(0.060)*	(0.152)	(0.000)***	(0.036)**
Banking Freedom	-0.040	-0.248	-0.096			
	(0.282)	(0.000)***	(0.012)**			
State-Owned Banks				-0.001	0.351	0.306
				(0.991)	(0.007)***	(0.008)***
Supervisory Power	0.048	0.181	0.098	0.017	0.182	0.086
	(0.017)**	(0.000)***	(0.000)***	(0.460)	(0.000)***	(0.000)***
Supervisory Independence	-0.094	0.084	-0.097	-0.101	0.049	-0.099
	(0.000)***	(0.008)***	(0.000)***	(0.000)***	(0.108)	(0.000)***
Information Disclosure	-0.124	-0.397	-0.057	-0.176	-0.503	-0.137
	(0.001)***	(0.000)***	(0.171)	(0.000)***	(0.000)***	(0.001)***
Moral Hazard	0.026	-0.021	0.022	0.029	0.003	0.036
	(0.006)***	(0.085)*	(0.030)**	(0.005)***	(0.807)	(0.001)***
Observations	2658	2259	2434	2513	2124	2297

Panel C:

	General Financing Obstacle	Bank Corruption	Special Connection	General Financing Obstacle	Bank Corruption	Special Connection
Inflation	0.167	0.848	-0.770	0.331	1.463	-0.020
	(0.575)	(0.017)**	(0.011)**	(0.258)	(0.000)***	(0.947)
Growth	-8.815	-0.873	-3.607	-10.906	-7.480	-5.474
	(0.000)***	(0.717)	(0.084)*	(0.000)***	(0.003)***	(0.009)***
Priv	0.118	0.227	0.108	0.036	0.290	0.134
	(0.021)**	(0.002)***	(0.051)*	(0.403)	(0.000)***	(0.005)***
Shareholder rights	-0.065	-0.181	-0.113			
	(0.002)***	(0.000)***	(0.000)***			
Systemic banking crisis				-0.053	0.081	0.013
				(0.333)	(0.242)	(0.826)
Supervisory Power	0.058	0.216	0.132	0.048	0.188	0.075
	(0.007)***	(0.000)***	(0.000)***	(0.020)**	(0.000)***	(0.001)***
Supervisory Independence	-0.098	0.020	-0.143	-0.115	0.002	-0.071
	(0.001)***	(0.566)	(0.000)***	(0.000)***	(0.940)	(0.013)**
Information Disclosure	-0.100	-0.480	0.034	-0.126	-0.368	-0.183
	(0.035)**	(0.000)***	(0.493)	(0.003)***	(0.000)***	(0.000)***
Moral Hazard	0.041	-0.061	0.018	0.033	-0.003	0.019
	(0.001)***	(0.000)***	(0.173)	(0.001)***	(0.801)	(0.065)*
Observations	2263	1908	2058	2377	2010	2157

Table VII
Independent Supervisors and Financing Obstacles

The regression estimated is: Financing Obstacle = β_1 Government + β_2 Foreign + β_3 Exporter + β_4Manufacturing + β_5 Services + β_6 Sales +β_7 No. of Competitors +β_8 Inflation + β_9 Growth + β_{10} Priv + +β_{11} Supervision + ε. Financing Obstacle is either the General Financing Obstacle, Special Connection or Bank Corruption. Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Manufacturing and Services are industry dummies. Sales is the logarithm of sales in US$. Number of Competitors is the logarithm of the number of competitors the firm has. Priv is claims on the private sector by deposit money banks as share of GDP. Growth is the growth rate of GDP. Inflation is the log difference of the consumer price index. Supervision is one of three supervisory variables. Supervisory Power indicates the power of the supervisor vis-à-vis banks; Supervisory Independence from Banks/Government the independence of the bank supervisor from government and banks, respectively. The regression is run with ordered probit. Detailed variable definitions and sources are given in the appendix. P-values are reported in parentheses.

	General Financing Obstacle	Bank Corruption	Special Connection	General Financing Obstacle	Bank Corruption	Special Connection
Inflation	0.576	0.457	-0.323	0.472	-0.385	-0.385
	(0.000)***	(0.005)***	(0.021)**	(0.004)***	(0.007)***	(0.007)***
Growth	-7.228	-8.309	-6.518	-9.138	-7.830	-7.830
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Priv	-0.099	-0.066	-0.083	-0.065	-0.081	-0.081
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Supervisory Power	0.160	0.118	0.208	0.107	0.192	0.192
	(0.001)***	(0.040)**	(0.000)***	(0.065)*	(0.000)***	(0.000)***
Supervisory Independence	-0.112	-0.002	-0.047			
	(0.000)***	(0.912)	(0.011)**			
Supervisory Power*	-0.054	0.003	-0.047			
Supervisory Independence	(0.001)***	(0.874)	(0.007)***			
Supervisory Independence				0.043	0.002	0.002
from government				(0.115)	(0.930)	(0.930)
Supervisory Independence				-0.110	-0.157	-0.157
from banks				(0.012)**	(0.000)***	(0.000)***
Supervisory Power*				0.015	-0.081	-0.081
Supervisory Independence – Govt				(0.526)	(0.000)***	(0.000)***
Supervisory Power*				-0.027	0.050	0.050
Supervisory Independence – Banks				(0.579)	(0.247)	(0.247)
Observations	4677	3835	4265	3835	4265	4265

*,**,*** indicate significance levels of 10,5, and 1 percent, respectively.

