ABSTRACT

Title:	AN INTEREST GROUP THEORY OF FINANCIAL DEVELOPMENT
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My work contributes to current explanations of the variance in financial development across countries by considering the role of political and legal structure in determining the effect of private interests on financial policy and illustrating the political obstacles that policymakers face when reforming the financial system.

In Chapter 2, I present a political economy model to study the role of politics in the process of financial development across emerging markets. The model concludes that both special interest groups and political structure affect the level of credit market development chosen in equilibrium. When policymakers are constrained by political institutions that require democratic accountability, they are more likely to improve the level of creditor rights enforcement in the financial system. Financial reform is also more likely to occur in wealthy and highly productive economies. In contrast, the model shows that openness to international capital inflows impedes financial development. Furthermore elite special interest group members benefit more from financial repression when wealth is unequally distributed; hence, income inequality provides a further obstacle to financial reform in emerging markets.

Chapter 3 empirically investigates the role of political institutions in implementing financial reform under three different levels of democratic accountability, Free Countries, Partly Free Countries and Not Free Countries. I find that the institutional details of the political system, as summarized by the number and cohesion of its veto players – individuals whose consent is required for policy change – are weakly associated with credit market development in Partly Free Countries.

Chapter 4 (co-authored with A. Knill) investigates the role of security laws on the ability of firms to raise external finance by issuing capital. We find that securities laws have disparate effects on capital issuance between small and large firms in G10 and emerging market countries. Private enforcement of securities laws that codify existing market arrangements is found to be a deterrent to capital issuance for small firms and firms in emerging markets. Public enforcement of securities laws by government regulation significantly increases the probability of issuance for emerging market firms.

AN INTEREST GROUP THEORY OF FINANCIAL DEVELOPMENT

By

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Dedication

I dedicate my dissertation to my son, Andrew Dubois Thomas Richardson, born during the writing of this thesis. Drew, my wish for you is that your future is filled with opportunities, abundance, music, happiness, and laughter and that you experience in your life the joy that you have brought to mine.

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Chapter 1: Introduction

The purpose of this dissertation is to examine the institutions that underpin financial systems. Political and legal institutions function in tandem to shape financial policy, in part, by determining the ability of those who benefit from financial repression to block development. I find that legal institutions that fail to protect private property rights generate a dichotomy between entrenched corporate interests and aggregate welfare. For this reason, politicians are influenced by powerful, elite special interest groups when forming financial policy. My thesis contributes to current explanations of the variance in financial development across countries by analyzing the effect of private interests on financial policy and examining the institutional obstacles that policymakers face when reforming the financial system.

The context of this dissertation is embedded in a large literature examining the role of finance on growth. In a recent revitalization of this research, Levine (1997) demonstrates the critical causal relationship between financial structure and economic development by explaining the purpose of financial systems within society, how they operate, and the mechanisms by which they affect and are affected by economic growth. Shleifer and Vishny (1997) produce a second watershed paper under the finance and development umbrella. Their article examines the different ways economies deal with the problem of corporate governance: the set of laws and institutions created to ensure that firms share their profits with the suppliers of capital. The authors focus on two differentiating features of corporate governance systems across countries: ownership concentration and the degree of legal protection of investors. Shareholder rights determine the competency of the financial system to allocate society's resources

efficiently. High ownership concentration is a market response to the agency costs that plague financial systems with weak corporate governance institutions. A juxtaposition of Shleifer and Vishny (1997) and Levine (1997) reveals that the effectiveness of a financial system to generate economic growth is dependent on the institutional structure in which the system is embedded.

La Porta et al. (1998) offers a rationale for the success of financial systems in promoting growth known as the "law and finance" view of financial development. The authors explore the contribution of a country's legal origin in the formation of its financial structure and its corporate governance institutions, finding that legal origin — be it English common law, or French, German or Scandinavian civil law — partly determines the quality of investor protection and the size of the stock market versus the banking sector. The paper concludes that English common law systems generally have the strongest investor protection enforcement, followed by Germany, Scandinavian, and lastly, French civil systems. Beck et al. (2001) support these results, finding that legal origin has a considerable influence on access to bank credit.

Though the law and finance view is the leading explanation for the variance in the proficiency of financial systems across countries, the literature also recognizes a relationship between political institutions and financial system development. Rajan and Zingales (2002) analyze the importance of interest groups as opposed to legal origin or culture in influencing financial development. They propose and test a theory that firms are more willing to support financial liberalization in times of trade openness and increased international competition. Firms are more resistant to financial development when the economy is relatively more closed. The authors explain La Porta et al.'s (1998)

results by suggesting that in Civil law countries, like France, it is easier for governments to implement new policies when swayed by interest groups to do so.

Biasis and Mariotti (2003) provide a theoretical model that implements the story told by Rajan and Zingales. The authors show that soft bankruptcy laws, which are indicative of low levels of financial development, may actually increase social welfare by reducing the potential for inefficient liquidation caused by imperfect credit markets. However, imperfect sanctions against default impose a collateral requirement that prevents poor agents from accessing the credit market, thus, the gains to rich entrepreneurs are bought at the expense of the poor. Within their model, the authors point out that the "[a]gents with different initial resources typically have different preferences towards the bankruptcy law. Hence different laws can be chosen in different countries, reflecting the political influence of the different social classes, and possibly at odds with social welfare."

Other research in the political economy aspects of financial development include Pagano and Volpin (2002), who survey the literature on corporate governance structures by examining the ability of political economy methodology to analyze the economic regulations and financial institutions that result from the balance of power between the constituents of society. The main insights of the political economy approach is that it explains international differences in financial policy by describing "which constituencies are assuming a certain regulatory outcome, why they are currently dictating the rules, and how and why the balance of power can shift against them." From the political science literature Haggard et al. (1993) give a detailed multi-country case study of the influence of political institutions on financial repression and liberalization. The authors identify

several key factors that affect financial structure development, including macro instability as a political liability, the existence of conservative central banks, new government installation, and the presence of countervailing interest groups.

Other researchers, for example Denizer et al. (1998), have shown that through a combination of powerful elites and low inter-party competition, interest groups have been able to instigate and perpetuate implicit subsidies through government allocation of credit to favored firms and industries. Though research on the politics and economics of financial development is scarce, several papers suggest that the effects of political economy on financial development deserve further investigation.[1]

In addition, empirical studies, like those undertaken by Singh (1995) and Glen and Pinto (1994), underscore the importance of policy reform on firms' financial behavior. Singh credits the intense intervention in financial markets by developing-country governments for the tendency of large firms to rely primarily on new equity issues to finance investments instead of the internal revenues or bank loans predicted by theory. The experience of firms in developing countries – notoriously lacking in legal rules, corporate governance institutions and legal enforcement – reveals that there must be influences other than legal structure on the size of the stock market and the degree of financial development. The paper by Glen and Pinto offers a qualitative framework to analyze how the issues of financing cost, riskiness, disclosure and fear of loss of control affect the firm's capital structure decision. The authors connect government policies — including capital controls, tax incentives and interest rate ceilings — to financing decisions made by firms.

[1] See Hellman et al. (1998); Hellman and Shankermann (2000); Krozner (1998, 1999); Faccio (2002); Morck et al. (1998); Gordan and Lei (1999); Johnson and Titman (2002); and Laffont and Tirole (1991).

Booth et al. (1999) highlight differences in financing behavior between emerging market and industrialized firms. The researchers find that firms in developing countries are affected by the same sort of financial variables when making their capital structure decisions as firms in industrialized countries. The crucial difference is that knowing the country of an emerging market firm's origin is as least as important in explaining its capital decisions as the firm's characteristics. This observation provides further evidence, albeit indirect, that a country's institutional factors, such as political institutions, go a long way in accounting for firms' financial decision-making.

Chapters 2 and 3 of my thesis explore the role of institutions in developing credit markets. Credit market development is particularly critical in emerging markets because firms receive the lion's share of their investments funds from banks.[2] Chapter 2 presents a general equilibrium model that analyzes the effect of political institutions on financial intermediary development in an emerging market economy. The model finds that the amount of political accountability imposed by the country's political system affects the level of credit market development that a policymaker chooses in equilibrium.

Chapter 3 explores whether there exists a connection between the institutional details of the political system and intermediary development. I develop four empirical strategies to analyze this relationship and determine the sensitivity of the influence of political institutions on credit access to different legal regimes and levels of financial openness. Though Chapter 2 identifies the importance of democratic accountability in increasing accesses to credit, Chapter 3 finds that the detailed characteristics of the

[2] For example, Rojas-Suarez and Wiesbrod (1996) study capital market development in seven Latin American countries. The authors find that only in Chile is equity a substantial source of finance. For other countries, firms are almost entirely dependent on bank loans to make investments.

political system play a weak role in credit development once political constraints on the executive have been taken into account.

While most corporations receive much of their financing through bank loans, beginning in the 1990's large corporations in developing countries have relied heavily on new issues to fund investments. Chapter 4 (coauthored with A. Knill) investigates the role of securities laws on the ability of firms to raise external funds by issuing capital. We find that securities laws have disparate effects on capital issuance between small and large firms in G10 and emerging market countries.

Chapter 2: An Interest Group Theory of Credit Market Development

1. Introduction

Financial development, the capacity of the financial system to efficiently allocate capital from saver to investor, enhances a country's ability to generate economic growth.[3] Complicating this relationship between financial development and growth is the acknowledgement that some economic agents benefit from dysfunctional financial systems. The disparate effects of financial development on the economic prosperity of different segments of society are part of the explanation for why financial systems vary dramatically across countries.

The finance and growth literature has uncovered the role of economic institutions in determining a country's level of financial development and made the important connection between legal institutions, property rights, and the enforcement of financial contracts.[4] However, the role of institutions in financial development is not limited to economic functions; political institutions affect the ability of those who benefit from repression of financial markets to persuade their governments to restrict financial development. In order to understand completely the role of institutions in explaining differences in financial structures across countries it is necessary to consider both channels of institutional influence.

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[3] See also Levine and King (1993), Levine (1997) Levine and Zervos (1998) for landmark studies on financial development and growth.

[4] La Porta et al. (1998) is the first to offer a rationale for the success of financial systems in promoting growth known as the "law and finance" view of financial development. The authors explore the contribution of a country's legal origin – be it English Common Law or French and German Civil Law – in the formation of its financial structure and its corporate governance institutions, finding that legal origin partly determines the quality of investor protection.

The recent history of emerging markets illustrates the political obstacles faced by governments that attempt to develop their financial system. In these countries, the decades of the 1980s and 1990s were characterized, largely, by reform of the banking system. With varying degrees of success, reforms focused on liberalizing financial prices (interest rates) and reducing government-directed credit programs to favored corporations and industries. Several studies present anecdotal evidence of how high capital costs, increased firm competition, and reductions in government subsidies strengthen large corporations' political resistance to financial development.[5]

To examine the role political institutions in achieving financial development in emerging economies, I present a model in which a single policymaker sets financial policy by determining the level of creditor rights enforcement. The enforcement of creditor rights is a natural focus for examining government financial policy due to the importance of banking regulation in emerging markets. Firms in emerging markets are much more limited in their capacity to raise external finance than firms in developed countries[6]. They do not have access to the range of securities and financial options available in industrialized nations. Therefore, the ability of the banking system to finance projects efficiently is even more crucial. Bankruptcy laws that protect creditors allow banks to lend to small and medium enterprises reducing the incidence of credit rationing to larger firms.

In my model, stronger creditor protection increases the availability of credit to entrepreneurs, which raises the demand for capital and increases the equilibrium interest

[5] Most notably Rajan and Zingales (2003) and Singh (1995).
[6] Additionally, the government is often the main borrower in the economy, providing formidable competition to firms of all sizes for investment funds.

rate. Lenders benefit from financial development because of the increase in the lending rate, while poor and middle-income entrepreneurs benefit because they are able to produce when they otherwise could not in a financially repressed economy. Wealthy agents, on the other hand, are harmed by financial development because they suffer an increase in the cost of capital. These agents have the narrowly focused common objective required (Olson 1965) to organize into a political interest group and block the reform of the financial sector. The policymaker values aggregate welfare as well as the campaign contributions that she receives from the interest group of wealthy agents but is constrained in the amount of aggregate welfare that she can forgo in favor of campaign contributions by the economy's political institutions. Political institutions determine how accountable the policymaker must be to the general electorate when evaluating her tastes for campaign contributions aimed at maintaining financial repression. In equilibrium, the level of financial development the policymaker chooses is dependent on both interest group influence and the level of democratic accountability imposed on governments by the country's political institutions.[7]

By using numerical simulation techniques, my analysis sheds light on the political barriers to developing the financial system. The central conclusion of the theoretical model is that political institutions that impose more accountability on policymakers achieve higher levels of financial development. While special interest groups influence financial policy, a country's political structure determines the potency of elite influence

[7] In a related work, Biasis and Mariotti (2003) model bankruptcy reform by assuming the government acts like a benevolent social planner who always maximizes aggregate welfare irrespective of institutional restraints. In contrast, I model the government more realistically as I model a self-interested actor who is influenced by special interests groups and constrained by the political institutions that structure the economy.

on reform. Determinants of accountability such as competitive elections, independent judicial systems, and low corruption ensure that policymakers must value the well-being of the citizenry when making policy decisions. Hence, politicians are unwilling to capitalize on campaign contributions by withholding financial reforms that increase social welfare.

Comparative static analysis of the model allows me to examine the critical relationship between the economic environment, political accountability, and financial reform. This relationship has not been significantly explored by any other theoretical or empirical work on the determinants of financial development. The model validates the intuition that financial reform is more easily attained in wealthier industrialized economies. In contrast, it predicts that financial openness to capital inflows, e.g. foreign direct investment, aggravates financial reform. I show that capital openness negatively affects financial development by lowering the cost of capital and reducing the ability of creditor rights protection to increase aggregate social welfare. Finally, I demonstrate that special interest group members benefit more from financial repression when there is relatively more wealth inequality in the economy. Thus, wealth inequality decreases the likelihood that the policymaker will choose to develop the financial system.

The paper is organized as follows. Section 2 presents the set up of the simple financial system and introduces three special cases of credit markets: perfect markets, complete financial repression and imperfect credit markets. Section 3 analyzes the effect of financial development on the welfare of the special interest group, politically disorganized unconstrained and constrained firms and poor lenders. Section 4 summarizes the Grossman and Helpman model of interest group influence and provides

an application to political institutions. Sections 5 and 6 discuss the political equilibrium and present five results that follow from the model. Section 7 concludes.

2. A Simple Model of Financial Development

2.1 Setup

The set up of the financial system is loosely based on Matsuyama (2000). I make several crucial modifications to Matsuyama's original framework in order to capture the process of political reform in the credit system of an emerging economy. Furthermore, my model assumes that agents face a decreasing returns to scale production technology in contrast to the constant returns function in Matsuyama's paper.

There exists a small closed economy populated with a continuum of agents. Agents live for two periods. In the first period, individuals make their investment decisions and in the second period, they consume final wealth. Additionally, there are two sources of heterogeneity across agents: they are endowed with different amounts of initial wealth, w, and some have access to an investment project. At the beginning of period one, each individual receives a wealth endowment, $w > 0$.

To focus this theoretical investigation on a financial system in a poor economy I make two additional assumptions. The first poor country assumption introduces significant wealth inequality into the economy by asserting that there are η times as many agents in the bottom half of the domain of the wealth distribution function (the poor cohort) than at the top half the wealth distribution (rich cohort). Secondly, I assume that every agent in the top half of the wealth distribution has access to an investment project with a gross rate of return equal to, g. However, only a $\frac{1}{\eta}$ of agents in the bottom

domain have access to investment projects. I make this assumption in order to avoid results that depend on all the entrepreneurs being rich. Let N be the number of agents with wealth, w. Hence, the number of agents with investment projects is equal to $N\int_0^M \frac{1}{M} dw = N$. Agents without investment projects are called households. Agents with investment projects are called entrepreneurs. These assumptions capture two realistic characteristics of poor economies, wealth inequality and the social stratification of agents into capitalists and laborers.[8]

Wealth is uniformly distributed across households by $w \sim U\left[0, \frac{M}{2}\right]$. Let $H(w)$ denote the wealth distribution across households, where $H'(w) = \frac{2}{M}$. Wealth is uniformly distributed across entrepreneurs by $w \sim U[0, M]$. Let $G(w)$ denote the wealth distribution across entrepreneurs, where $G'(w) = \frac{1}{M}$.

The expression $N\frac{(\eta - 1)}{2}\int_0^{M/2} wH'(w)dw + N\int_0^M wG'(w)dw = N\frac{M}{8}(3+\eta)$ gives the total number of agents with wealth equal to w.

A critical characteristic of the project's production function is that there exists a minimum scale of investment, $k \geq 1$. The minimum investment scale implies that entrepreneurs with initial wealth less than one must borrow from the economy's credit market in order to set up their projects. Entrepreneurs with wealth greater than one self-

[8] See Biasis and Mariotti (2003).

finance their projects and lend their remaining endowment to other agents. The production function is given by Equation (2.1)[9]

$$F(k) = \begin{cases} 0 & if \quad k < 1 \\ gk^{1/2} & if \quad k \geq 1, \end{cases} \Bigg\}. \tag{2.1}$$

The production function places restrictions on the range of the parameter g.[10] As long as g is greater than the gross interest rate, $i(\lambda)$, agents will want to invest at least one unit of capital into their projects. The interest rate is a function of financial development. It is endogenously determined by the credit market equilibrium condition that aggregate demand for investment is equal to the aggregate supply of capital.

The credit market is characterized by a market imperfection. The legal structure covering debt contracts (bankruptcy laws) is too weak to ensure that creditors will receive the full amount owed to them if the borrower defaults. Let B be the loan amount. B is equivalent to the capital the agent chooses to invest minus his wealth endowment, $B = k - w$. As described in Equation (2.2) the borrower will only repay his debt obligation if the cost of repayment is less than the fraction of output lost by defaulting.

$$i(\lambda)B = i(k-w) \leq \lambda g k^{1/2}, \qquad \lambda \in [0,1]. \tag{2.2}$$

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[9] The decreasing returns production function ensures that the policymaker faces a tradeoff between social welfare and political rents when choosing financial policy. Under a CRS production technology an increase in the welfare of poor agents will be offset by a corresponding decrease in the welfare of wealthy agents, therefore aggregate social welfare will remain unchanged when financial policy is improved. With DRS technology, aggregate social welfare is unambiguously increased when the policymaker chooses a financial policy that increases access to credit to poorer entrepreneurs. This production function has two important implications on the agent's investment decisions. It ensures that the optimal capital level of capital agents choose is finite rather than infinite as in the CRS case. DRS technology also implies that the amount of wealth required to set up a project is increasing in the level of capital investment. The increasing wealth requirement is an additional obstacle to poor entrepreneurs that want to invest optimally.

[10] The gross return must be greater than zero for agents to invest in their projects. The model restricts $gk^{1/2} - k > 0$ for the function to be sensible. Since the minimum level of capital investment is assumed to be $k = 1$, the restriction implies $g > 1$.

The term λ is the fraction of output creditors can seize in case of default. Higher values of λ correspond to stronger enforcement of creditor rights. The degree to which the financial system protects creditor rights is the measure of financial development in this model. Financial development and creditor rights enforcement will be used interchangeably throughout this paper. Creditors will not lend more capital than they recoup from the borrower in cases of default. Even though default does not occur in equilibrium, the market imperfection constrains the amount of capital that agents can borrow. Solving Equation (2.2) for the level of capital investment, k ,yields the constrained level of capital, $k^c(\lambda, w)$ for each agent.

$$k = k^c(\lambda, w) = \frac{g^2\lambda^2 + 2wi(\lambda)^2 + g\lambda\sqrt{g^2\lambda^2 + 4wi(\lambda)^2}}{2i(\lambda)^2} \text{ when } \lambda<1. \qquad (2.3)$$

Equation (2.3) is an increasing function of the agent's wealth endowment, the enforcement of creditor rights, and the productive capacity of the investment project. It is a decreasing function of the interest rate. See Appendix A for derivatives.

Let $k^*(\lambda)$ be the optimal level of capital investment. Credit constrained agents can only invest an amount $k^c(\lambda, w) < k^*(\lambda)$. Solving the inequality, $k^c(\lambda, w) < k^*(\lambda)$, for initial wealth shows that the borrowing constraint will bind for agents whose wealth endowment is less than $w < (1-2\lambda)k^*(\lambda)$. Note that for $\lambda \geq .5$, the constraint binds only when initial wealth is less than zero. Since wealth is assumed nonnegative all agents in the economy are able to borrow optimally whenever $\lambda \in [.5,1]$. Therefore, agents are

indifferent to levels of financial development in this range. Without loss of generality, I restrict the parameter space to be $\lambda \in [0,.5]$.[11]

Rearranging equation (2.2) shows that each borrower must use as collateral a portion of final wealth equal to the proportion $\left(1-\frac{\lambda g}{i(\lambda)\sqrt{k}}\right)$ of the investment k. The wealth threshold required to borrow k units of capital is increasing in the scale of investment. To invest k units of capital, an agent must have a wealth endowment at least equal to

$$\overline{w}(k) = 1-\frac{\lambda g}{i(\lambda)\sqrt{k}}. \tag{2.4}$$

Given that the minimum amount of capital required to set up a project is $k=1$, the threshold level of wealth required to become an entrepreneur is

$$\overline{w}(1) = 1-\frac{\lambda g}{i(\lambda)}. \tag{2.5}$$

Less initial wealth is required to set up projects when there is a high level of financial development and debt contracts are strongly enforced. As financial development declines, agents are required to have a larger wealth endowment in order to borrow.

Let w_F represent final wealth. Entrepreneurs with wealth equal to or greater than the wealth threshold $\overline{w}(1)$ set up their projects. All other agents (households and poor entrepreneurs) must lend their wealth endowment to the credit market. In this manner, the level of financial development segments the society into wealthy entrepreneurs and poor lenders.

[11] Biasis and Mariotti (2003) restrict the policy space in a similar manner.

$$w_F = \begin{cases} g\sqrt{k^*(\lambda)} - i(\lambda)k^*(\lambda) + iw & \text{if} \quad w \geq \overline{w}(k^*) \\ g\sqrt{k^c(\lambda, w)} - i(\lambda)k^c(\lambda, w) + iw & \text{if} \quad \overline{w}(k^*) \geq w \geq \overline{w}(1). \\ i(\lambda)w & \text{if} \quad w < \overline{w}(1) \end{cases} \tag{2.6}$$

It is instructive to examine the equilibrium investment decisions, interest rates and final aggregate wealth under the two extreme cases of financial development, perfect credit markets and complete financial repression. I then investigate aggregate social welfare under the intermediate case of imperfect credit markets.

2.2 Perfect Credit Markets: Case of $\lambda = 1$

Consider, for a moment, the equilibrium that emerges under perfect capital markets, $\lambda = 1$. The creditors receive the full amount of repayment in cases of default and do not limit the amount agents can borrow. Each entrepreneur chooses the level of capital investment, *k* that maximizes final wealth.

$$w_F = gk^{1/2} - ik + iw \quad \textit{subject to } k \geq 1.$$

The Kuhn Tucker conditions for an optimum are

$$i = \frac{g}{2\sqrt{k}} + \rho \tag{ia}$$

$$\rho(1-k) = 0 \tag{ii}$$

$$k \geq 1 \tag{iii}$$

where ρ is the multiplier appended to the constraint that capital investment must be greater than or equal to one. Equation (ia) implies that

$$k = \frac{g^2}{4(i-\rho)^2}. \tag{ib}$$

The Kuhn Tucker conditions identify two solutions. The first solution occurs when the capital constraint is nonbinding, $\rho = 0$. Then capital investment is optimal and equal to

$$k = k^* = \frac{g^2}{4i^2}.$$

When $\rho \neq 0$ the capital constraint is binding and $k = 1$.

Lemma 1. Let $\lambda = 1$. Then $1 < i \leq \frac{g}{2}$ in equilibrium.

Proof: Suppose $i < 1$. Then lenders receive a negative return from lending, leading to excess supply. Suppose $i > \frac{g}{2}$. Then final wealth is strictly decreasing in k. The return to lending is greater than the return to borrowing for every agent, therefore there will be an excess supply of capital in the economy.

When $i < \frac{g}{2}$ Agents prefer to invest an amount k^* into their projects. When $i = \frac{g}{2}$ agents will invest exactly 1 unit of capital into their firms. The equilibrium behavior of individual agents implies

$$N\frac{(\eta-1)}{2}\int_0^{M/2}\frac{2w}{M}dw + N\int_0^{M}\frac{w}{M}dw \begin{cases} = Nk^*\int_0^M \frac{1}{M}dw & if\ i < \frac{g}{2} \\ \leq N\int_0^M \frac{1}{M}dw & if\ i = \frac{g}{2} \end{cases}. \qquad (2.8a)$$

The left-hand side represents aggregate credit supply. It is simply the summation of all the initial wealth in the economy and is independent of the interest rate. The right hand side represents credit demand. It is equal to the preferred level of investment multiplied by the number of agents.

Equation (3.8) can be simplified to the expression

$$\frac{M}{8}(3+\eta)\begin{cases} = k^* & if\ \ i < \frac{g}{2} \\ \leq 1 & if\ \ i = \frac{g}{2} \end{cases}. \qquad (2.8b)$$

In the case where $i < \frac{g}{2}$ we can use (2.8b) to obtain an explicit solution of the equilibrium interest rate

$$i_E^* = \frac{g\sqrt{2}}{\sqrt{M(3+\eta)}}. \qquad (2.9)$$

Aggregate final wealth, when $i = i_E^*$ is equal to (2.10a)

$$\begin{aligned} W_F^+ &= g\left(\frac{M}{8}(3+\eta)\right)^{1/2} N\int_0^M \frac{1}{M}dw - \frac{g\sqrt{2}}{\sqrt{M(3+\eta)}}\left(\frac{3M}{4}\right)N\int_0^M \frac{1}{M}dw \\ &\quad + \frac{g\sqrt{2}}{\sqrt{M(3+\eta)}}\left(N\frac{(\eta-1)}{2}\int_0^{M/2}\frac{2w}{M}dw + N\int_0^M \frac{w}{M}dw\right) \\ &= g\left(\frac{M}{8}(3+\eta)\right)^{1/2} N \end{aligned} .$$

When $i = \frac{g}{2}$, some entrepreneurs would not set up projects in equilibrium and in a perfect credit markets it would be random who became an entrepreneur and who did not. Additionally, in equilibrium entrepreneurs are indifferent between lending to the credit market and setting up a firm because the return to lending is equal to the return to entrepreneurship. Let θ be the proportion of individuals who set up firms in equilibrium. The term θ is defined by, $\theta = \begin{cases} \frac{M}{2} & if\ \ M \leq 2 \\ 1 & if\ \ M > 2 \end{cases}$. When M>2, there is enough capital in the economy for every agent to set up their projects.

Aggregate final wealth is equal to

$$W_F^+ = g\theta N\int_1^M \frac{1}{M}dw - \frac{g}{2}\theta N\int_1^M \frac{1}{M} + \frac{g}{2}\left(N\frac{(\eta-1)}{2}\int_0^{M/2}\frac{2w}{M}dw + \int_0^M \frac{w}{M}dw\right)$$
$$= \frac{g}{2}\left(\frac{M}{8}(3+\eta) + \theta\left(\frac{M-1}{M}\right)\right)N \quad . \qquad (2.10b)$$

2.3 Complete Financial Repression: Case of $\lambda = 0$

When there is no protection against bankruptcy, households refuse to lend and no credit is supplied to the market. Furthermore, the capital constraint in equation (2.3) reduces to $k^c(0,w) \le w$. If their wealth endowment is above one, entrepreneurs sink all of their initial wealth into their project. If the wealth endowment is below one, an entrepreneur cannot set up his project and will not lend to the credit markets. All agents that do not invest in projects simply eat their wealth endowment. Aggregate final wealth in the completely repressed economy is

$$W_F^- = g\int_1^M \frac{w^{1/2}}{M}dw$$
$$= \frac{2}{3}g\left(M^{1/2} - \frac{1}{M}\right)N \, . \qquad (2.12)$$
$$< W_F^+$$

As one would expect, aggregate social welfare is lower in the completely repressed economy then in the perfect markets case

2.4 Imperfect Markets: Case of $\lambda \in (0,0.5)$

Under imperfect markets, only the wealthiest entrepreneurs can borrow optimally at the equilibrium interest rate. Poor entrepreneurs are constrained by their wealth

endowment in the amount that they can borrow and subsequently invest into their investment projects.

Lemma 2. Let $\lambda < 1$. Then $i(\lambda) \leq \frac{g}{2}$ in equilibrium.

Proof: Similar to Lemma 1, when $i = i(\lambda)$.

For algebraic simplicity and without loss of generality, I consider the interest rate when $i(\lambda)$ is strictly less than $\frac{g}{2}$. In this range of the interest rate, every entrepreneur with access to a production technology would like to invest $k^*(\lambda) = \frac{g^2}{4i(\lambda)^2} > 1$.

Imperfect markets exist in the model whenever $\lambda \in (0,.5)$. Entrepreneurs with initial wealth equal to $w \geq 1 - \frac{g\lambda}{i(\lambda)\sqrt{k(\lambda)}} = \overline{w}(k)$ will open a firm with investment scale equal to $k^*(\lambda)$. For entrepreneurs with initial wealth, $\overline{w}(k^*) < 1 - \frac{g\lambda}{i\sqrt{k^*(\lambda)}}$ the credit constraint binds and they must limit investment to $k^c(\lambda, w) \geq 1$ as described in Equation (2.3). Agents that have access to a production technology but with initial wealth $w < \overline{w}(1)$ do not invest and merely lend their endowment to the credit market. Agents without access to projects simply loan their wealth endowment to the economy's credit markets. The above discussion implies that in equilibrium

$$N\left(\frac{(\eta-1)}{2}\int_0^{M/2}\frac{2w}{M}dw + \int_0^{M}\frac{w}{M}dw\right) = N\int_{\overline{w}(1)}^{\overline{w}(k^*)}\frac{k^c(\lambda,w)}{M}dw + k^*(\lambda)N\int_{\overline{w}(k^*)}^{M}\frac{1}{M}dw \qquad (2.13)$$

Equation (2.13) shows aggregate capital demand for constrained and unconstrained borrowers. The equilibrium interest rate, $i_E(\lambda)$ solves

$$N\frac{M}{8}(3+\eta) = N\left(\int_{\underline{w}(1)}^{\overline{w}(k^*)} \frac{k^c(w,\lambda)}{M}dw + k^*(\lambda)\int_{\overline{w}(k^*)}^{M}\frac{1}{M}dw\right) \tag{2.14}$$

Sections 2.2 and 2.3 offer two extreme versions of financial development: perfect credit markets and complete financial repression. Section 2.4 presents a more realistic, and thus more compelling, example of financial development, the imperfect markets case. However, what the model gains in realism when imposing imperfect markets it loses in theoretical simplicity. Since theoretical results are hard to achieve in the intermediate case it is useful to simulate a parametric version of the model. Below I use numerical simulation techniques to solve Equation (2.14) for the equilibrium interest rate as a function of creditor rights enforcement, λ. Once the equilibrium interest rate, $i(\lambda)$, is computed I am able to analyze aggregate welfare over the range of creditor rights enforcement, λ. Table 2.1 summarizes variables in the theoretical model.

Table 2.1: Summary of Variables

Variable	Description
λ	Creditor Rights Enforcement
$i(\lambda)$	Interest Rate
$w_H \sim U(0, M/2)$ and $w_H \sim U(0, M/2)$	Initial Wealth Endowment for Households (H) and Entrepreneurs (E)
H	Inequality Marker
$k^*(\lambda)$	Optimal Investment Scale
$k^c(\lambda, w)$	Constrained Investment Scale
$\overline{w}(k^*)$	Optimal Wealth Threshold
$\overline{w}(1)$	Minimum Wealth Threshold
$K_{\text{sup }ply}(w,\eta)$	Capital Supply
$K_{Demand}(\lambda, w)$	Capital Demand
$W_F(\lambda, w)$	Aggregate Final Welfare
$W_{SIG}(\lambda, w)$	Special Interest Group (SIG) Final Wealth

Table 2.2 presents the parametric model. The first column of Table 2.2 identifies the model's theoretical restrictions. I choose exogenous initial parameter values that are consistent with the theoretical restrictions. Creditor rights enforcement ranges from $\lambda \in [.1,.49]$. For each level of λ, I compute the endogenous variables listed in Column 3 by numerical simulation. The four remaining initial parameter values do not vary over the range of imperfect markets, λ. The level of productivity, g, and the household and entrepreneur wealth distributions are chosen such that $k^*(\lambda) \geq 1$ and $1 \leq i(\lambda) < \frac{g}{2}$. A wide range of parameters values, g, satisfy this condition; $g = 4$, also meets the criteria that the project has a reasonable rate of return.[12] Furthermore, M is deliberately chosen so that $M < 2$. Under this restriction, there is not enough capital in the economy for every entrepreneur to invest in his project. This restriction is a realistic feature of an emerging market.[13] The term η is chosen to allow significant wealth inequality into the parametric model. When $\eta = 3$ there are 3 times as many agents in the bottom of the domain of the wealth distribution function as in the top of the domain. Furthermore, only $\frac{1}{\eta} = \frac{1}{3}$ of all agents in the bottom domain are entrepreneurs and have the opportunity to produce. Finally, the parameter N equals the number of agents with initial wealth w and can take be any positive number. Without loss of generality, I let $N=1$.

[12] Over a 5-year election cycle, a project with productivity g would have a gross annual rate of return of at least .8 (depending on the optimal level of investment $k^*(\lambda)$).

[13] Recall that in the perfect markets case, whenever $M < 2$, then $i = g/2$. Entrepreneurs receive the same rate of return whether they invest in their projects or lend to the credit markets. Therefore, they are indifferent between investing and lending. Under imperfect markets, the rate of return to investing is higher than the rate of return to lending, therefore, every entrepreneur wants to invest the amount $k^*(\lambda)$. However, poor entrepreneurs are faced with a wealth constraint that forces them to invest sub optimally or not at all.

Table 2.2: The Parametric Model		
Theoretical Restrictions	Initial Exogenous Parameter Values	Endogenous Variables
Imperfect Markets: $\lambda \in (0,.5)$	$\lambda \in [.1,.49]$	$i(\lambda)$
Minimum Capital Scale: $k^*(\lambda) \geq 1$	$g = 4$	$k^*(\lambda)$ $k^c(\lambda, w)$
Interest Rate Range: $1 \leq i(\lambda) \leq \frac{g}{2}$	$w_H \sim U(0, M/2)$ $w_E \sim U(0, M)$ $M = 1.4$	$\overline{w}(1)$ $\overline{w}(k^*)$
	$\eta = 3$	$K_{\text{sup }ply}(w, \eta)$ $K_{Demand}(\lambda, w)$
	$N = 1$	$W_F(\lambda, w, \eta)$ $W_{SIG}(\lambda, w, \eta)$

The first task of the numerical simulation is to calculate the interest rate as a function of creditor rights enforcement, λ. The equilibrium interest rate equates the aggregate supply of credit in the economy to the aggregate demand for credit as described in Equation 2.14. Figure 2.1 graphs the equilibrium interest rate over the range of λ consistent with the imperfect markets environment. The figure shows that the interest rate in an increasing function of creditor rights enforcement.

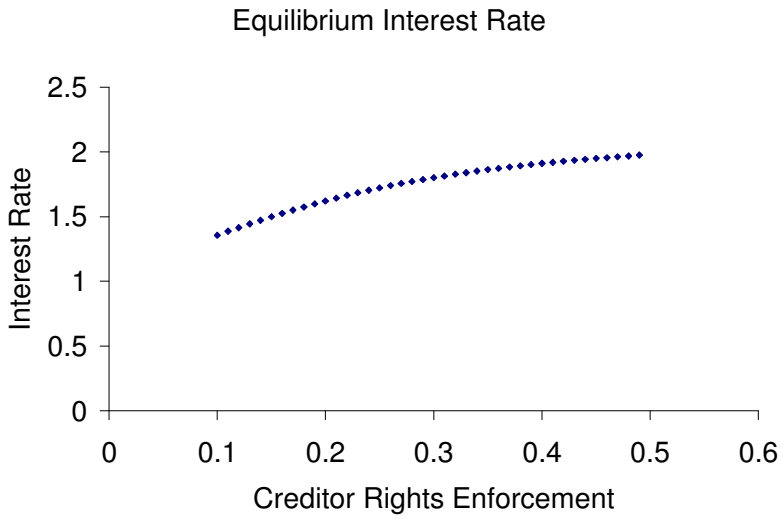


Figure 2.1: Graph of endogenously determined interest rates as a function of Creditor Rights Enforcement.

Figure 2.2 graphs the optimal capital investment for each entrepreneur. Recall that the investment choice made by unconstrained entrepreneurs is equal to $k^* = \frac{g^2}{4i(\lambda)^2}$. Unconstrained entrepreneurs demand less capital as creditor protection improves and lending becomes more profitable relative to investment due to the decreasing returns to scale production function. Note that as financial development approaches the perfect markets case optimal investment converges to one as the equilibrium interest rate converges to $i = \frac{g}{2}$.

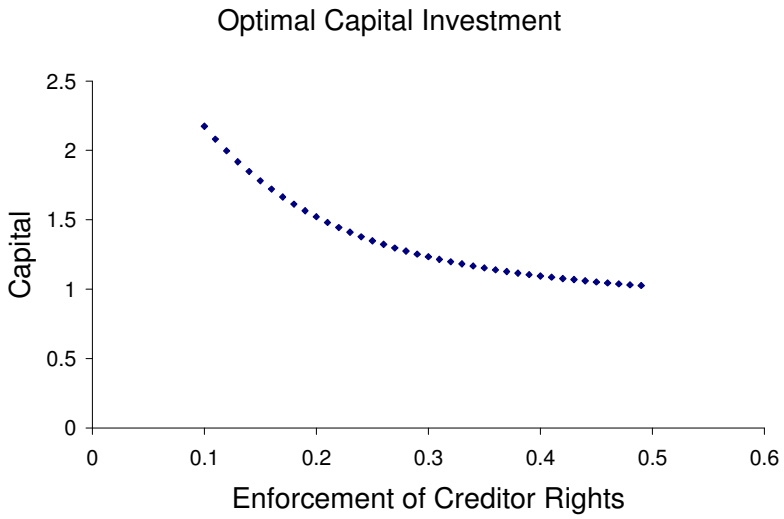


Figure 2.2: Optimal Capital Investment for Decreasing Returns to Scale Production Function as a Function of Creditor Rights Enforcement.

3. Welfare

The general equilibrium model generates four implications of imperfect credit markets and a DRS production technology on aggregate social welfare. First, only entrepreneurs above a certain wealth threshold can set up firms. Second, middle-income entrepreneurs are constrained to invest sub optimally. Third, it is wealth maximizing for rich entrepreneurs to invest more than is socially optimal. Fourth, the level of creditor rights enforcement, λ, determines the equilibrium interest rate by controlling who borrows and thusly the demand for credit.

In this section, I derive the welfare functions for the five constituent groups that compose aggregate welfare: poor lenders, constrained entrepreneurs, unconstrained entrepreneurs and SIG members. Poor lenders are composed of households without projects and entrepreneurs that do not have enough wealth to borrow under imperfect credit markets. The welfare of each group is a function of financial development. Figure 2.3 shows entrepreneurs segmented by initial wealth endowment.