Table VIII
Supervision and Financing Obstacles – Robustness Tests

The regression estimated is: General Financing Obstacle = β_1 Government + β_2 Foreign + β_3 Exporter + β_4 Manufacturing + β_5 Services + β_6 Sales +β_7 No. of Competitors +β_8 Inflation + β_9 Growth + β_{10} Priv + +β_{11} Supervision + ε. Financing Obstacle is the General Financing Obstacle, Special Connection or Bank Corruption. Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Manufacturing and Services are industry dummies. Sales is the logarithm of sales in US$. Number of Competitors is the logarithm of the number of competitors the firm has. Priv is claims on the private sector by deposit money banks as share of GDP. Growth is the growth rate of GDP. Inflation is the log difference of the consumer price index. Supervision is one of four supervisory variables. Supervisory Power indicates the power of the supervisor vis-à-vis banks. Supervisory Independence is the independence of the bank supervisor from government and banks. Information Disclosure is the amount of information available to bank creditors and Moral Hazard indicates the generosity of the deposit insurance scheme. The regressions in columns 1-6 are run with ordered probit and the regressions in columns 7-9 with random effects probit, where the financing obstacle takes the value zero if the original variable is one or two, and one otherwise. The sample in columns 1-3 is limited to firms that finance part of their investment with bank finance. The regressions in columns 4-6 are weighted with the inverse of the number of firms in the country. Detailed variable definitions and sources are given in the appendix. P-values are reported in parentheses.

	Firms with Access to Bank Finance			Weighted regressions			Probit regressions		
	General Financing Obstacle	Bank Corruption	Special Connection	General Financing Obstacle	Bank Corruption	Special Connection	General Financing Obstacle	Bank Corruption	Special Connection
Inflation	0.384	1.813	-0.433	0.165	1.570	-0.211	0.290	1.831	-0.250
	(0.266)	(0.000)***	(0.211)	(0.562)	(0.000)***	(0.467)	(0.369)	(0.000)***	(0.457)
Growth	-12.956	-9.273	-10.107	-8.993	-7.354	-6.505	-12.029	-7.619	-9.629
	(0.000)***	(0.001)***	(0.000)***	(0.000)***	(0.002)***	(0.001)***	(0.000)***	(0.013)**	(0.000)***
Priv	0.033	0.346	0.092	0.000	0.304	0.084	0.065	0.353	0.054
	(0.476)	(0.000)***	(0.068)*	(0.997)	(0.000)***	(0.074)*	(0.184)	(0.000)***	(0.298)
Supervisory Power	0.039	0.189	0.084	0.044	0.175	0.083	0.024	0.111	0.068
	(0.080)*	(0.000)***	(0.000)***	(0.031)**	(0.000)***	(0.000)***	(0.306)	(0.000)***	(0.008)***
Supervisory Independence	-0.102	0.087	-0.090	-0.106	0.020	-0.106	-0.076	-0.053	-0.147
	(0.001)***	(0.017)**	(0.003)***	(0.000)***	(0.517)	(0.000)***	(0.009)***	(0.166)	(0.000)***
Information Disclosure	-0.111	-0.406	-0.099	-0.115	-0.399	-0.098	-0.181	-0.363	-0.065
	(0.008)***	(0.000)***	(0.035)**	(0.003)***	(0.000)***	(0.022)**	(0.000)***	(0.000)***	(0.160)
Moral Hazard	0.038	-0.006	0.033	0.033	-0.002	0.027	0.037	-0.003	0.031
	(0.000)***	(0.668)	(0.004)***	(0.001)***	(0.859)	(0.007)***	(0.001)***	(0.855)	(0.008)***
Observations	2035	1691	1836	2658	2259	2434	2658	2259	2434