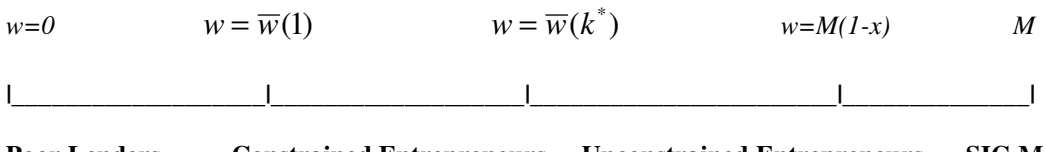


Figure 2.3: Entrepreneurs by wealth endowment

3.1 Politically Organized Unconstrained Firms (The SIG)

The special interest group, SIG, is composed of the agents in the top x% of the wealth distribution. This elite group of citizens satisfies the conditions necessary for the organization of a successful interest group. Olson (1965) argues that in order to organize, interest groups must be composed of a small number of agents with narrowly and uniformly defined interests. I show that this group of agents is harmed by financial development and has the incentives and the resources (since they are the wealthiest agents) to block reform.

SIG welfare is composed of the total profit of members of the SIG plus their interest income. SIG profit is given by Equation (3.1).

$$\Pi_{SIG}(\lambda) = gk^*(\lambda)^{1/2} - i(\lambda)k^*(\lambda) \int_{(1-x)M}^{M} \frac{dw}{M}. \tag{3.1}$$

Substituting $k^*(\lambda) = \frac{g^2}{4i(\lambda)^2}$ into (3.1) reduces the profit function to

$$\Pi_{SIG}(\lambda) = \frac{g^2}{4i(\lambda)} \int_{(1-x)M}^{M} \frac{dw}{M} = \frac{g^2}{4i(\lambda)} x.$$

The change in SIG profit as financial development increases is equal to

$$\Pi'_{SIG}(\lambda) = \frac{-g^2}{16i(\lambda)^2} i'(\lambda)x < 0 \tag{3.2}$$

SIG profit is decreasing in the level of financial development. To find the total change in SIG welfare as financial development increases I add the interest income that SIG members earn from lending to other agents.

$$W_{SIG}(\lambda) = \frac{g^2}{4i(\lambda)}x + i(\lambda)\int_{(1-x)M}^{M}\frac{w}{M}dw = \frac{g^2}{4i(\lambda)}x + i(\lambda)\left(\frac{M^2}{M} - \frac{(1-x)^2M^2}{M}\right). \tag{3.3}$$

$$= \frac{g^2}{4i(\lambda)}x + \frac{M}{2}(2x - x^2)i(\lambda)$$

The change in elite welfare is given by

$$W'_{SIG}(\lambda) = \frac{-g^2}{16i}i'(\lambda)x + \frac{M}{2}(2x - x^2)i'(\lambda). \tag{3.4}$$

The lower the level of financial development, the lower is the cost of capital. As long as the increase in capital costs is greater than the increase in interest income brought about by the increased financial development, the wealthy are better off when credit markets are repressed. Figure 2.4 graphs SIG welfare as the enforcement of creditor rights increases using the parameter restrictions defined in Table 2. For the initial conditions $M = 1.4$ and $x = .25$, the aggregate wealth endowment for SIG members is equal to $\int_{(1.4)(1-.25)}^{1.4}\frac{w}{M}dw = .30625$. Final aggregate wealth of the SIG members ranges from a high of 1.528 at $\lambda = .1$ to a low of 1.068 at $\lambda = .3$. Furthermore, the figure demonstrates that aggregate final wealth for the SIG is lower at $\lambda = .49$ than at $\lambda = .1$. Hence, these entrepreneurs prefer weak creditor rights enforcement when the financial system is imperfect.

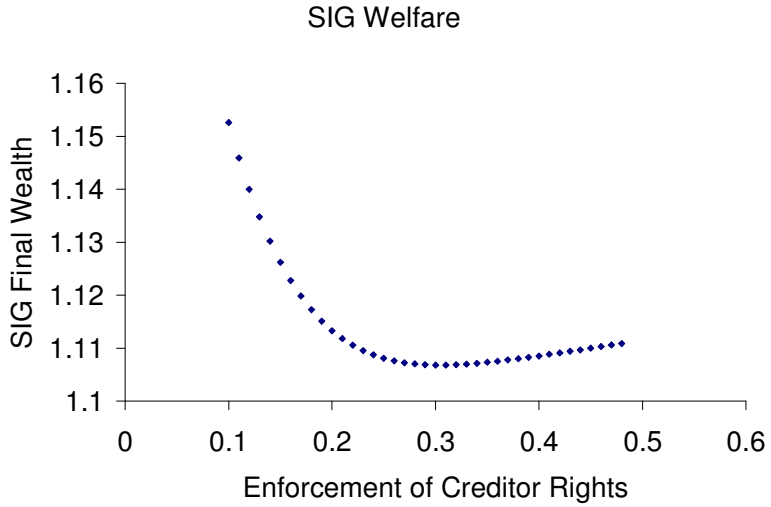


Figure 2.4: Aggregate Welfare of the Special Interest Group as a Function of Creditor Rights Enforcement

3.2 Politically Unorganized Unconstrained Entrepreneurs

Not all unconstrained firms are able to organize politically, only the top x% of the wealth distribution. These unconstrained entrepreneurs that are politically disorganized have wealth over the threshold necessary to invest the optimal level of capital, $\overline{w}(k^*)$, and below that required to be in the SIG. The aggregate profit of politically disorganized unconstrained firms is given by Equation (3.5).

$$\Pi_U(\lambda) = (gk^*(\lambda)^{1/2} - i(\lambda)k^*(\lambda)) \int_{\overline{w}(k^*)}^{M(1-x)} \frac{1}{M} dw \tag{3.5}$$

$$= \left[(1-x) - \frac{(1-2\lambda)}{M} \right] (gk^*(\lambda)^{1/2} - i(\lambda)k^*(\lambda)).$$

Substituting $k^*(\lambda)$ into the wealth threshold yields

$$\overline{w}(k^*) = (1-2\lambda). \tag{3.6}$$

Substituting for $k^*(\lambda)$ and $\overline{w}(k^*)$ into Equation (3.5) gives

$$\Pi_U(\lambda) = \left[(1-x) - \frac{(1-2\lambda)}{M}\right]\left[\frac{g^2}{2i(\lambda)} - \frac{g^2}{4i(\lambda)}\right] = \left[(1-x) - \frac{(1-2\lambda)}{M}\right]\frac{g^2}{4i(\lambda)}. \tag{3.7}$$

The derivative of the aggregate unconstrained firm profit with respect to financial development is equal to

$$\Pi_U'(\lambda) = \frac{g^2}{2Mi(\lambda)} + \left[(1-x) - \frac{(1-2\lambda)}{M}\right]\left[-\frac{g^2}{4i^2(\lambda)}\right]i'(\lambda). \tag{3.8}$$

The first term is the increase in profits due to the increase in the number of unconstrained firms as financial development rises. The second term corresponds to the drop in profits caused by increase in the cost of capital.

Aggregate welfare for the unconstrained agents is equal to profits plus interest income.

$$W_U(\lambda) = \Pi_U(\lambda) + i(\lambda)\int_{\overline{w}(k^*)}^{M(1-x)} w\frac{1}{M}dw. \tag{3.9}$$

Derivative of unconstrained welfare is

$$W_U'(\lambda) = \Pi'_U(\lambda) + i'(\lambda)\left(\frac{M(1-x)}{2} - \frac{(1-2\lambda)^2}{2M}\right) + \frac{2(1-2\lambda)}{M}i(\lambda). \tag{3.10}$$

The second term is the increase in interest income due to the increase in the interest rate and the third term is the increase in aggregate interest income due to the increase in the number of unconstrained firms.

3.3 Constrained Entrepreneurs

Constrained entrepreneurs are forced to invest a sub optimal level of capital into their investment project. The level of capital investment is a function, $k^c(\lambda, w)$, is a

increasing function of their wealth endowment and financial development. Aggregate profit for constrained entrepreneurs is

$$\Pi_C(\lambda, w) = \int_{\overline{w}(1)}^{\overline{w}(k^*)} (\sqrt{gk^c(\lambda, w)} - i(\lambda)k^c(\lambda, w)) \frac{1}{M} dw . \tag{3.11}$$

where $k^c(\lambda, w)$ is defined in Equation (3.3).

Let $K_C(\lambda, w) = \int_{\overline{w}(1)}^{\overline{w}(k^*)} \frac{k^c(\lambda, w)}{M} dw$ be aggregate credit demand for constrained firms. Then the change in profit for constrained entrepreneurs is

$$\Pi'_C(\lambda, w) = \frac{gK_C'(\lambda, w)}{2K_C(\lambda, w)^{1/2}} - (K_C(\lambda, w)i'(\lambda) + i(\lambda)K_C(\lambda, w)) > 0 . \tag{3.12}$$

See Appendix B for detailed derivative. The first term represents the increase in revenue from the increase in financial development and the second term represents lost profit due to an increase in the cost of capital. Constrained entrepreneurs welfare is interest income plus profits:

$$W_C(\lambda, w) = \Pi_C(\lambda, w) + i(\lambda) \int_{\overline{w}_1}^{\overline{w}_{k^*}} \frac{w}{M} dw . \tag{3.13}$$

It is increasing in the level of financial development:

$$W_C'(\lambda) = -4 + 8\lambda + \frac{2(g\lambda - i(\lambda))}{i(\lambda)^3} (g\lambda i'(\lambda) - gi(\lambda)) + \Pi_c'(\lambda) > 0 . \tag{3.14}$$

3.4 Poor Lenders

Because they lack access to capital, the poorest entrepreneurs in the economy are unable to set up their investment projects. These agents, along with households, lend their wealth to the credit markets and earn

$$W_L(\lambda) = i(\lambda)N\left(\int_0^{\overline{w}(1)} \frac{w}{M}dw + \frac{(\eta-1)}{2}\int_0^{M/2} \frac{2w}{M}dw\right) \tag{3.15}$$

$$W_L'(\lambda) = 2(1-\overline{w}(1))\left(-\frac{g}{i(\lambda)} + \frac{g\lambda i'(\lambda)}{i(\lambda)^2}\right) + i'(\lambda)\frac{(\eta-1)}{2}\int_0^{M/2} \frac{2w}{M}dw\,. \tag{3.16}$$

Poor lenders experience two effects when financial development increases. Firstly, they earn a higher return on interest income from lending. Secondly, poor entrepreneurs at the margin of the initial wealth threshold are able set up firms because the minimum wealth endowment required to borrow capital has decreased.

3.5 Aggregate Welfare

Aggregate welfare is the sum of all income earned from lending at the endogenous interest rate and the profit made by the entrepreneurs:

$$W(\lambda) = N\left(i(\lambda)\frac{M}{8}(3+\eta) + \Pi_{SIG}(\lambda) + \Pi_U(\lambda) + \Pi_C(\lambda, w)\right).$$

The total increase in aggregate income that results from an increase in financial development λ is

$$W'(\lambda) = i'(\lambda)\frac{M}{8}(3+\eta) + \frac{(1-2\lambda)}{M}\frac{g^2}{2i(\lambda)} - \left[M - \frac{(1-2\lambda)^2}{M}\right]\left[\frac{g^2}{4i(\lambda)^2}\right]i'(\lambda) + \frac{gK_C'(\lambda,w)}{2K_C(\lambda,w)^{1/2}} - K_C(\lambda,w)i'(\lambda) + i(\lambda)K_C(\lambda,w) \tag{3.17}$$

Figure 2.5 graphs aggregate welfare as a function of financial development. Social welfare improves when financial development increases. Recall the aggregate wealth endowment is equal to $N\frac{(\eta-1)}{2}\int_0^{M/2} \frac{2w}{M}dw + N\int_0^{M} \frac{w}{M}dw$. Under the initial parameter specification the aggregate wealth endowment is equal to 1.04. Final

aggregate wealth at $\lambda = .1$ is 2.86799. Final aggregate wealth at $\lambda = .49$ is 4.088. When credit markets are imperfect, strong creditor enforcement increase aggregate final wealth by more than 40% over weak enforcement.

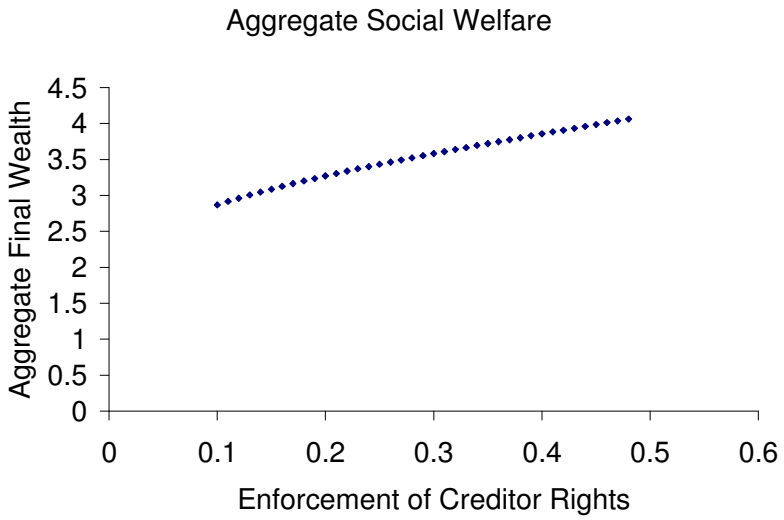


Figure 2.5: Social Welfare as a Function of Creditor Rights Enforcement

In this section, I have specified the welfare functions for each of the constituent groups. The policymaker will choose the level of financial development that maximizes a linear function of aggregate welfare and campaign contributions. I analyze the politician's utility function in Section 4.

4. Political Utility

In the Grossman and Helpman (GH) model, special interest groups try to influence the policymaker's policy choice by giving her political gifts. The SIG's design contribution schedules that associate gifts to the politician with every policy option available to her in order to maximize its own objective function. Contributions are assumed nonnegative. Mimicking the principal in the principal agent game the SIG

designs a payment scheme, C(λ), "to give the politician the appropriate incentives to act on its behalf" (GH 2001).

The politician cares about the total level of political contributions and aggregate well-being. She desires contributions because they can be used to finance campaign spending (among other benefits). Social welfare is a concern to the politician because her constituents are more likely to reelect her if she has delivered a high standard of living. The policymaker maximizes a utility function $G(\lambda, c)$ where λ is the policy choice made by the policymaker and c is the political contributions. Grossman and Helpman state that, "The utility function is meant to capture the policymaker's personal preferences over the various possible policy outcomes, as well as her concern for her future electoral prospects. The policy λ will affect the politician's chances of being reelected if voters look retrospectively at her record when deciding whether to vote for her in subsequent elections".[14] Because the government uses contributions to pursue its own political gain, G(.) is increasing in c and is a single peaked function for any level of c. Following GH, I assume that the policymaker's utility function is a linear function of her concern for the welfare of the electorate and her desire for political gifts. The weights on aggregate welfare and campaign contributions sum up to 1. Furthermore, I use the simplest version of the GH model by limiting the interaction to that between the political entity and a single interest group. Thus, the policymaker's utility is given by

$$G(\lambda, c) = \alpha W(\lambda) + (1-\alpha) C(\lambda) \qquad (4.1)$$

[14] A less cynical view of the government is that it cares about the overall welfare of its constituency and since the policy variable, p, directly affects societal well-being it is a component in the government's utility.

where $W(\lambda)$ gives the aggregate welfare as a function of the policy choice. The term $C(\lambda)$ represents contributions from special interest group.

One of the attributes of the GH model is that it allows for liberal interpretation of the parameters. The GH interpretation of the weights on utility is the policymakers' tastes for campaign finance. In addition to this interpretation the weights could be thought of as the degree of corruption in the economy. In more corrupt societies politicians find it easier to take bribes from elite rent seekers that benefit from regressive financial policies than in less corrupt systems. In addition, α could represent the capacity of the political system to reform, or otherwise improve policies that increase aggregate social welfare. In my application of the GH model to financial development, I interpret the weights generically to be the degree of democratic accountability that the political system requires of the government. In societies with high accountability, policymakers must weight general welfare heavily, where the opposite is the case politicians are free to pursue rent-seeking behavior by courting the favors of narrowly defined special interest groups.

My model predicts that political systems with a high degree of democratic accountability will be more likely to improve their financial policies. In the model a politician is able to increase aggregate welfare by reforming financial policy. She increases SIG welfare by maintaining the status quo level of financial repression. In a political system with accountable (unaccountable) institutions the politician gives aggregate (SIG) welfare a weight of one. In anti democratic political systems, policymakers value campaign contributions with a weight of one. The model predicts that proclivity of political institutions towards accountability to the general electorate will

determine the politician's concern for aggregate welfare or SIG welfare when making her policy decisions. Thus institutional details of the political system affect the governments' incentives to reform the credit market.

Strictly speaking the policymaker described in my interpretation of the GH model is always self-interested, without constraint she would prefer to maximize the rents of political office. It is the institutional constraints inherent in the economy, which determine the political advantage of trading off aggregate welfare for contributions and vice versa. Institutions determine whether the capital that the politician earns is political (people are happy with her policy performance) or monetary (she earns campaign funds and other political gifts from interest groups), the politician acts in order to ensure her ability to be reelected. As the benevolent social planner is a useful fiction to help describe optimal government behavior, the completely self-interested policymaker is also beneficial in this model when discussing the policy reform that occurs in equilibrium. The political institutions determine the avenue by which the politician acquires the "capital" necessary to be reelected.

Grossman and Helpman define the equilibrium policy $\tilde{\lambda}$ as the policy that maximizes the interest groups utility function $U(\tilde{\lambda}, c)$ subject to the constraint that $G(\lambda, c) \geq G(\hat{\lambda}, 0)$. The equilibrium interest group contribution $\tilde{c}$ makes the politician just indifferent between the $\tilde{\lambda}$ and the policy she would pick if no contributions were forthcoming from the SIG, $\hat{\lambda}$. In this model favored policies that increase aggregate welfare may be abandoned or modified by the policymaker in order to capture the rents of political office. The equilibrium policy that results from this principle agent game is

pareto efficient in the sense that one actor cannot be made better of without the other becoming worse off.

If I assume that the SIG utility function can be written as a function of its welfare from the government's policy choice minus what it pays in political contributions, $U(\lambda, c) = W_{SIG}(\lambda) - c$, then the politician's objective function can be rewritten as

$$G(\lambda, c) = \alpha W(\lambda) + (1-\alpha) W_{SIG}(\lambda), \tag{4.2}$$

The policymaker chooses the policy λ by maximizing a linear weighted function of aggregate welfare and SIG welfare. This model provides the basis from which to evaluate the ability of a small closed economy to enact reform given the strength of the special interest within the economy and the policymaker's predilection for political gifts determined by the economy's political institutions.

In Section 5, the GH model is applied to the case of reform in the credit market. Improvements in financial development increase aggregate growth in the economy. Elite agents, those individuals in the upper tail of the wealth distribution, experience a decrease in welfare when the level of financial development is increased. The elites have the ability and the incentive to form a SIG that lobbies the policymaker to block financial development. The equilibrium policy that is chosen by the policymaker is dependent on degree of accountability imposed by the society's political institutions, the productive capacity of the economy, the extent of wealth inequality, and the supply of capital. Figure 2.6 gives the model's timeline.

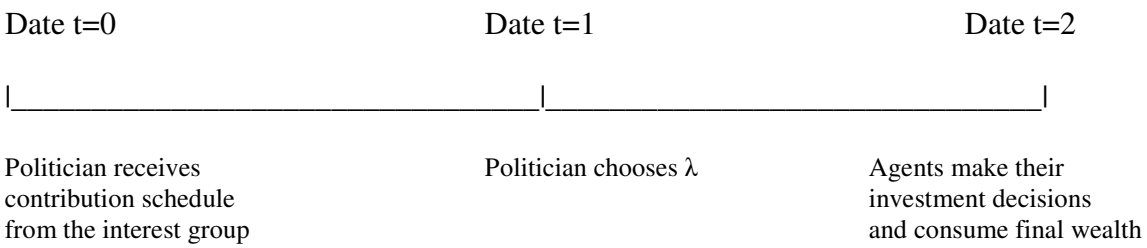


Figure 2.6: Sequence of events and decisions

5. Political Equilibrium

In this section, I investigate how the SIG uses political gifts to sway the policymaker into enacting a low level of financial development. At the beginning of period one, the politician decides whether to reform the credit market. Based on the government's financial policy, citizens decide how much capital to invest in their projects. The differing effect of credit market efficiency on the returns of borrowers and lenders divides the politician's constituency into the poor who benefit from better enforcement of legal sanctions and the rich who profit from inefficient credit markets.

Recall from Section 4 that the policymaker's objective is to maximize a political utility function

$$G(\lambda, c) = \alpha W(\lambda) + (1-\alpha) c_{SIG}(\lambda) \tag{4.1}$$

where $W(\lambda)$ is aggregate final wealth and $c_{SIG}(\lambda)$ is the contribution the SIG gives the policymaker for a given policy variable, λ. The contribution is decreasing in financial development because the SIG is worse off by increasing creditor rights.

The political utility function has a first order condition equal to

$$\alpha W'(\lambda) + (1-\alpha) c_{SIG}'(\lambda) = 0. \tag{5.1}$$

I assume that the contribution schedule is differential in λ. This implies $c'(\lambda)_{SIG} = W'_{SIG}(\lambda)$. I can substitute $W_{SIG}'(\lambda)$ for $c_{SIG}'(\lambda)$ in the politician's first

order condition, which yields Equation (6.2) below. Therefore, Equation (5.1) can be rewritten as

$$\alpha W'(\lambda) + (1-\alpha) W_{SIG}'(\lambda) = 0 . \qquad (5.2)$$

Substituting the first order conditions for SIG and aggregate welfare, Equations (3.4) and (3.17) respectively, into the policymaker's first order condition yields (5.3) below.

$$\alpha\left\{ i'(\lambda)\frac{M}{8}(3+\eta) + \left(\frac{(1-2\lambda)}{M}\right)\left(\frac{g^2}{2i(\lambda)}\right) - \left(M - \frac{(1-2\lambda)^2}{M}\right)\left(\frac{g^2}{4i(\lambda)^2}\right) i'(\lambda) + \frac{gK_C'(\lambda,w)}{2K_C^{1/2}(\lambda,w)} - K_C(\lambda,w)\big(i(\lambda)+i'(\lambda)\big)\right\} +$$
$$(1-\alpha)\left\{\frac{-g^2}{16i(\lambda)} i'(\lambda)x + \frac{M}{2}(2x-x^2)i'(\lambda)\right\} = 0$$

The policymaker chooses a λ that satisfies the first order condition for maximizing a weighted sum of aggregate welfare and the welfare of the SIG. The policy choice is dependent on the exogenous parameter values -- the productivity level *g*, abundance of capital, *M*, the aggregate wealth of the special interest group, *x*, and the level of political accountability imposed by institutions, *α*. Financial policy is dependent on the economy's political institutions, *α,* which determines the politician's ability to maximize rents to the detriment of social welfare.

Result 1: Political institutions that impose more democratic accountability on policy makers will generate higher levels of financial development.

Political institutions that impose democratic accountability make it difficult for the policymaker to succumb to the interests of elites that lobby for financial repression. When accountability is low, political utility is decreasing in financial development. For political systems that impose democratic institutions, the political utility function is upward sloping in financial development. Figure 2.7 graphs political utility for different

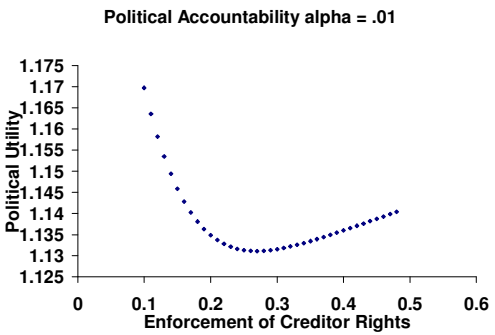
levels of political accountability. Low values of α are indicative of political institutions that require governments have little accountability to the general electorate. As the weight α increases the politician's concern for general welfare also increases. Anti democratic political institutions result in a political utility functions that is a decreasing function of financial development. Political systems that impose more accountability in policy choices lead to a political utility function that is increasing in financial development. Figure 2.7 also shows that there exists a political structure in which the policymaker is exactly indifferent between low and high levels of financial development. In the graphs this point occurs at a political weight of $\alpha = .032824$.

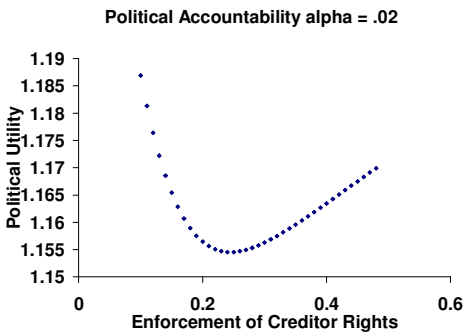
The parametric model establishes the importance of political accountability in determining the extent financial development. However, other papers have been hesitant to confirm a relationship between political institutions that impose accountability and financial development. Beck et al. (2001) minimize the importance of political structure in explaining financial structure. Using measures of political environment that include competitiveness in elections, government openness, and inter-party competition, the authors find "a weak, fragile link between political structure and finance development". Instead, Beck et al. (2002) attribute the change in financial development to legal origin and initial endowment of colonies settled by Europeans. Taking a broader view Glaser et al. (2004) criticize empirical techniques used in previous literature to relate political institutions and economic growth. The authors' main argument is that countries can improve human capital without democratic accountability and that once these economies become richer they can improve institutions.

Acemoglu et al. (2004) summarize a large literature connecting political institutions and economics growth by stating "political institutions place all political power in the hands of a single individual or a small group, economic institutions that provide protection of property rights and equal opportunity for the rest of the population are difficult to sustain."[15] My model supports the authors' conclusion that in accountable political systems it is more difficult for politicians to ignore the welfare of the majority in favor of the preferences of a small number of elite. Furthermore, by rigorously formalizing the role of political structure in financial development, I am able to demonstrate the significance of political institutions in generating changes in financial policy and economic outcomes. Though the investigation of political structure poses an empirical challenge to researches, its connection to economic growth should not be disregarded.

Figure 2.7: Political Utility

[15] The new institutional economics literature supporting a relationship between political structure and economic growth include Buchanan and Tullock (1962), North (1981, 1990), Knack and Keefer (1995), Hall and Jones (1999), Acemoglu, Johnson and Robinson (2001, 2002). Empirical research identifying politics and firm behavior include See Hellman et al. (1998); Hellman and Shankermann (2000); Krozner (1998) and (1999); Faccio (2002); Denizer et al. (1998); Morck et al. (1998); Gordan and Lei (1999); Johnson and Titman (2002); and Laffont and Tirole (1991).


Political Accountability alpha = .01
Political Utility
1.175
1.17
1.165
1.16
1.155
1.15
1.145
1.14
1.135
1.13
1.125
0
0.1
0.2
0.3
0.4
0.5
0.6
Enforcement of Creditor Rights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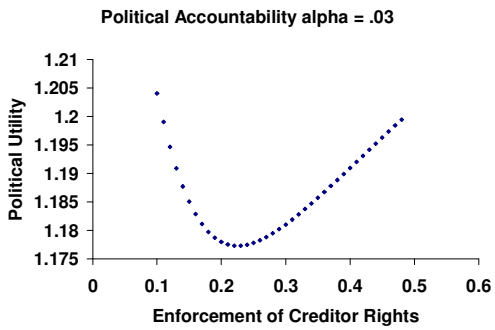
Political Utility
1.19
1.185
1.18
1.175
1.17
1.165
1.16
1.155
1.15
0
0.2
0.4
0.6
Enforcement of Creditor Rights


Political Accountability alpha = .03
Political Utility
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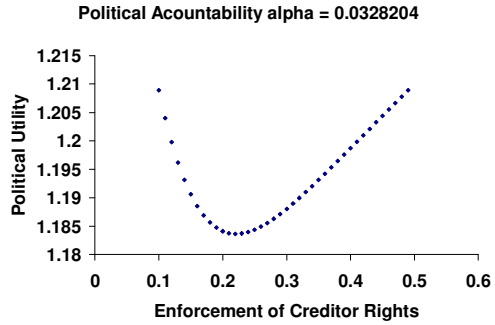
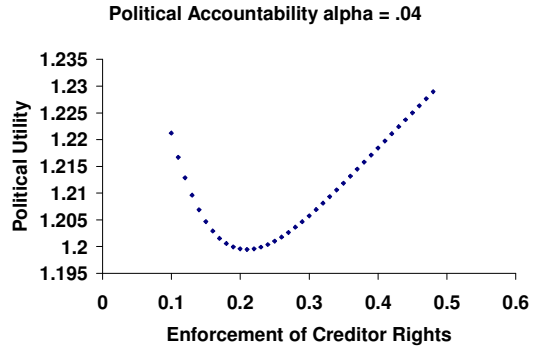
1.205
1.2
1.195
1.19
1.185
1.18
1.175
0
0.1
0.2
0.3
0.4
0.5
0.6
Enforcement of Creditor Rights


Political Acountability alpha = 0.0328204
Political Utility
1.215
1.21
1.205
1.2
1.195
1.19
1.185
1.18
0
0.1
0.2
0.3
0.4
0.5
0.6
Enforcement of Creditor Rights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Political Utility
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1.23
1.225
1.22
1.215
1.21
1.205
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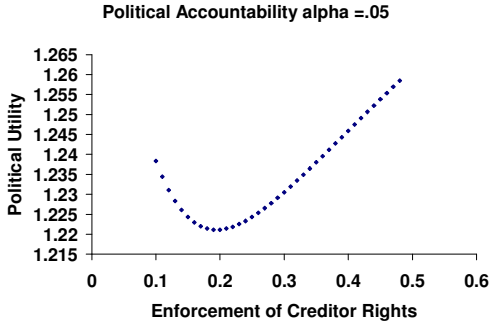
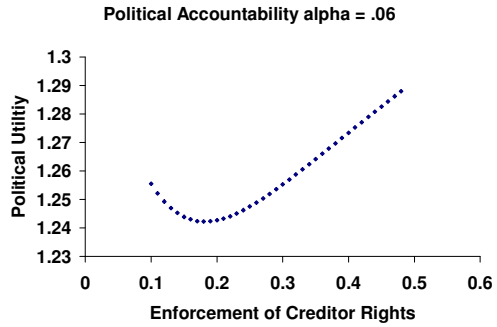
1.195
0
0.1
0.2
0.3
0.4
0.5
0.6
Enforcement of Creditor Rights


Political Accountability alpha =.05
Political Utility
1.265
1.26
1.255
1.25
1.245
1.24
1.235
1.23
1.225
1.22
1.215
0
0.1
0.2
0.3
0.4
0.5
0.6
Enforcement of Creditor Rights


Political Accountability alpha = .06
Political Utility
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1.29
1.28
1.27
1.26
1.25
1.24
1.23
0
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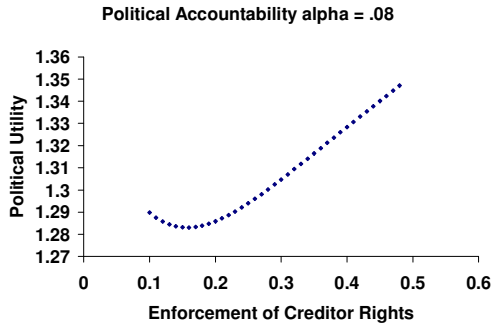
0.2
0.3
0.4
0.5
0.6
Enforcement of Creditor Rights


Political Accountability alpha = .08
Political Utility
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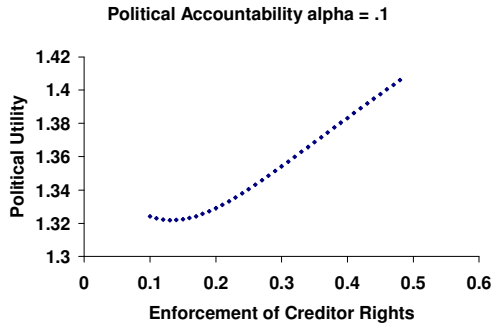
1.35
1.34
1.33
1.32
1.31
1.3
1.29
1.28
1.27
0
0.1
0.2
0.3
0.4
0.5
0.6
Enforcement of Creditor Rights


Political Accountability alpha = .1
Political Utility
1.42
1.4
1.38
1.36
1.34
1.32
1.3
0
0.1
0.2
0.3
0.4
0.5
0.6
Enforcement of Creditor Rights

6. Comparative Statics Under Imperfect Credit Markets

Section 6 investigates the comparative static properties of the model by exploring the effects of four shocks to the economic environment – productivity, wealth, openness, and inequality. To evaluate the effects of a small shock to the economy on the level of political accountability required for reform, I choose a range of parameter values around the initial restrictions imposed in the parametric model given in Table 2.2. The ranges of the parameter values are constrained by the theoretical restrictions also listed in Table 2.2. Table 2.33 shows the ranges of the exogenous parameters that I evaluate. For each incremental change in the exogenous parameter values I calculate the level of political accountability, α, that makes the politician exactly indifferent between low financial development (λ=.1) and high levels of financial development (λ =.49).

Table 2.3: Parameter Ranges	
Comparative Static Scenarios	**Exogenous Parameters**
Change in Productivity	$g \in [4.0, 5.0]$
Percent Change in Wealth Per Capita	w increased by 10% to 100%
Change in Openness to Financial Inflows	$f \in [0, .5]$
Percent Change in Wealth Inequality	η increased by 5% to 25%

6.1 Change in Productivity

Result 2: Politicians are more likely to enforce creditor rights in more productive economies.

In this scenario, the productivity parameter, g, is increased in increments of 0.1 from 4.0, the initial starting value to 5.0. All other exogenous parameters are held constant at the initial values listed in Table 2. Figure 2.8 plots accountability points α that make the politician indifferent between the lowest level of creditor rights enforcement under imperfect markets $\lambda = .1$ and the highest, $\lambda = .49$. The figure shows

that as the economy's productive capacity increases, policymakers weight aggregate welfare more than SIG welfare and are therefore more likely to increase financial development. Consider two economies. Economy A has a high rate of productivity and Economy B has a low rate of productivity. Given that both economies have a similar political structure, a policymaker is more likely to reform the financial system in Economy A then in Economy B. According to this result, the constraints imposed by the political system on policymakers are partially offset by exogenous improvements in productive capacity. Additionally as *g* increases the wealth threshold required to borrow enough capital to set up projects fall, increasing firm entry. Aggregate welfare rises when productivity increases, causing the politician to value social welfare more even if it is politically easy to acquire gifts from elites. Result 2 is consistent with Hall and Jones (1999) who find evidence that social infrastructure, including political structure, is a significant determinant capital accumulation and productivity.

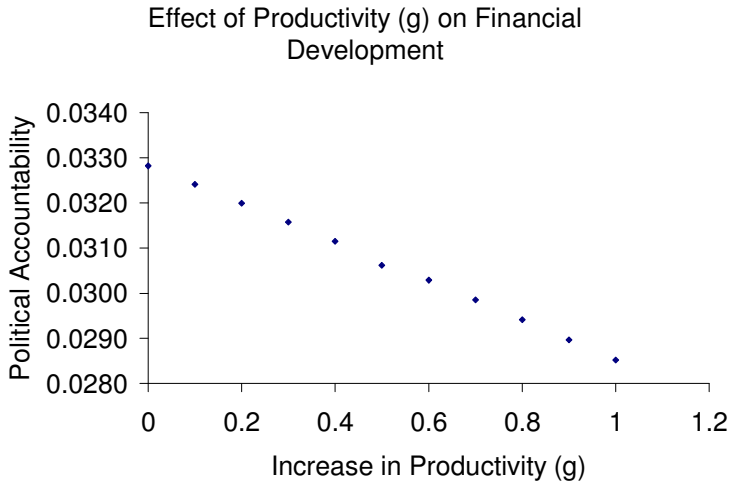


Figure 2.8: Plot of points that make the policymaker just indifferent between high and low financial development for different levels of productivity ranging from *g = 4 to g=5*.

6.2 Percent Change in Wealth Per Capita

Result 3: The likelihood of financial reform increases as wealth per capita increases.

In the second comparative static scenario, I increase the initial wealth endowments per capita from 10% to 100% for both households and entrepreneurs. The increase in initial wealth increases the level of available credit in the economy. As the supply of capital increases the equilibrium interest rate decreases for each level of creditor rights enforcement, λ. The loss in welfare that SIG members suffer due to improvements in creditor rights enforcement is partially offset by the decrease in the cost of capital. Additionally, constrained entrepreneurs experience welfare gains because the wealth thresholds required for firm entry and optimal investment fall. Figure 2.9 plots the levels of political accountability, α, that makes the politician indifferent between low and high financial development as the level of wealth per capita is increased. As Figure 2.9 demonstrates, it is easier for the politician to develop credit markets in wealthier economies where the supply of credit is abundant.

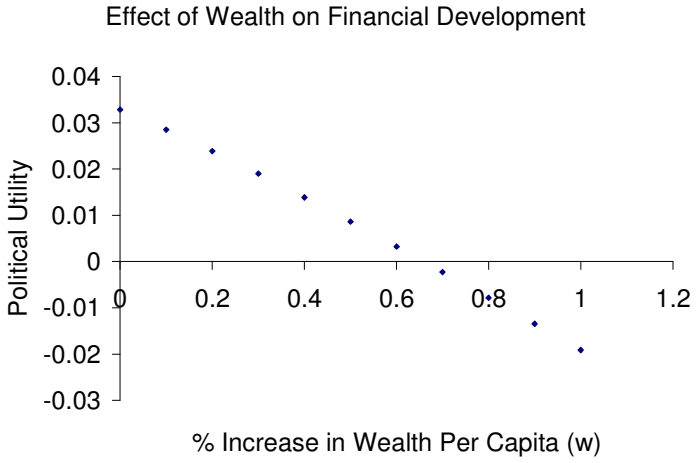


Figure 2.9: Plot of points that make the policymaker just indifferent between high and low financial development for different levels of aggregate initial wealth as wealth per capita varies.

For very wealthy economies, the condition that $\alpha \geq 0$ is violated. Politicians would have to receive negative utility from improvements in aggregate social welfare in order to choose a low level of financial development.

Result 3 is an illustration of path dependence in corporate ownership structures discussed in Bebchuk and Roe (1999). The authors show that current corporate ownership is dependent on patterns of past ownership. Furthermore, the authors argue that special interest politics shapes corporate governance, stating "A country's initial pattern of corporate structures influences the power that various interest groups have in the process producing corporate rules. If the initial pattern provides one group of players with relatively more wealth and power, this group would have a better chance to have corporate rules that it favors down the road." In my theoretical model, as per capita wealth increases, politically influential SIG members are harmed less by financial development because the increase in available credit lowers production costs. The same results hold in reverse. When the economy is poor and capital is scarce, the SIG suffers more when credit markets rights are strongly enforced than in a capital abundant economy. Result 3 suggests that special interests will be more of an obstacle to financial reform in poor emerging markets than in industrialized nations.

6.3 Change in Financial Openness

Result 4: Capital openness has a negative effect on financial development.

So far, the simulations have been generated under the assumption of a closed economy. I examine the effect of international capital supply on financial reform by now assuming that capital is allowed to flow into the economy from abroad. In order to simulate openness I increase the level of capital supply M, by adding f, where f

represents capital inflows and ranges from an increase of 10% to 60%. Capital supply under an open economy is given by $K_{\sup ply} = (\eta - 1)\int_0^{M/2} \frac{w}{M} dw + \int_0^{M+f} \frac{w}{M} dw$. Foreign investors only supply capital to domestic agents in the model; they do not start projects. Since the supply of capital increases while demand remains unchanged, the equilibrium interest rate falls. I assume that the world interest rate, i^w, is normalized to 0. As long as the endogenous equilibrium interest rate is greater than i^w foreigners will want to invest capital in the domestic economy. Foreign interest income does not enter into the policymaker's political utility function. Her utility function is entirely composed of domestic aggregate welfare and the welfare of the SIG.