Appendix : Variables and Sources

Variable	Definition	Original source
Banking Freedom	Indicator of openness of banking and financial system: specifically, whether the foreign banks and financial services firms are able to operate freely, how difficult it is to open domestic banks and other financial services firms, how heavily regulated the financial system is, the presence of state-owned banks, whether the government influences allocation of credit, and whether banks are free to provide customers with insurance and invest in securities (and vice-versa). The index ranges in value from 1 (very low – banks are primitive) to 5 (very high – few restrictions). Averaged over 1995-97.	Heritage Foundation
Corruption of bank officials	Is the corruption of bank officials no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Exporter	Dummy variable that takes on the value one if firm exports, zero otherwise.	World Business Environment Survey (WBES)
Foreign	Dummy variable that takes on the value one if any foreign company or individual has a financial stake in the ownership of the firm, zero otherwise.	World Business Environment Survey (WBES)
GDP per capita	Real GDP per capita, averaged over 1995-1999	World Development Indicators
General Financing Obstacle	How problematic is financing for the operation and growth of your business: no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Government	Dummy variable that takes on the value one if any government agency or state body has a financial stake in the ownership of the firm, zero otherwise.	World Business Environment Survey (WBES)
Growth	Growth rate of GDP, average 1995-99	World Development Indicators
Inflation rate	Log difference of Consumer Price Index	International Financial Statistics (IFS), line 64
Manufacturing	Dummy variable that takes on the value one if firm is in the manufacturing industry, zero otherwise.	World Business Environment Survey (WBES)
Moral Hazard	An aggregate index of moral hazard that increases with the generosity of the deposit insurance regime. Specifically, it is the first principal component based on the following deposit insurance design features: existence of co-insurance, coverage of foreign currency and interbank deposits, type of funding (unfounded, callable or funded), source of funding (banks only, banks and government, or government only), management (private, joint or public), membership (compulsory or voluntary) and the level of explicit coverage (coverage limit divided by deposits per capita).	Demirguc-Kunt and Detragiache (2003)
Need special connections with banks	Is the need of special connections with banks/financial institutions no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Number of Competitors	Regarding your firm's major product line, how many competitors do you face in your market?	World Business Environment Survey (WBES)

Priv	{(0.5)*[F(t)/P_e(t) + F(t-1)/P_e(t-1)]}/[GDP(t)/P_a(t)], where F is credit by deposit money banks to the private sector (lines 22d), GDP is line 99b, P_e is end-of period CPI (line 64) and P_a is the average CPI for the year.	IFS
Information Disclosure	Principal component indicator of nine dummy variables that measure whether (1) bank directors and officials are legally liable for the accuracy of information disclosed to the public, (2) whether banks must publish consolidated accounts, (3) whether banks must be audited by certified international auditors, (4) whether 100% of the largest 10 banks are rated by international rating agencies, (5) whether off-balance sheet items are disclosed to the public, (6) whether banks must disclose their risk management procedures to the public, (7) whether accrued, though unpaid interest/principal enter the income statement while the loan is still non-performing (8) whether subordinated debt is allowable, and (9) whether there is no explicit deposit insurance system and no insurance was paid the last time a bank failed..	Barth, Caprio and Levine (2004)
Institutional Development	Average value of six indicators measuring voice and accountability, political stability, regulatory quality, government effectiveness, control of corruption and rule of law. Each of these indicators, in turn is constructed from a wide array of survey indicators in the respective area.	Kaufman, Kraay and Zoido-Lobaton (1999)
Services	Dummy variable that takes on the value one if firm is in the service industry, zero otherwise.	World Business Environment Survey (WBES)
Shareholder rights	Summary indicator of the rights of minority shareholders vis-à-vis management and blockholders	La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997, 1998)
Size	Logarithm of firm sales	World Business Environment Survey (WBES)
State-owned banks	Percentage of banking system's assets in banks that are 50% or more government owned	Barth, Caprio and Levine (2004)
Supervisory Independence	The degree to which the supervisory authority is independent from the government and legally protected from the banking system	Barth, Caprio and Levine (2004)
Supervisory Independence from banks	The degree to which the supervisory authority is legally protected from the banking system	
Supervisory Independence from government	The degree to which the supervisory authority is independent from the government (To whom are the supervisory bodies responsible or accountable? How is the head of the supervisory agency (and other directors) appointed? How is the head of the supervisory agency (and other directors) removed?) Ranges from one (low) to three (high independence).	
Supervisory Power	Principal component indicator of 14 dummy variables: 1.Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank? 2.Are auditors required by law to communicate directly to the supervisory agency any presumed involvement of bank directors or senior managers in elicit activities, fraud, or insider abuse? 3.Can supervisors take legal action against external auditors for negligence? 4.Can the supervisory authority force a bank to change its internal organizational structure? 5.Are off-balance sheet items disclosed to supervisors? 6. Can the supervisory agency order the bank's directors or management to constitute provisions to cover actual or potential losses? 7. Can the supervisory agency suspend the directors' decision to distribute: a) Dividends? b) Bonuses? c) Management fees? 8.Can the supervisory agency legally declare-such that this declaration supersedes the rights of bank shareholders-that a bank is insolvent? 9.Does the Banking Law give authority to the supervisory agency to intervene that is, suspend some or all ownership rights-a problem	Barth, Caprio and Levine (2004)

	bank? 10.Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency do the following: a) Supersede shareholder rights? b) Remove and replace management? c) Remove and replace directors?	
Systemic banking crisis	Dummy variable that takes on the value one if the country suffered a systemic banking crisis during the 1990s	Caprio and Klingebiel (1999)