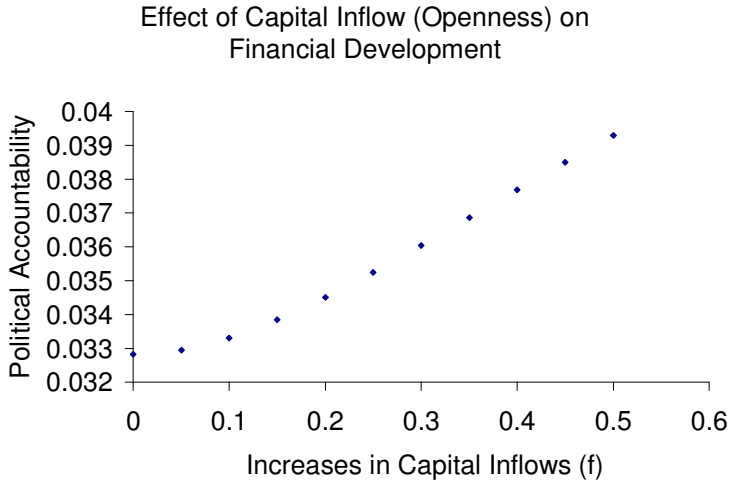


Figure 2.10: Plot of points that make the policymaker just indifferent between high and low Financial Development for different degrees of capital openness

Other studies, namely Rajan and Zingales (2003), have suggested that capital openness induces elite groups to change their demands for financial repression by increasing the opportunities for international investment and growth. However, the authors also explain that financial openness in the absence of trade openness is not

sufficient to change the preference of large domestic firms for financial repression. "…in the absence of domestic or foreign competition in product markets, these [large] firms will have little need to access external funds. Moreover, given the state of information asymmetries across markets, it is unlikely that small domestic firms are likely to be financed directly by foreign investors. If potential domestic entrants are unlikely to be financed by foreigners, industrial incumbents will still retain an incentive to keep entrants at bay by opposing financial development." Rajan and Zingales conclude that both trade and financial openness are necessary for elite groups to back financial development. In my model, lower interest rates lead to higher profits for elite entrepreneurs. A politician heavily influenced by the special interest group (α is low) may choose a lower level of creditor right enforcement since the loss in aggregate welfare would be offset by an increase in elite welfare. In this manner, the model suggests that increasing the capital account has the unattended effect of decreasing access to finance for small and medium entrepreneurs while increasing elite profits.

Trade openness provides competition in the product markets that lowers profits and internal cash flow, forcing large domestic firms to depend on external finance. Financial openness requires sound macroeconomic policies that reduce the government's ability to direct credit to favored firms. While the most profitable firms can tap into foreign capital, other firms, now dependent on external finance, may support financial development in order to increase access to credit.

In my model, the inadequacy of financial openness alone to provide an incentive for SIG members to back enforcement of creditor rights is manifested by the reaction of the interest rate to capital inflows. The additional capital decreases the equilibrium

interest rate because capital supply increases more than capital demand. The lower interest rate increases the optimal level of capital firms would like to invest, while lowering the return to lending. Wealthy agents have less incentive to lend in the credit markets and more incentive to invest in their projects at the lower interest rate. The decrease in the interest rate benefits SIG members, therefore aggregate social welfare increases overall even though lower interest rates harm poor citizens who must lend their wealth endowments. Figure 2.10 demonstrates how the "rich get richer and the poor get poorer" impact of capital inflows into the domestic economy affects the nature of financial reform. As foreign investment increases exogenously into the system, the policymaker has less incentive to reform. Elites continue to pressure the politician to maintain a low level of creditor enforcement in order to swallow up all the additional credit and increase profits.[16]

6.4 Percent Change in Wealth Inequality

Result 5: Wealth inequality has a negative effect on financial development.

Section 6.4 investigates the likelihood of financial reform under increasing wealth inequality by increasing η, the number of agents in the bottom domain of the wealth distribution (poor). Household wealth is equal to $\eta \int_0^{M/2} \frac{w}{M} dw$. The parameter η is increased by .05% to .25% from a starting value of 3. Figure 2.11 graphs levels of political accountability that make the policymaker indifferent between high and low

[16] It is important to note that along with capital, financial openness brings institutional improvements to the domestic economy such as good corporate governance and foreign bank competition. The institutional features of financial openness are not modeled in this paper. Result 4 suggests that the benefit of capital openness is its effect on financial institutions rather than the corresponding increase in capital. According to the model, capital inflows alone will not increase the level of financial development.

financial development as wealth inequality varies. The figure shows that the more unequal wealth is distributed in a country the higher the level of political accountability, α, required for financial development.

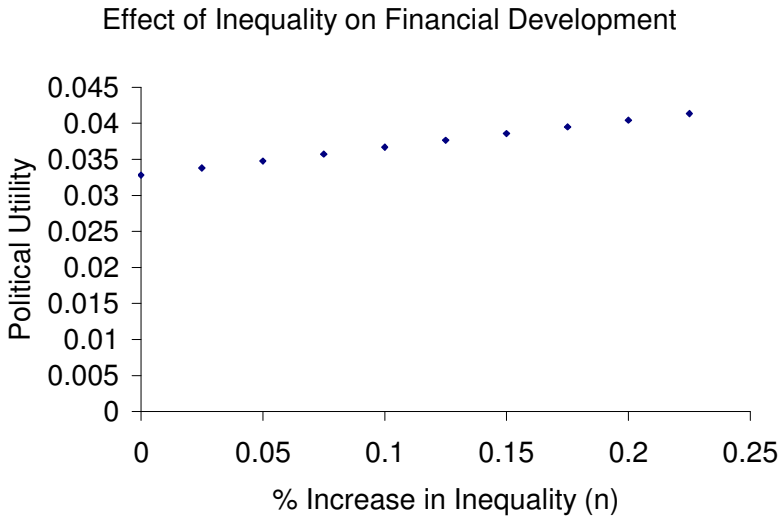


Figure 2.11: Plot of points that make the policymaker just indifferent between high and low financial development for different levels as wealth inequality varies.

Wealth inequality in the simulated economy reduces the equilibrium interest rate and increases the return to setting up projects. SIG members benefit from the low cost of capital that inequality brings about under financial repression. In Figure 10, I plot a range of wealth inequality parameters, η, for the two extreme levels of financial development, $\lambda = .1$ and $\lambda = .49$. Figure 2.12 shows elite entrepreneurs benefit more from financial repression when wealth is more unequally distributed, i.e. as η increases. Elites also suffer more from financial development when η increases.

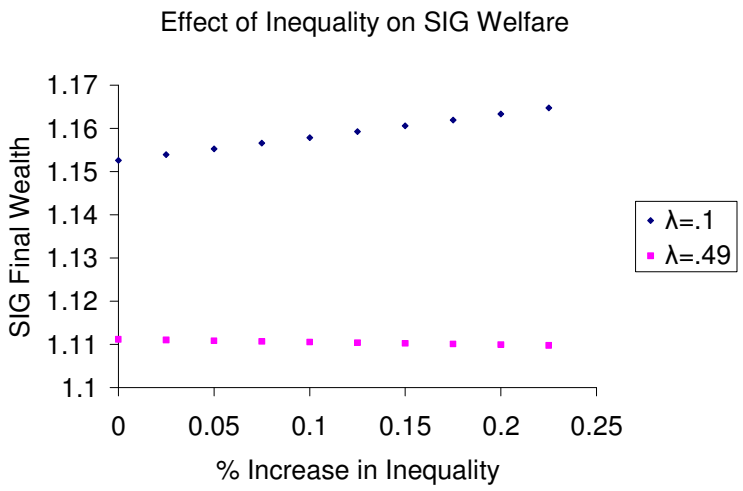


Figure 2.12: Plot of SIG welfare under different degrees if wealth inequality under financial repression (λ=.1) and financial development (λ=.49)

Result 5 is consistent with other research exploring the connection between inequality and financial development. Gradestein (2004) argues that in countries with high aggregate income and more equally distributed wealth, influential elites are more willing to support the enforcement of private property rights. Perotti and Volpin (2004) show that inequality reduces the level of minority investor protection in equity markets. Engerman and Sokoloff (2002) study economic institutions across the Americas and argue "that with more extreme inequality or heterogeneity in the population were more likely to develop institutional structures that greatly advantaged members of elite classes (and disadvantaging the bulk of the population) by providing them with more political influence and access to economic opportunities." While these studies have provided an empirical linkage between inequality and financial development, my theoretical model provides some insight into why such a relationship exists. Initial economic inequality leads to persistent political inequality. Thus, financial policy is formed to benefit the economically elite and politically influential at the expense of economic growth. In this manner, Result 5 is another example of the path dependence of financial policy.

7. Concluding Remarks

The central lesson of this chapter is that political structure - namely the degree of democratic accountability imposed by a country's institutions - significantly influences the capacity of policymakers to enact financial reforms. The model supports previous empirical and anecdotal evidence that special interest groups influence the degree of financial intermediary development. However, the model's conclusions shed doubt on the supposition that all governments respond uniformly to the pressure of powerful economic agents in society, demonstrating instead that a complete interest group depiction of financial reform includes the role of idiosyncratic political institutions in shaping the incentives and constraining the actions of governments.

I have presented a theoretical model of reform that unites these two political determinants of financial development. First, an interest group uses political contributions to influence government financial policy. Second, the politician's sensitivity to interest group pressure depends on whether or not political institutions require her to be accountable to the general electorate. Furthermore, the level of democratic accountability necessary for governments to improve financial development is dependent on the country's economic environment; including productivity, wealth per capita, financial openness, and the degree of wealth inequality. Financial development leads to popular political support from most citizens however; political repression enlarges the campaign funds in the politician's coffers. Both sources of political capital help the policymaker in her quest to be reelected. Institutions determine the source of political capital that is more advantageous to the policymaker. The model's predictions raise a variety of empirical questions. While the literature has considered some of them,

answers are far from conclusive. In conclusion, I simply discuss the questions I believe deserve further exploration.

First, what is the likelihood that policymakers trade aggregate social welfare in favor of interest groups? Democratic accountability, the main determinant of financial development in my model, has several components. Tsebelis (2002) shows that political systems with a large number of polarized veto players are less likely to enact reforms that improve aggregate welfare. Lederman et al. (2001) suggest that political institutions that enforce accountability tend to be less corrupt hence policymakers have less incentive to engage in rent seeking behavior at the expense of aggregate welfare. Other aspects of accountability such as competitive elections and independent judicial systems ensure that policymakers must value the well-being of the citizenry when making policy decisions. Empirical exploration into all the different components of political accountability and their relationship to financial development is needed.

Second, do countries with high industrial concentration and heavy regulation of new business entry tend to focus on aspects of financial development that are beneficial to large industrial incumbents (equity markets) as opposed to reforms that increase new business entry (credit markets)? Singh (1995) found that large corporations in developing countries rely heavily on equity to finance the investment. Unlike the US and the UK where equity markets developed as result of market forces, Singh finds that emerging market governments have taken a proactive role in developing their stock markets. Furthermore, Singh (1997) suggests that developing countries may enact policies that increase equity issuance by large firms but neglect more substantive policy measures to financial institutions.

Third, do capital inflows (FDI) reduce a country's incentive to reform its credit markets? Singh (1997) also discusses how less developed country governments may be reacting to pressure by large firms to ensure cheap access to capital and by international investors to open financial markets. By developing their equity markets, governments can appease both interest groups and may chose to do so even if that means endangering welfare-enhancing improvements to credit markets and property rights.

Fourth, are governments whose legal structure accommodates active intervention in financial markets more responsive to interest group pressure? La Porta et al. (1997,1998) argue that common law regimes are superior in producing efficient legal systems to civil law. In contrast, Rajan and Zingales (1999, 2003) argue that civil systems are more efficient than common law systems in adopting good policies because all legislation emanates from the center. The centralized nature of civil law systems also means that governments are more influenced by special interests when making their policy decisions. Therefore, the government's tendency to intervene in markets is proxied by legal institutions: civil law countries are more likely to intervene in financial policy than common law governments. A government whose legal structure accommodates intervention to a greater extant may respond more willingly to interest group pressure.

Fifth, in the theoretical model entrepreneur faces the same level of creditor rights enforcement, λ. In reality, firms face different obstacles in attaining financing for investments based on their size. A natural extension of the model is to explore the effects of disparate credit market imperfections on the equilibrium interest rate and access to capital.

Finally, what role does persistent inequality and low capital availability play in sustaining financial repression? I have discussed the theoretical importance of path dependence in explaining patterns of corporate ownership. More work is needed to asses the empirical significance of poverty and inequality on financial development.

My paper is an attempt to provide a theoretical framework for analyzing these questions. As emphasized by Acemoglu et al. (2004), "a theory of why different countries have different economic institutions must be based on politics, on the structure of political power, and the nature of political institutions… Constructing formal models incorporating and extending these ideas is the most important task ahead."

Chapter 3: An Empirical Analysis of Political Institutions and Credit Market Development

1. Introduction

In the previous chapter, the central conclusion of my theoretical model reveals the role of the political system in implementing financial reform: political systems that impose more democratic accountability on policymakers achieve higher levels of financial development. The theory shows that the level of accountability in the political system determines the politician's preference between special interest group contributions and aggregate welfare. Accountable political systems limit government protection of elite advantage based on insecure property rights by making it difficult for politicians to accept monetary enticements from special interests; hence, politicians choose financial policy that increases aggregate welfare.

Assumed in both the theory of special interest politics and its application to financial development is that all governments respond uniformly to the pressure of the powerful economic agents in society, as such the interest group depiction of financial reform ignores the role of institutions in shaping the incentives and constraining the actions of governments. Political scientists Garret and Lange (1995) recognize the omission of institutions from a theory of interest group led policy reform, stating, "Researchers have assumed that the effects of internationally generated changes in the constellation of domestic economic preferences will be quickly and faithfully reflected in changes in policies and institutional arrangements within countries. If one understands which economic interests have gained economic strength, one knows which has gained political power and in turn how the policy is going to change … [However], institutions

invariable outlive the constellation of interests that created them, and hence they provide barriers to market driven change".

Other researchers have explored the manner in which institutions affect the overall quality of the financial system. Djankov, McLiesh, and Shleifer (2004) examine whether legal rights that protect creditors against default and creditor registries that collect information on the credit history of borrowers are associated with higher levels of credit market development. The authors conclude that while both types of institutions are important for intermediary development, creditor rights are more influential in rich countries and credit registries play a more significant role in poor countries. Additionally, Desai, Dyck, and Zingales (2004) find that the institutional details of the tax system affect the quality of corporate governance. The higher the tax rate the more incentive managers have to divert corporate profits. On the other hand, strong tax enforcement reduces managerial diversion of profits and increases stock market value.

This chapter investigates whether the institutional details of the political system play significant role in achieving financial development that is independent of the level of democratic accountability between policymakers and voters. I find that political institutions, as summarized by the number and cohesion of its veto players, are weakly related to financial development. The chapter proceeds as follows. Section 2 discusses the role of veto players in policy reform and democratic accountability. Section 3 presents the data. Section 4 discusses the four empirical strategies I use to examine the relationship between veto players and financial development. Section 5 presents the results of each empirical strategy. Section 6 concludes.

2. Veto Players under Different levels of Political Accountability

Political institutions play a critical role in sustaining democratic accountability. A convenient method for summarizing a country's political institutions is by the characteristics of the veto players in the political system. Tsebelis (1995, 2002) defines the concept of veto players as "individual or collective actors whose agreement (by majority rule for collective actors) is required for change in the status quo". He provides a method of categorizing governments by the number and policy cohesion of veto players. The veto player framework is antecedent to the idea of checks and balances found in the American Constitution and federalist and French revolutionary writings and has been utilized implicitly and explicitly in contemporary comparative politics. It allows for comparisons across all political regime types including presidentialism and parliamentarism, unicameralism and bicamerialism, and two-party and multi-party systems.

An example of the veto player framework is found in the comparison of American and British political systems. Often the US and British political systems are paired together as having similar characteristics. However, the differences between the two systems are more compelling, "presidential vs. parliamentary systems, bicameralism vs. (de facto) unicameralism, undisciplined vs. disciplined parties, appointed vs. independent bureaucracies and the presence vs. the absence of supreme courts". Thus, the British system is a single veto player political structure while the American system accords with a multi veto player set up. (One needs only to concede the impossibility of Thatcher style market reforms occurring in a system of frequent gridlock like the US to understand the capability of the veto framework to explain differing levels of resistance to policy change

by governments). Simplifying the nexus of comparison to the ability of political systems to reform policy reduces the confusion of multi-dimensional analysis. The categorization of governments by the number and cohesion of veto players is the most important contribution of the veto player framework advanced by Tsebelis.

Along with a method of categorizing political systems, Tsebelis also presents a theory for predicting which systems have a higher capacity to implement reform. Tsebelis summarizes his theory as follows, "A significant policy change has to be approved by all veto players and it will be more difficult to achieve the larger the number of players and the greater ideological distance between them. Empirical research, measuring the effect of veto players on policy reforms in areas as diverse as labor markets and trade openness, supports Tsebelis' results for advanced democracies.[17]

Other researchers have suggested that Tsebelis's propositions may not be true in the context of weaker democracies. Keefer (2001) states that the "absence of multiple veto players in countries often means that some groups in society are less represented than they otherwise would be." Political scientists Andrews and Montinola (2004) agree, adding,

> In advanced, industrial democracies, institutions that enforce the rule of law are well established, and there is a relatively clear link between policy change (that is, passage) and implementation. … And reform turns mainly on whether legislative veto players can agree on passage of policies. In emerging democracies, agreement on policy is not the only potential obstacle to reform. The more important task for reformers is preventing passage of corrupt legislation and ensuring proper implementation of genuine reforms.

[17] See Baun (1999) and Hellerberg and Basinger (1998).

Tsebelis's predictions are based on the supposition that the most formidable obstacle to policy change is policy coordination between veto players. Andrews and Montinola show that since the institutional constraints on legislators in emerging democracies are weak, the chief obstacle to reform for these countries is collusion among veto players in taking bribes. A multi-veto player framework makes it more difficult for a politician to exploit his position for personal gain and retain office. Other researches have made similar distinctions about the differences in the impact of the number of veto players in advanced versus emerging democracies.[18]

Moreover, Tsebelis intentionally ignores whether political institutions achieve good or bad policies in order to focus attention entirely on the capability of political systems to change the status quo, regardless of the effects of the change on the economy. According to Andrews and Montinola (2004), good reforms strengthen the rule of law, while bad reforms lead to expropriation by the government. Applying this idea to financial markets, good reforms protect private property and creditor rights. Bad reforms violate creditor rights and retard financial development.

I examine whether political institutions have disparate effects on credit market in advanced versus weak democracies. In advanced democracies, obstacles to policy change occur in only one dimension, coordination between policymakers. Policy changes that increase the rule of law are more successfully implemented when there are fewer veto players that block reform. However, a multi-veto player framework is desirable when the reforms are bad because there are more vetoes to policy change. In contrast, for moderately or weakly democratic states, it is desirable to have a multi-veto

[18] See Hellman (1998) and Moser (1999).

player system whether the reform is good or bad because politically preferences formed by weakly accountable political systems cause the primary obstacle to policy reform to be collusion on bribes rather than coordination on policy. Multi-veto players prevent collusion and increase voter representation insuring that good reforms are implemented by legislatures and bad reforms are blocked. Moreover, since financial systems begin from a status quo of financial repression that benefit elite interests groups within the country, reforms are more likely to be of good quality (otherwise policymakers could maximize their bribes by maintaining the status quo).

Other researchers have shown that multiple veto player political system increases the likelihood of good quality reforms in weak democracies. Keefer and Savage (2001) show that checks and balances in the political system increase the ability of independent central banks to decrease inflation. Keefer (2001) suggests that multiple veto players increase government credibility. Henisz (2000) provides evidence that political constraints on the executive increase economic growth. Finally, La Porta et al. (2002) show that checks and balances in the political system are correlated with political freedom.

Though the number of veto players has disparate predictions depending on the level of democracy, policy cohesion of the veto players has the same effect on capacity for policy change for all levels of democratic accountability. Cohesion deals with the policy coordination problem of veto players and is unrelated to the bribery collusion problem produced by weakly accountable political systems in emerging democracies. Thus, as Tsebelis asserts, we should expect that policy cohesion among veto players increases the likelihood of reform.

I offer the following two testable hypotheses on the relationship between intermediary development, accountability, and political institutions.

H1: Financial development increases with the number of veto players for emerging democracies.

H2: Veto players that are more politically polarized are less likely to generate policy change that leads to financial development for all levels of democratic accountability.

3. Data

The panel covers 157 countries over 21 years. A complete description of the data is shown in Appendix C. The data years are restricted to 1980-2001 based on research by Singh (1997). Singh observes that governments in less developed countries started from a level of financial repression then undertook a great deal of financial sector reform in the 1980's and 1990's. I use this period of heavy reform in the developing world to test the prediction that political institutions play a role in the ability of governments to resist special interest group pressures and to improve the financial sector.

To proxy financial intermediary development, I use *Private Credit*, the amount of credit extended to private firms by financial intermediaries divided by GDP, from the Database on Financial Development and Structure by Beck et al. (2002). *Private Credit* is the preferred measure of intermediary development in the finance and growth literature because it isolates private bank lending from credit issued by central banks, government lending and credit to government run enterprises (Levine et al. (1999)). According to the World Business Environment Survey (WBES) only 28% of small firms receive financing

from banks, where small firms are defined as enterprises with 5 to 50 employees.[19] Medium firms are defined as enterprises with 51 to 500 employees and large firms employ over 500 workers. Medium and large firms receive 40% and 47% of financing for investments from banks. From this survey data, one can infer that most private credit is acquired by medium and large firms, which also have this most political influence within a country.

Following Tsebelis (1999) and Keefer (2003), I measure political institutions along two dimensions – the number of veto players, *Checks,* and the distance in their policy positions, *Political Polarization*. Both variables are from the Database of Political Institutions (DPI). *Checks* is measured by assigning one check if the government is controlled by different parties in the executive and legislative branch for presidential systems and assigning a check for party in the governing coalition under parliamentary systems. *Checks* are also added to detail the competitiveness of national elections, including whether elections have closed lists or open lists. In my empirical analysis, I use the *Log of Checks* variable, because I believe that the number of veto players in the political system has a nonlinear relationship to private credit. For instance, the marginal effect on the dependent variable of going from, say, two checks, to three checks is much greater than the marginal effect of going from ten checks to eleven checks.

Political Polarization captures the distance in policy agreement between policymakers in a particular year and is measured by assigning the four largest political parties a policy position along a left to right scale of economic policy. The largest difference between two political parties is given from 0 to 2 is the degree of polarization.

[19] The WBES surveys approximately 10,000 firms in 80 countries on issues related to financing obstacles.

To test the disparate effects of veto players on different levels of democracy I use as a measure of political accountability, the annual Freedom House World Country scores *Freedom Index*. The *Freedom Index* scores are found by rating countries by their government's protection of civil liberties and political liberties. I assume that countries that protect the rights of their citizenry along these two dimensions are more likely to enforce political institutions that reinforce accountability. The index places countries into three categories – *Free Countries*, *Partly Free Countries*, and *Not Free Countries*. I examine whether the variables measuring political institutions will have a different effect on financial development for each category of political accountability.

Additionally, I investigate the ability of political institutions to increase intermediary development under different degrees of openness. Rajan and Zingales (2003) hypothesize that openness to trade and financial flows lead members of elite interest groups to support financial development instead of repression. I measure the independent effects of both types of openness on financial development in the presence of political variables. Foreign direct investment (*FDI*) and trade openness (*Trade*) are taken from the World Bank indicators database (2003).

I also control for the level of economic development. As a proxy for economic development I use the Log of GDP per capita in 1995, *Lgdp95*. I used the 1995 measure as opposes to GDP per capita at the beginning of the sample because the panel is unbalanced and I will have more country-year observations towards the end of the series. *Inflation* is also included in the regression to control for its effect on *Private Credit* over the data's time interval.

The countries are separated into three groups, *Free Countries*, *Partly Free Countries*, and *Not Free Countries*. I assume that in *Free Countries* politicians are the most accountable to their constituencies and that they are the least accountable in *Not Free Countries*. I then analyze the data in order to determine if a country's political institutions increase *Private Credit* within the three different levels of democratic accountability. In Tables 3.1A – 3.1C, countries are grouped by their political system's promotion of civil and political liberties. Even within these groupings, there exists considerable variation in the data. Note that among *Free Countries*, countries include highly industrialized nations as well as developing countries. Table 3.2 summarizes the data. Panel A displays the summary statistics for *Free Countries*, Panel B for *Partly Free Countries and* Panel C for *Not Free Countries*. Overall, *Free Countries* have the highest level of financial development as proxied by *Private Credit*. It is instructive to compare countries with highly accountable political institutions to political systems with weaker voter representation in policy reform. The amount of *Private Credit* is just over 54% of GDP in *Free Countries*, almost twice as much as the percentage of *Private Credit* in *Partly Free Countries* and two and a half times the percentage in *Not Free Countries*. *Free Countries* also have the greatest variance in financial development of the three groups. Moreover, *Free Countries* tend to have more *Checks* in the political system (not surprisingly, because these are also the most democratic countries) and have veto players that are the most ideologically polarized.

For the smallest economies, namely the African countries of Ethiopia, Liberia, Chad, Sudan and Niger, *Private Credit* can be less than 15% of GDP and in some cases significantly less. For the most economically advanced countries, like the US, the UK,

Japan, and Germany credit extended to private corporations can total over 90% of GDP. The other variables of interest demonstrate considerable range over the data set as well. The number of veto players necessary to implement reform in the financial sector ranges from a low of 1 to up to 18 *Check*s. Most countries in the sample have 5 or fewer *Checks* within the political system; however, there are notable exceptions. India tops the list with as many as 18 *Checks* required to pass reform legislation. Other countries with Checks over 5 include France, Turkey, Denmark, and Thailand. *Political Polarization* between veto players ranges from 0 to 2, 0 indicating complete policy cohesion. The US, UK, Israel, Turkey, Central African Republic, and France are among the most polarized political systems, while Algeria, The Bahamas, Canada and Chile are included in the least.

The openness indicators, *Trade* and *FDI* also show tremendous variation in the sample. *Partly Free Countries* on average fall in the middle of *Free* and *Not Free* political regimes in terms of financial development, number of veto players, degree of polarization, wealth per capita and financial and trade openness.

Also of interest is the correlation between the variables in the bottom half of each panel. Both the *Log of Checks* and *Polarizatio*n are positively correlated with *Private Credit* for *Free Countries*. The *Log of Checks* has a positive correlation and *Polarization* a negative correlation in *Partly Free Countries*. Both institutional variables have a negative correlation with *Private Credit* in *Not Free Countries*. Overall, economic development as proxied by *Lgdp95* is highly correlated with the *Private Credit, Log of Checks and Polarization* however; the correlation between economic development and the number of veto players and political polarization diminishes significantly for the

Partly Free and *Not Free Countries*. Furthermore, *Trade* and *FDI* are negatively associated with *Private Credit* in the *Free Countries* and positively related with *Private Credit* in the *Partly Free Countries*. In the next two sections, I analyze whether these differences in signs between the explanatory and dependent variables for the different levels of democratic accountability are suggestive of the disparate effects of political institutions on financial development.

4. Empirical Strategy

I test the hypothesis of the paper by using four different empirical strategies. In Strategy 1, I cluster the standard errors at the country level as in Desai et al. (2004). By clustering the standard errors I avoid assuming that observations within each country are independent of each other. For Strategy 2, I cluster the standard errors by country and then test whether liberalization plays a key factor in the relationship between the political variables and the proportion of private credit to GDP. According to Dermirguc-Kunt and Detragiache (1998) and Williamson and Mahar (1998), many countries had liberalized interest rates by 1995. I test whether the effect of political institutions is more strongly related to financial development before the completion of liberalization in most countries or afterwards.

In Strategy 3, I average the data over 5-year intervals and I do not cluster the standard errors at the country level. This strategy is similar to the approach used by Levine, Beck, and Loayza (2000). The authors examine the relationship between institutions on financial development and growth and find that differences on legal and accounting system help explain differences in credit market development.

In Strategy 4, I use data on firm ownership as the dependent variable in order to determine of political institutions affect the ownership arrangement (family owned versus widely held) in listed corporations. Widely-held corporations may be less numerous in countries with political systems where financial policy can be more easily influenced by narrow interest groups represented by family owned enterprises.

For each empirical strategy, I present 4 tables. The first displays the OLS regressions of two equations, the Basic Equation and the Openness Equation. The Basic Equation includes the political variables, *Log of Checks* and *Polarization* plus the two controls, *Lgdp95* and *Inflation*. The Openness Equation includes the basic variable plus *Trade* and *FDI*.

In the second table, I add *Legal Origin* to the regression equation in order to determine the independent effects of the legal regime and political institutions on *Private Credit*. Much attention in the literature has been given to the role of legal origin in influencing financial development.[20] La Porta et al. (1998) explore the contribution of a country's legal origin in the formation of its financial structure and its corporate governance institutions, finding that legal origin — be it English common law, or French, German or Scandinavian civil law — partly determines the quality of investor protection and the size of the stock market versus the banking sector. The paper concludes that English common law systems generally have the strongest investor protection enforcement, followed by Germany, Scandinavian, and lastly, French civil systems. Beck et al. (2002) suggest that political institutions do not explain financial development independently of legal origin. I test the authors' conclusions when segmenting the data into the different levels of democratic accountability.

[20] See La Porta et al. (1997, 1998), Beck et al. (2002), and Levine et al. (2000).

Next, I present instrumental variables estimation of the Basic and Openness equation. The use of *Lgdp95* may be problematic because the variable is highly correlated with the other variables in the regression equation and with the error term. Instrumental variables estimation is commonly used when there is contemporaneous correlation between an independent variable and the error term. Rodrik et al. (2002) estimates the independent contributions of geography, institutions, and trade on economic growth. In their search for instruments for their explanatory variables that are uncorrelated with the error term and highly correlated with the regressor that is being instrumented, the authors appeal to geography-based instruments identified in the finance and growth literature.

Acemoglu et al. (2001) use an instrument for GDP that is based on the mortality of settlers who first colonized countries from Europe. If the settlers found hospitable living environment they settled the country and built good institutions that lead to economic growth. If the colonizers were morbidly vulnerable to environmental conditions they built extracting institutions that lead to economic stagnation. Therefore, settler mortality is highly correlated with GDP; however, it is also exogenous to institutions. The log of settler mortality, *Lsettler*, is a good but somewhat restrictive instrument because it can only be used on a sample of former colonies. In my data set, 70 countries in the sample have data on settler mortality. I also employ a second instrument, distance from the equator in degrees from Hall and Jones (1999). Both instruments proxy for economic development by correlating with "the extent of Western European influence."

A second potential concern with the OLS analysis is omitted variable bias when controlling for trade and financial openness in the regression equation. Policy reforms that enlarge the amount of credit lent to private firms may also encourage the country to increase its trade in goods and attract more foreign capital. Without including the specific policy reforms into the regression equation it is impossible to discern how much of the change in *Private Credit* is due to *Trade* and *FDI* alone. Frankel and Romer (1999) provide an instrument for actual trade shares by estimating a gravity model of bilateral trade. A similar geography based instrument is not as easily derived for financial openness. The log of their measure, *Log FR,* is based on geographical characteristics such as distance between trading partners. I use this measure as an instrument for the *Trade* variable.

5. Results

5A. Strategy 1: Clustering Standard Errors by Country

Table 3.3 displays the OLS regressions with the standard errors clustered by country for the three different levels of democratic accountability, *Free Countries*, *Partly Free Countries*, and *Not Free Countries*. For each category of democratic accountability, I estimate the Basic and Openness Equations. I find that for no group of countries is the *Log of Checks* a significant determinant of Private Credit under this empirical strategy. *Political Polarization* is a negative and significant at the 5 % level for the *Partially Free* group of countries in Regression 4. The variable has a coefficient of -0.083. When *Trade* and *FDI* are added in Regression 4 the coefficient on *Polarization* drops to -0.053 at a 10% level of significance. The proxy for economic development, *Lgdp95*, is positive and significant for all levels of accountability. *Inflation* is negative and significant

determinant of *Private Credit* for all regressions except Regression 6. Trade is an important factor for *Partially Free* countries whereas *FDI* is an important determinant in *Free Countries*.

The inclusion of *Legal Origin* in Table 3.4 does not substantively change the relationship between the political variables and *Private Credit* discussed in Table 3.3. The *Log of Checks* in the political system is not a significant determinant of the dependent variable. *Polarization* is negative and significant at the 5% and 10% levels in Regressions 3 and 4, respectively with coefficients of approximately -0.05 in both regressions. *French Legal Origin* is significant at the 5% level for *Partially Free Countries* only. However, the significance of *French Legal Origin* is not robust to the inclusion of indicators for financial openness. *German Legal Origin* is a strong contributor to *Private Credit* for the *Free Countries*, while intermediary development is hampered by a *Socialist Legal Origin* in the *Free* and *Not Free* groups.

The last two tables estimate the Basic and Openness equations using IV techniques. Panel A shows the first stage regressions. Regressions 1, 3, and 5 use the log of settler mortality (*Lsettler*) as an instrument for *Lgdp95* and Regression 2, 4, and 6 instruments for *Lgdp95* using the distance from the equator in degrees (*Disteq*). Panel B of Table 3.5 gives the second stage regressions. Under both the instruments, *Polarization* is negative and significant at the 5% level for *Partly Free Countries*. Its coefficients are -0.077 and -0.075 in Regressions 3 and 4, respectively.

Political Polarization is robust to the inclusion of *FDI* and *Trade* in Table 3.6 when *Disteq* is used as an instrument for *Lgdp95* and *Log FR* is used as an instrument for trade openness. In Regression 4, *Polarization* has coefficient of -0.074 and is significant

at the 5 % level. *FDI* is a significant factor of financial development in *Free Countries* while *Trade* is negative and significant. Unlike the OLS estimation, *Trade* is not a significant component of *Private Credit* for the *Partially Free Countries*.

5B. Strategy 2: The Effect of Liberalization

The second empirical approach takes into account the potential role of financial liberalization occurring in many of the countries during the period under analysis. I test whether the relationship between the political variables and financial development changes after the time by which most countries had liberalized their financial markets, by including a dummy variable for country-year observations after 1995, *Group B*. I then include interaction terms of the *Group B* dummy variable and the two political variables, *Log of Checks* and *Polarization*. I define the interaction terms as *LchecksB* and *PolarizationB*. Finally, I test whether coefficients of the interaction terms are equal to zero to determine if the relationship between the political variables and financial development is altered by liberalization. I am not able to test the equality of the coefficients for the *polarization* interaction term in the *Not Free Countries* case. Post 1995 all the observations for *Polarization* are exactly equal to 0. Since there is no variation in the explanatory variable, it is automatically dropped from the regression estimation.

Table 3.7 presents the results of the OLS estimation of the Basic and Openness Equations. Also shown in the table are the F-statistics for whether the interaction terms are equal to zero. The *Log of Checks* is not a significant determinant of *Private Credit* in any of the regressions. *Polarization* is significant at the 5% level in Regression 3. The interaction dummies are not significant. The F-statistics suggest that financial

liberalization did not significantly alter the relationship between the political variables and financial development of the credit market.

Table 3.8 adds *Legal Origin* to the Basic and Openness Equations. The results are similar to the *Legal Origin* regressions in Table 3.4 that employ empirical Strategy 1. Political *Polarization* and *French Legal Origin* are both negative and significant at the 5% level in the Basic Equation only. Their coefficients are -0.046 and -0.125, respectively. *German Legal Origin* makes a positive contribution to *Private Credit* for *Free Countries* while a *Socialist* legal regime is a deterrent to credit development in *Free* and *Not Free Countries*. According to the F-statistics, the interaction terms are not significantly different from zero.

The IV estimation shown in Table 3.9 shows that *Polarization* is a negative determinant of *Private Credit* for both the Basic and Openness Equations for *Partly Free Countries*. Its coefficients are -0.85 and -0.082 respectively. When I control for trade and capital openness and instrument for trade openness in Table 3.10, *Polarization* is only a significant determinant in Regression 4. As in the previous regression, for both Tables 3.9 and 3.10, liberalization does not significantly change the relationship between the political variables and private credit.

5C. Strategy 3: Averaging Data in 5-year intervals

Empirical Strategy 3 averages the data into 5 non-overlapping intervals from 1980-2000. The standard errors are robustly estimated. Table 3.11 shows that the *Log of Checks* is positive and significant at the 5% level for the *Partially Free Countries*. The coefficients are 0.09 and 0.098 in Regressions 3 and 4 respectively. This result contrast to no relationship between *Log of Checks* and *Private Credit* found in the first two

empirical approaches. It also does not support the hypothesis the multiple veto players in the political system is more valuable to intermediary development in weaker democracies. *Polarization* is found to be a significant negative determinant of *Private Credit* in Table 3.11 for the *Partially Free Countries*. Its coefficients are -0.166 and -0.094 in the Basic and Openness regressions, respectively.

Table 3.12 adds *Legal Origin* to the regressions. The *Log of Checks* is negative and significant at the 5% level for *Free Countries*. Its coefficients are -0.122 and -0.127 for the Basic and Openness Equations, respectively. The *Log of Checks* is not a significant factor for *Private Credit* in the *Partially Free* and *Not Free* groups of countries. *Polarization* is negatively related to *Private Credit* at the 5% level in Regression 3 and at the 10% level in Regression 4 of the *Partially Free* states. Table 3.13 presents IV estimation. The *Log of Checks* remains positive and significant for *Free Countries*. It is also positive for the *Partially Free Countries* when *Lsettler* is used as an instrument for *Lgdp95* in Regression 3. Table 3.14 includes trade instrumented by *Log FR* and it adds *FDI* to each regression. The relationship between *Log of Checks* and *Private Credit* is unchanged from the previous table, it is positive and significant for *Free Countries*, however, neither of the political variables is significantly related to *Private Credit* for the *Partially Free* and *Not Free Countries*.

5D. Strategy 4: Ownership as the Dependent Variable

Empirical Strategy 4 estimates the effect of political institutions on the percentage of publicly listed firms that are privately held in each country. The ownership data is from in Mork Wolfenzon and Yeung (2004). It covers 31 countries. There are four variables collected in the Morck et al. data set – the percentage of widely held public

firms in the country when control is inferred at 10%, the percentage of widely held public firms in the country when control is inferred at 20%, the percentage of family owned firms in the country when control is inferred at 10%, and the percentage of family owned firms in the country when control is inferred at 20%. After I merge the ownership data with my averaged data set, I have 28 observations therefore; I do not divide the countries into 3 groups as before. Instead, I include the index of democratic accountability directly into the regressions. The *Freedom Index* ranges from 1 (*Free Countries*) to 3 (*Not Free Countries*) as before. Since most of the ownership data is collected from the years 1999 and 2002, I average the explanatory variables over the time interval 1996-2000. The basic equation includes *Log of Checks*, *Polarization*, the *Freedom Index,* and *Lgdp95*. The Openness Equation includes the Basic Equation plus *Trade* and *FDI*. I repeat the OLS and IV estimation as in the other 4 strategies except I do not include in the regressions the proxies for openness in the IV estimation because that leaves me with only 6 observations. All tables under this empirical approach display the same result. I do not find a relationship between the political variables and the level of ownership.

6. Conclusion

This chapter uses a number of different empirical approaches to test two hypotheses. First, the number of veto players is positively related to intermediary development in weak democracies. Second, political polarization deters credit market development in all countries. There is no support for the first hypothesis as I find no consistent relationship between the *Log of Checks* and *Private Credit*. Moreover, there is only weak support for the hypothesis that political polarization negatively effects intermediary development. To quote noted philosopher, Cornel West, "democracy

matters" however, the manner in which a country organizes its political institutions does not seem to effect intermediary development once the level of democratic accountability between politicians and constituencies has been taken into account. Thus, the analysis presented in this chapter does not find any empirical advantage to the arrangement of political institutions in restricting special interest group influence on financial policy.

Table 3.1A : Free Country and Years

Argentina (1984-2000)	Gambia (1980, 1989-1993)	Nigeria (1980-1983)
Australia(1980-2000)	Germany (1980-2001)	Norway (1980-2001)
Austria (1980-2001)	Ghana(1980-1981,2000-2001)	Panama (1994-2001)
The Bahamas (1980-2001)	Greece (1980-2001)	Papa New Guinea (1980-1992, 1998-2001)
Bangladesh (1991-1992)	Grenada (1985-2001)	
Barbados (1980-2001)	Guyana (1993-2001)	Peru (1980-1988, 2001)
Belgium (1980-2001)	Honduras (1982, 1984-1992, 1997-1998)	Philippines (1987-1989, 1996-2001)
Belize (1981-2001)	Hungary (1990-2001)	Poland (1990-2001)
Benin (1991-2001)	Iceland (1980-2001)	Portugal (1980-2001)
Bolivia (1982-1994, 1996-2001)	India (1980-1990, 1998-2001)	Romania (1996-2001)
Botswana (1980-2001)	Ireland (1980-2001)	Samoa (1989-2001)
Brazil (1985-1992)	Israel (1980-2001)	Slovak Republic (1994-1994, 1998-2001)
Bulgaria (1991-2001)	Italy (1980-2001)	Slovenia (1991-2001)
Canada (1980-2001)	Jamaica (1980-2001)	Solomon Island (1980-1999)
Cape Verde (1991 -2001)	Japan (1980-2001)	South Africa (1994-2001
Chile (1990-2001)	Republic of Korea (1988-2001)	Spain (1980-2001)
Colombia (1980-1988)	Latvia (1991, 1994-2001)	Sri Lanka (1980-1982)
Costa Rica (1980-2001)	Lithuania (1991-2001)	St. Lucia (1980-2001)
Croatia (2000-2001)	Luxembourg (1980-2001)	St. Vincent and the Grenadines (1980-2001)
Cyprus (1981-2001)	Malawi (1994-1998)	Suriname (1988, 2000-2001)
Czech Republic (1993-2001)	Mali (1992-1993, 1995-2001)	Sweden (1980-2001)
Denmark (1980-2001)	Malta (1980-1092, 1987-2001)	Switzerland (1980-2001)
Dominica (1980-2001)	Mauritius (1981-2001)	Thailand (1989-1990,1998-2001)
Dominican Republic (1980-1992, 1998-2002)	Mexico (2000-2001)	Trinidad and Tobago (1980-2000)
Ecuador (1980-1995, 1998-1999)	Mongolia (1991-1999)	United Kingdom (1980-2001)
El Salvador (1997-2001)	Namibia (1990-2001)	United States (1980-2001)
Estonia (1991, 1993-2001)	Nepal (1991-1992)	Uruguay (1985-2001)
Fiji (1980-1986, 1999)	Netherlands (1980-2001)	Vanuatu(1980-1982,1989-2001)
France (1980-2001)	New Zealand (1980-2001)	Venezuela(1980-1991,1996-1998)

Table 3.1B : Partially Free Country and Years

Algeria (1989-1991)	Guinea-Bissau (1991-2001)	Nigeria (1987-1992, 1998-2001)
Angola (1991)	Guyana (1980-1992)	Oman (1992)
Argentina (1982-1983, 2001)	Haiti (1986-1987,1990,1994-1999)	Pakistan (1985-1998)
Armenia (1991-2001)	Honduras (1980-1981, 1983, 1993-1996, 1999-2001)	Panama (1980-1987,1990-1993)
Bahrain (1981-1992)	Hungary (1984-1989)	Papua New Guinea (1993-1997)
Bangladesh (1980-1990, 1993-2001)	India (1991-1997)	Paraguay (1980-1987, 1989-2001)
Belarus (1991-1995)	Indonesia (1980-1992, 1998-2001)	Peru (1989-2000)
Benin (1990)	Iran, Islamic Rep. (1980, 1984-1987)	Philippines (1980-1986,1990-1995)
Bhutan (1980-1991)	Jordan (1984-1987, 1989-2001)	Poland (1980-1981, 1983-1989)
Bolivia (1995)	Kazakhstan (1991-1993)	Romania (1991-1995)
Brazil (1980-1984, 1993-2001)	Kenya (1980-1986, 1992)	Samoa (1980-1988)
Bulgaria (1990)	Korea, Rep. (1980-1987)	Senegal (1980-2001)
Burkina Faso (1980-1981, 1983, 1992-2001)	Kuwait (1980-1989, 1992-2001)	Seychelles (1992-2001)
Burundi (1992)	Kyrgyz Rep (1991-1999)	Sierra Leone (1980-1991, 1996, 1998-2001)
Cape Verde (1987, 1990)	Latvia (1992-1993)	Singapore (1980-2001)
Central African Republic (1991-2001)	Lebanon (1980-1987, 1991-1994, 2001)	Slovak Republic (1993, 1996-1997)
Chile (1980-1981, 1983-1989)	Lesotho (1980-1987, 1991-2001)	Solomon Islands (2000-2001)
Colombia (1989-2001)	Liberia (1983-1988, 1997-2001)	South Africa (1980, 1983-1993)
Congo, Rep. (1991-1996, 2000-2001)	Madagascar (1982-2001)	Sri Lanka (1983-2001)
Cote d'Ivoire (1980-1987, 1989-1992, 1999-2001)	Malawi (1999-2001)	Sudan (1980-1983, 1986-1988)
Croatia (1991-1999)	Malaysia (1980-2001)	Suriname (1987, 1989-1999)
Cyprus (1980)	Maldives (1980-1987)	Swaziland (1980-1992)
Djibouti (1980-1981,1984, 1999-2001)	Mali (1991, 1994)	Thailand (1980-1988,1991-1997)
Dominican Republic (1993-1997)	Malta (1983-1986)	Togo (1999-2001)
Ecuador (1996-1997,2000-2001)	Mauritania (2000-2001)	Tonga (1980-2001)
Egypt, Arab Rep. (1980-1992)	Mauritius (1980)	Trinidad and Tobago (2001)
El Salvador (1980-1996)	Mexico (1980-1999)	Tunisia (1980-1992)
Estonia (1992)	Moldova (1991-2001)	Turkey (1980-2001)

Table 3.1B : Partially Free Country and Years (Continue)

Ethiopia(1991-1992,1995-2001)	Mongolia (1990)	Uganda (1980-1990, 1994-2001)
Fiji (1987-1998, 2000-2001)	Morocco (1980-2001)	Ukraine (1991-2001)
Gabon (1990-2001)	Mozambique (1991-1992, 1994-2001)	Uruguay (1980-1984)
The Gambia (1981-1988, 2001)	Namibia (1989)	Vanuatu (1983-1988)
Ghana (1992-1999)	Nepal (1980-1990, 1993-2001)	Venezuela (1992-1995,1999-2001)
Grenada (1980, 1984)	Nicaragua (1980-1997, 1999-2001)	Zambia (1980-1990, 1993-2001)
Guatemala (1980, 1984-2001)	Niger (1991-1995,1999-2001)	Zimbabwe (1980-2000)

Table 3.1C : Not Free Country and Years

Algeria (1980-1988, 1992-2001)	The Gambia (1994-2000)	Niger (1980-1990, 1996-1998)
Angola (1980-1990, 1992-1998)	Ghana (1982 -1991)	Nigeria (1984-1986, 1993-1997)
Argentina (1980-1981)	Grenada (1981-1983)	Oman (1980-1991, 1993-2001)
Bahrain (1993-2001)	Guatemala (1981-1983)	PRK (1980-2000)
Belarus (1996-2001)	Guinea-Bissau (1980-1990)	Pakistan (1980-1984, 1999-2001)
Benin (1980-1989)	Haiti (1980-1985, 1988-1993, 2000-2001)	Panama (1988-1989)
Bhutan (1992-2001)	Hungary (1980-1983)	Paraguay (1988)
Bolivia (1980-1981)	Indonesia (1993-1997)	Poland (1982)
Bulgaria (1980-1989)	Iran (1981-1983, 1988-2001)	Romania (1980-1990)
Burkina Faso (1982, 1984-1991)	Jordan (1980-1983, 1988)	Rwanda (1980-2001)
Burundi (1980-1991, 1993-2001)	Kazakhstan (1994-2001)	Saudi Arabia (1980-2001)
Cameroon (1980-2001)	Kenya (1987-1991, 1993-2001)	Seychelles (1980-1991)
Cape Verde (1980-1986, 1988-1989)	Kuwait (1990-1991)	Sierra Leone (1992-1995,1997)
Central African Republic (1980-1990)	Kyrgyz Rep (2000-2001)	South Africa (1981-1982)
Chad (1980-2001)	Lao PDR (1980-2001)	Sudan (1984-1985, 1989-2001)
Chile (1982)	Lesotho (1988-1990)	Suriname (1980-1986)
China (1980-2001)	Liberia (1980-1982, 1989-1996)	Swaziland (1993-2001)
Congo, Dem Rep (1980-2001)	Madagascar (1980-1981)	Syria Arab Rep (1980-2000)
Congo, Rep (1980-1990, 1997-1999)	Malawi (1980-1993)	Togo (1980-1998)
Djibouti (1982-1983, 1985-1998)	Maldives (1988-2001)	Tunisia (1993-2001)
Egypt, Arab Rep. (1993-2001)	Mali (1980-1999)	Uganda (1991-1993)
Equatorial Guinea (1980-2001)	Mauritania (1980-1999)	Vietnam (1980-2001)
Ethiopia (1980-1990, 1993-1994)	Mongolia (1980-1989)	Zimbabwe (2001)
Gabon (1980-1989)	Mozambique (1980-1990,1993)	

Table 3.2: Summary Statistics

Panel A: Free Countries							
	Private Credit	Log of Checks	Polarization	Trade	FDI	Lgdp95	Inflation
Observations	1198	1134	1093	1243	1238	1290	1280
Mean	0.542	1.160	.7282	83.534	2.921	8.68	18.033
Std. Dev.	0.376	.552	.914	43.575	4.799	1.368	65.09
Min	0.0178	0	0	10.079	-6.897	5.044	-32
Max	1.790	2.890	2	290.710	93.720	10.696	969
Correlations							
Private Credit	1.000						
Log of Checks	0.255	1.000					
Polarization	0.281	0.513	1.000				
Trade	-0.030	0.042	-0.060	1.000			
FDI	-0.028	-0.035	-0.017	0.376	1.000		
Lgdp95	0.6946	0.461	0.513	-0.085	-0.064	1.000	
Inflation	-.2019	-0.0786	-0.0480	-0.1014	-0.0771	-0.1068	1.00
Panel B: Partly Free Countries							
	Private Credit	Log of Checks	Polarization	Trade	FDI	Lgdp95	Inflation
Observations	888	918	918	998	988	1066	1007
Mean	0.274	0.492	0.109	74.565	1.794	7.006	29.512
Std. Dev.	0.240	0.620	0.414	49.097	3.581	1.226	89.56
Min	0.001	0	0	8.953	-28.622	3.898	-26
Max	1.552	2.890	2	361.179	39.776	10.068	976
Correlations							
Private Credit	1.000						
Log of Checks	0.1701	1.000					
Polarization	-0.047	0.458	1.000				
Trade	0.531	-0.039	-0.111	1.000			
FDI	0.277	0.052	-0.028	0.436	1.000		
Lgdp95	0.597	0.007	0.004	0.577	0.267	1.000	
Inflation	-0.194	0.077	0.097	-0.004	-0.076	-0.026	1.00

Panel C: Not Free Countries							
	Private Credit	Log of Checks	Polarization	Trade	FDI	Lgdp95	Inflation
Observations	533	753	735	696	688	783	709
Mean	0.223	0.154	0.015	68.102	1.720	6.389	20.306
Std. Dev.	0.208	0.393	0.168	68.011	7.662	1.158	56.019
Min	0	0	0	6.320	-82.810	3.898	-29
Max	1.197	2.079	2	275.232	145.210	9.727	637
Correlations							
Private Credit	1.000						
Log of Checks	-0.049	1.000					
Polarization	-0.025	0.391	1.000				
Trade	0.112	-0.028	-0.037	1.000			
FDI	0.004	-0.005	-0.009	0.369	1.000		
Lgdp95	0.419	-0.032	-0.026	0.350	-0.0350	1.000	
Inflation	-0.236	-0.042	-0.013	-0.085	-0.011	-0.166	1.000

Table 3.3: OLS Regression of the Basic and Openness Equations

The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. The Openness Equation includes the Basic equation plus Trade and FDI. Standard errors are clustered at the country level. Absolute value of robust t-statistics are in parenthesis.* significant at 10%; ** significant at 5%; *** significant at 1%

	Free Countries		Partly Free Countries		Not Free Countries	
	Basic	Openness	Basic	Openness	Basic	Openness
The dependent variable is Private Credit.	1	2	3	4	5	6
Log of Checks	-0.041	-0.033	0.048	0.051	0.009	0.023
	(1.09)	(0.89)	(1.38)	(1.49)	(0.29)	(0.7)
Polarization	-0.006	-0.01	-0.083**	-0.053*	-0.021	-0.034
	(0.19)	(0.33)	(2.50)	(1.94)	(1.19)	(1.73)
Inflation	-0.001***	-0.001***	-0.001**	-0.001***	-0.001**	-0.001
	(3.94)	(3.91)	(2.59)	(3.04)	(2.03)	(1.75)
Lgdp95	0.184***	0.18***	0.114***	0.078***	0.094***	0.088***
	(7.85)	(7.53)	(6.37)	(6.40)	(5.89)	(2.89)
Trade		0		0.002***		-0.001
		(0.61)		(3.36)		(0.74)
FDI		0.008**		-0.001		0.009
		(2.21)		(0.29)		(0.75)
Constant	-1.007***	-0.966***	-0.515***	-0.414***	-0.346***	-0.277**
	(5.88)	(5.49)	(4.51)	(5.40)	(3.50)	(2.02)
Observations	1000	956	724	668	455	396
R-squared	0.48	0.47	0.44	0.52	0.32	0.19

Table 3.4: OLS Regression of the Basic and Openness equations and Legal Origin

The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. The Openness Equation includes the Basic equation plus Trade and FDI. Standard errors are clustered at the country level. Each equation includes dummy variables for French, German, Scandinavian, and Socialist legal origins. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

	Free Countries		Partly Free Countries		Not Free Countries	
	Basic	Openness	Basic	Openness	Basic	Openness
The dependent variable is Private Credit.	1	2	3	4	5	6
Log of Checks	-0.066	-0.059	0.001	0.041	0.009	0.036
	(1.66)	(1.53)	(0.04)	(1.31)	(0.28)	(0.94)
Polarization	0.008	0.003	-0.055**	-0.05*	-0.015	-0.014
	(0.28)	(0.12)	(2.12)	(1.91)	(0.51)	(0.42)
Lgdp95	0.174***	0.165***	0.135***	0.082***	0.099***	0.067**
	(7.79)	(7.35)	(7.16)	(4.88)	(4.78)	(2.39)
Inflation	-0.001***	-0.001***	-0.001**	-0.001**	-0.001	-0.001**
	(3.30)	(3.24	(2.05)	(2.15)	(1.67)	(2.16)
Legor_fr	-0.016	-0.027	-0.12**	-0.017	-0.026	0.023
	(0.27)	(0.46)	(2.38)	(0.36)	(0.58)	(0.5)
Legor_ge	0.325***	0.356***	-0.057	0.112	0***	0***
	(2.85)	(3.17)	(0.76)	(1.57)	(0.00)	(0.00)
Legor_sc	-0.103	-0.078	0***	0***	0***	0***
	(0.7)	(0.52)	(0.00)	(0.00)	(0.00)	(0.00)
Legor_so	-0.225***	-0.236***	-0.134	-0.08	-0.29***	-0.184**
	(5.19)	(5.70)	(1.75)	(1.48)	(4.70)	(2.06)
FDI		0.01***		-0.001		-0.005
		(2.01)		(0.21)		(0.7)
Trade		0		0.002***		0.001
		(0.24)		(3.24)		(0.92)
Constant	-0.897***	-0.833***	-0.569***	-0.422***	-0.377***	-0.262
	(4.90)	(4.02)	(5.45)	(4.50)	(2.92)	(1.57)
Observations	908	871	629	592	302	260
R-squared	0.53	0.54	0.48	0.52	0.49	0.31

Table 3.5: IV Regression of the Basic Equation

The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. Regressions A instruments Lgdp95 with Log of Settler Mortality (Lsettler). Regressions B instruments Lgdp95 with Distance from the Equator in Degrees (Disteq). Standard errors are clustered at the country level. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

Panel A: First Stage Regressions of Lgdp95						
	Free Country		Partly Free Country		Not Free Country	
	A	B	A	B	A	B
	1	2	3	4	5	6
Log of Checks	0.215***	0.551***	0.048	0.388***	0.310	-0.039
	(2.88)	(7.04)	(0.56)	(3.88)	(1.80)	(0.23)
Polarization	0.778	0.212***	0.60	0.025	-0.423	-0.505
	(1.50)	(3.68)	(0.56)	(0.17)	(1.46)	(1.33)
Inflation	0	-0.001*	0.002	-0.003	0.010***	-0.004**
	(0.70)	(1.84)	(1.61)	(1.59)	(2.86)	(2.29)
Instrument	-0.791***	5.49***	-0.664***	2.89***	-2.86	5.015***
	(23.59)	(16.81)	(16.59)	(6.35)	(21.58)	(12.38)
Constant	11.219***	6.22***	10.08***	6.29***	7.448***	5.50***
	(63.22)	(58.81)	(48.03)	(54.89)	(21.58)	(57.11)
Observations	491	526	478	600	246	407
R-squared	0.60	.0.48	0.42	0.08	0.11	0.28
Panel B: Second Stage Regressions of the Basic Equation						
	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
The dependent variable is Private Credit	1	2	3	4	5	6
Lgdp95	0.179***	0.238***	0.161***	0.148**	0.222*	0.139
	(7.40)	(5.03)	(4.40)	(2.18)	(1.86)	(2.39)*
Log of Checks	-0.026	-0.085	0.029	0.034	-0.022	-0.004
	(0.63)	(1.44)	(0.87)	(0.78)	(0.40)	-0.13
Polarization	0.001	-0.023	-0.077**	-0.075**	0.021	0.003
	(0.02)	(0.58)	(2.10)	(2.57)	(0.46)	-0.13
Inflation	-001***	-0.001***	-0.001	-0.001	-0.004***	-0.001
	(3.44)	(3.54)	(3.23)	(3.27)**	(2.76)	-1.62
Constant	-0.990***	-1.374***	-0.925***	-0.735	-1.11	-0.628
	(5.16)	(4.03)	(3.94)	-1.58	(1.58)	-1.8
Observations	491	526	478	600	246	407
R-squared	0.49	0.5	0.39.	0.43	.	0.27

Table 3.6: IV Regression of the Openness Equation

The Openness Equation includes the Log of Checks, Polarization, Inflation, Lgdp95, Trade, and FDI. Regressions A instruments Lgdp95 with Log of Settler Mortality (Lsettler). Regressions B instruments Lgdp95 with Distance from the Equator in Degrees (Disteq). Trade is instrumented with the Log of the Frankel-Romer proxy of natural trade openness (Log FR). Standard errors are clustered at the country level. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
	1	2	3	4	5	6
Panel A: First Stage Regressions of Lgdp95						
Log of Checks	0.152*	0.512***	0.015	0.401***	0.223	0.195
	(1.71)	(6.48)	(.17)	(4.23)	(1.22)	(1.47)
Polarization	0.070	0.244***	0.109	0.090	0.318	-0.374
	(1.06)	(4.18)	(0.92)	(0.66)	(0.90)	(1.31)
FDI	-0.001	0.017	0.085***	0.052***	0.065*	0.062***
	(0.007)	(1.21)	(4.33)	(2.95)	(1.96)	(2.96)
Inflation	0.001*	-0.006	0.002*	-0.001	0.009**	-0.001
	(1.81)	(1.23)	(1.89)	(.45)	(2.57)	(-0.39)
Instrument	-0.820***	5.841***	-0.562***	2.621***	-0.234	3.858
	(15.47)	(16.75)	(11.15)	(6.07)	(3.47)***	(13.35)
LogFrankRom	0.20***	.124**	-0.013	0.143**	0.023*	0.277***
	(3.41)	(2.55)	(1.35)	(1.99)	(1.86)	(4.75)
Constant	10.816***	5.755***	9.50***	5.742***	7.026***	4.574***
	(41.29)	(30.26)	(34.31)	(24.45)	(18.62)	(23.94)
Observations	364	515	397	561	233	354
R-square	0.48	0.48	0.33	0.10	0.10	0.33
Panel B: First Stage Regressions of Trade						
Log of Checks	7.055***	4.454**	0.165	7.623***	11.286**	11.285***
	(3.24)	(2.28)	(0.04)	(2.81)	(2.47)	(2.79)
Polarization	-4.202**	-6.570***	-12.54*	-8.399**	-16.188*	-13.067
	(2.58)	(4.55)	(2.36)	(2.15)	(1.83)	(1.50)
FDI	2.506	2.431***	10.33***	6.614***	5.489888	6.824***
	(5.91)	(7.00)	(11.84)	(13.04)	(6.59)	(10.63)
Inflation	-0.016	-0.001	-0.201***	-1.23***	-0.121	0.001
	(1.20)	(.45)	(13.62)	(2.88)	(1.30)	(0.03)
Instrument	-5.359***	2.621***	-1.91	-24.947**	1.353	40.343***
	(4.12)	(6.07)	(.85)	(2.02)	(0.80)	(4.25)
Log FR	30.393	.143**	-0.126	33.933***	0.372	24.130***
	(21.29)	(1.99)	(0.30)	(16.44)	(1.20)	(13.64)
Constant	2.212	5.742***	65.08***	-29.801***	41.401***	-25.758***
	(0.34)	(24.45)	(5.29	(4.43)	(4.39)	(4.44)
Observations	364	561	397	561	233	354
R-square	0.65	0.10	0.31	0.50	0.16	0.45

Panel C: Second Stage Regression of the Openness Equation						
	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
The dependent variable is Private Credit	1	2	3	4	5	6
Lgdp95	0.155***	0.222***	0.113	0.183**	0.263	0.211*
	(6.43)	(4.88)	(1.21)	(2.14)	(0.61)	(1.88)
Trade	-0.002**	-0.003**	-0.002	0.001	0.002	-0.008*
	(2.21)	(2.67)	(0.09)	(.51)	(0.07)	(1.90)
Lchecks	0.009	-0.044	0.012	0.020	-0.054	0.056
	(0.30)	(0.87)	(0.41)	(0.43)	(0.11)	(0.78)
Polarization	-0.036	-0.048	-0.084	-0.074**	0.059	-0.122
	(1.05)	(1.36)	(0.25)	(2.03)	(0.09)	(1.43)
FDI	0.023***	0.020***	0.054	0.001	-0.026	0.051*
	(2.96)	(3.12)	(0.17)	(0.11)	(0.11)	(1.74)
Inflation	-0.001***	-0.001***	-0.001	-0.001***	-0.004***	-0.001
	(3.66)	(4.09)	(0.25)	(2.74)	(2.98)	(1.08)
Constant	-0.719	-1.110***	-0.409	-1.020*	-1.45	-0.677
	(3.84)	(3.65)	(0.39)	(1.81)	(0.35)	(1.23)
Observations	364	515	397	561	233	354
R-sq	0.50	0.53	.	0.23	.	.

Table 3.7: OLS Regression of the Basic and Openness Equations and Liberalization

The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. The Openness Equation includes the Basic Equation plus Trade and FDI. Standard errors are clustered at the country level. Each equation includes a dummy variable for country-year observation after 1995 (GroupB) and interactions terms between GroupB and Log of Checks (LCHECKSB) and GroupB and Polarization (POLARIZB). F-Tests of equality of coefficient between the political variables, Log of Checks and Polarization, and the interaction terms are given below. Absolute value of robust t-statistics are in parenthesis.
* significant at 10%; ** significant at 5%; *** significant at 1%

	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
The dependent variable is Private Credit	1	2	3	4	5	6
Log of checks	-0.033	-0.031	0.026	0.031	-0.004	0.014
	(0.81)	(.76)	(1.05)	(1.13)	(0.19)	(0.56)
Polarization	0.003	0.002	-0.068**	-0.042	-0.008	-0.022
	(0.11)	(0.08)	(2.28)	(1.58)	(0.53)	(1.09)
LCHECKSB	0.018	0.029	0.069	0.059	0.048	0.022
	(0.43)	(0.67)	(1.35)	(1.43)	(0.82)	(0.31)
POLARIZB	0.021	-0.035	-0.051	-0.038		
	(0.76)	(1.18)	(1.02)	(0.98)		
GROUPB	0.129**	0.117**	0.000	-0.006	0.012	0.032
	(2.55)	(2.31)	(0.01)	(0.18)	(0.29)	(0.65)
Lgdp95	0.184***	0.180***	0.114***	0.078***	0.093	0.087***
	(7.77)	(7.59)	(6.18)	(6.18)	(5.59)	(2.96)
Inflation	-0.001***	-0.001***	-0.001***	-0.001***	-0.061**	-0.001*
	(3.96)	(3.94)	(2.55)	(2.96)	(2.03)	(1.80)
Trade		-0.001		0.002***		-0.001
		(0.64)		(3.44)		(0.74)
FDI		0.005		-0.002		0.009
		(1.58)		(0.36)		(0.74)
Constant	1.070***	1.010***	-0.516	-0.410***	-0.344	-0.276
	(6.12)	(5.73)	(4.23)	(4.91)	(3.41)	(2.06)
Observations	1000	956	724	668	455	396
R-squared	0.51	0.50	0.45	0.53	0.32	0.19
F-statistic[a]	F(2,80) = 0.31	F(2, 77) = 0.73	F(2,79) = 0.91	F(2,74) = 1.02	F(1,58) = 0.67	F(1,53) = 0.09

[a] For Not Free Countries, only the constraint that the Log of Checks is equal to LCHECKSB is tested.

Table 3.8: OLS Regressions of the Basic and Openness Equations, Legal Origin, and Liberalization

The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. The Openness Equation includes the Basic equation plus Trade and FDI. Standard errors are clustered at the country level. Each regression includes a dummy variable for country-year observation after 1995 (GroupB) and interactions terms between GroupB and Log of Checks (LCHECKSB) and GroupB and Polarization (POLARIZB). Each regression includes dummy variables for French, German, Scandinavian, and Socialist legal origins. F-Tests of equality of coefficient between the political variables and the interaction terms are given below. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

	Free Countries		Partly Free Countries		Not Free Countries	
The dependent variable is Private Credit.	1	2	3	4	5	6
Log of Checks	-0.051	-0.052	-0.026	0.017	-0.01	0.007
	(1.13)	(1.2)	(0.98)	(0.63)	(0.4)	(0.25)
Polarization	0.015	0.015	-0.046**	-0.043	0.007	0.02
	(0.53)	(0.54)	(2.01)	(1.69)	(0.31)	(0.92)
LCHECKSB	-0.02	-0.005	0.081	0.069	0.059	0.069
	(0.49)	(0.12)	(1.48)	(1.52)	(0.92)	(1)
POLARIZB	-0.01	-0.024	-0.042	-0.032	0***	0***
	(0.36)	(0.85)	(0.82)	(0.78)	(0.00)	(0.00)
GROUPB	0.188***	0.168***	0.001	-0.006	0.025	0.041
	(3.37)	(3.06)	(0.03)	(0.17)	(0.66)	(1.05)
Lgdp95	0.173***	0.165***	0.135***	0.082***	0.098***	0.065**
	(7.67)	(7.40)	(7.06)	(4.71)	(4.77)	(2.49)
Inflation	-0.001***	-0.001***	-0.001*	-0.001**	-0.001	-0.001**
	(3.10)	(3.11)	(1.95)	(2.01)	(1.73)	(2.37)
Legor_fr	-0.022	-0.033	-0.125**	-0.022	-0.027	0.024
	(0.39)	(0.57)	(2.38)	(0.45)	(0.6)	(0.54)
Legor_ge	0.32***	0.339***	-0.038	0.124	0***	0***
	(2.83)	(3.07)	(0.54)	(1.77)	(0.00)	(0.00)
Legor_sc	-0.108	-0.086	0***	0***	0***	0***
	(0.72)	(0.57)	(0.00)	(0.00)	(0.00)	(0.00)**
Legor_so	-0.29***	-0.291***	-0.131*	-0.077	-0.281***	-0.17**
	(5.60)	(6.01)	(1.95)	(1.45)	(4.44)	(2.02)
FDI		0.005		-0.002		-0.008
		(1.48)		(0.34)		(1.11)
Trade		0		0.002***		0.001
		(0.32)		(3.33)		(0.93)
Constant	-0.963***	-0.88***	-0.566***	-0.418***	-0.376***	-0.262
	(5.18)	(4.30)	(5.12)	(4.18)	(3.01)	(1.67)
Observations	908	871	629	592	302	260
R-squared	0.57	0.57	0.49	0.53	0.5	0.34
F-statistic[a]	0.25	0.47	1.32	1.26	0.84	1.00

[a] For Not Free Countries, only the constraint that the Log of Checks is equal to LCHECKSB is tested.

Table 3.9: IV Regression of the Basic Equation and Liberalization

The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. Regressions A instruments Lgdp95 with Log of Settler Mortality (Lsettler). Regressions B instruments Lgdp95 with Distance from the Equator in Degrees (Disteq). Standard errors are clustered at the country level. The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. Each regression includes a dummy variable for country-year observation after 1995 (GroupB) and interactions terms between GROUPB and Log of Checks (LCHECKSB) and GROUPB and Polarization (POLARIZB). F-Tests of equality of coefficient between the political variables and the interaction terms are given below. Absolute value of robust t-statistics are in parenthesis.*significant at 10%; **significant at 5%; ***significant at 1%

Panel A: First Stage Regressions of Lgdp95

	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
	1	2	3	4	5	6
Log of Checks	0.192**	0.466***	0.024	0.273**	0.248	0.045
	(2.04)	(4.45)	(0.24)	(2.28)	(1.17)	(0.23)
Polarization	0.049	0.214***	0.071	0.064	-0.363	-0.528
	(0.77)	(3.05)	(0.48)	(0.33)	(1.19)	(1.37)
LCHECKSB	0.052	0.155	0.089	0.376	0.168	-0.298
	(0.35)	(0.99)	(0.55)	(1.76)	(0.46)	(0.75)
POLARIZB	0.096	0.007	-0.006	-0.118		
	(0.87)	(0.05)	(0.03)	(0.39)		
GROUPB	-0.116	-0.296	-0.221*	-0.369***	0.05	0.269***
	(0.70)	(1.73)	(1.88)	(2.64)	(0.34)	(2.30)
Inflation	0.000	-0.001***	0.001	-0.003*	0.010***	-0.004**
	(0.65)	(2.06)	(1.22)	(1.82)	(2.88)	(2.41)
Instrument	-0.790***	5.527***	-0.661***	2.813***	-0.284***	4.875***
	(23.51)	(16.68)	(16.52)	(6.13)	(4.48)	(11.95)
Constant	11.264	6.362***	10.143***	6.425	7.421	5.441***
	(59.45)	(47.89)	(47.85)	(50.94)	(21.09)	(54.97)
Observations	491	526	478	600	246	407
R-squared	0.60	0.48	0.43	0.08	0.12	0.29

Panel B: Second Stage Regression of the Basic Equation						
	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
The dependent variable is Private Credit	1	2	3	4	5	6
Lgdp95	0.178***	0.232***	0.161***	0.152***	0.221*	0.140**
	(7.73)	(4.86)	(4.36)	(2.12)	(1.83)	(2.41)
Log of Checks	0.011	-0.045	0.011	0.029	-0.036	-0.007
	(0.28)	(0.75)	(0.33)	(0.88)	(0.80)	(0.27)
Polarization	-0.10	-0.20	-0.085**	-0.082**	0.032	0.005
	(0.37)	(0.52)	(2.15)	(2.18)	(0.80)	(0.19)
LCHECKSB	-0.06	-0.045	0.056	0.10	0.038	0.015
	(1.19)	(1.06)	(0.92)	(0.18)	(0.52)	(0.37)
POLARIZB	0.024	-0.015	0.004	0.010		
	(0.57)	(0.33)	(0.06)	(0.19)		
GROUPB	0.207***	0.188***	-0.014	0.015	0.007	-0.010
	(3.11)	(3.66)	(0.37)	(0.33)	(0.12)	(0.29)
Inflation	-0.001***	-0.001	-0.001***	-0.001	-0.004**	-0.001
	(3.34)	(3.26)	(3.30)	(2.85)	(2.64)	(1.59)
Constant	-1.08***	-1.419***	-0.831***	-0.768	1.105	0.632*
	(5.75)	(4.11)	(3.31)	(1.53)	(1.56)	(1.80)
Observations	491	526	478	600	246	407
R-squared	0.55	0.54	0.39	0.42	.	.0.27
F-statistic[a]	F(2,39)=	F(2,46)=	F(2,49)=	F(2,63)=	F(1,33)=	F(1,50)=
	0.86	0.69	1.15	0.11	0.27	0.14

[a] For Not Free Countries, only the constraint that the Log of Checks is equal to LCHECKSB is tested.

Table 3.10: IV Regression of the Openness Equation and Liberalization

The Openness Equation includes the Log of Checks, Polarization, Inflation, Lgdp95, Trade, and FDI. Regressions A instruments Lgdp95 with Log of Settler Mortality (Lsettler). Regressions B instruments Lgdp95 with Distance from the Equator in Degrees (Disteq). Trade is instrumented with the Log of the Frankel-Romer proxy of natural trade openness (Log FR). Standard errors are clustered at the country level. The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. Each regression includes a dummy variable for country-year observation after 1995 (GroupB) and interactions terms between GROUPB and Log of Checks (LCHECKSB) and GROUPB and Polarization (POLARIZB). F-Tests of equality of coefficient between the political variables and the interaction terms are given below. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

Panel A: First Stage Regressions of Lgdp95

	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
	1	2	3	4	5	6
Log of Checks	-0.033	0.401***	-0.002	0.269**	0.242	0.222
	(0.81)	(3.82)	(0.02)	(2.39)	(1.09)	(1.45)
Polarization	0.003	0.265***	0.156	-0.156	-0.332	-0.397
	(0.11)	(3.74)	(0.96)	(0.90)	(0.90)	(1.35)
LCHECKSB	0.018	0.207	0.081	0.415**	-0.065	-0.109
	(0.43)	(1.31)	(0.43)	(2.13)	(0.16)	(0.36)
POLARIZB	0.021	-0.034	-0.086	-0.207	Dropped	Dropped
	(0.76)	(0.028)	(0.36)	(0.75)		
GROUPB	0.129	-0.398**	-0.252**	-0.311**	0.018	-0.004
	(2.55)	(2.23)	(2.00)	(2.39)	(0.12)	(0.04)
FDI	0.005	0.030**	0.092***	0.057***	0.065*	0.063***
	(0.23)	(2.02)	(4.62)	(3.12)	(1.90)	(2.88)
Inflation	0.001*	-0.001	0.002	-0.001	0.009**	0.000
	(1.80)	(1.53)	(1.39)	(0.62)	(2.54)	(0.37)
Instrument	-0.820	5.935***	-0.564****	2.573***	-0.233***	3.855***
	(15.44)	(16.92)	(11.17)	(5.94)	(3.42)	(12.21)
Log FR	0.195***	0.114**	-0.016	0.147**	0.024*	0.276***
	(3.35)	(2.34)	(1.68)	(2.02)	(1.73)	(4.73)
Constant	10.884***	5.918***	9.60	5.838***	7.014***	4.574***
	(4.02)	(28.71)	(34.19)	(24.02)	(18.15)	(23.83)
Observations	364	515	397	561	233	354
R-squared	0.48	0.48	0.34	0.11	0.09	0.45

Panel B: First Stage Regressions of Trade						
	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
	1	2	3	4	5	6
Log of Checks	7.380***	7.998***	5.118	3.943	10.074*	11.538**
	(2.68)**	(3.08)	(1.03)	(1.22)	(1.82)	(2.48)
Polarization	-5.049	-7.348***	-10.158	-6.060	14.360	-12.843
	(2.55)	(4.20)	(1.41)	(1.19)	(1.55)	(1.43)
LCHECKSB	-0.906	-7.702*	-14.319	11.596**	3.148	-1.216
	(0.22)	(1.97)	(1.70)	(2.07)	(0.31)	(0.13)
POLARIZB	2.630	1.769	-1.802	-6.911		
	(0.77)	(0.58)	(0.17)	(0.87)		
GROUPB	-1.524	9.094**	1.178	-7.601**	4.54	2.866
	(0.31)	(2.06)	(0.21)	(2.04)	(1.23)	(0.96)
FDI	2.648***	2.237***	10.693***	6.706***	5.241***	6.76***
	(5.22)	(6.00)	(12.04)	(12.85)	(6.16)	(10.10)
Inflation	-0.017	-0.006	-0.223***	-0.129***	-0.116	-0.001
	(1.23)	(0.045)	(3.93)	(2.95)	(1.24)	(0.03)
Instrument	5.353	15.281	-2.24	26.028**	1.510	39.240***
	(1.433)	(1.76)	(1.00)	(2.09)	(0.89)	(4.10)
Log FR	30.363***	27.678***	-0.233	34.07***	-0.489	24.108***
	(21.19)	(22.98)	(0.55)	(16.35)	(1.44)	(13.60)
Constant	-1.959***	-20.341***	66.797***	27.6***	39.80***	-26.142***
	(6.691)	(3.99)	(5.36)	(3.96)	(4.13)	(4.49)
R-squared	0.64	0.61	0.32	.050	0.16	.
Observations	364	515	397	561	233	354

Panel C: Second Stage Regressions of the Openness Equation						
	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
The dependent variable is Private Credit.	1	2	3	4	5	6
Lgdp95	0.154***	0.212***	0.098***	0.188**	0.270	0.208*
	(6.81)	(4.94)	(2.90)	(2.09)	(0.63)	(1.90)
Trade	-0.002**	-0.003**	0.002	0.001	0.003	-0.008*
	(2.19)	(2.54)	(0.31)	(0.53)	(0.12)	(1.91)
Log of Checks	0.033	-0.003	0.006	0.018	-0.073	0.064
	(1.48)	(0.07)	(0.14)	(0.52)	(0.19)	(0.87)
Polarization	-0.052**	-0.044	-0.053	-0.085*	0.081	-0.126
	(2.05)	(1.42)	(0.72)	(1.88)	(0.17)	(1.44)
LCHECKSB	-0.062	-0.053	0.019	-0.002	0.022	-0.032
	(1.49)	(1.26)	(0.18)	(0.02)	(0.21)	(0.26)
POLARIZB	0.049	-0.014	0.057	0.022		
	(1.12)	(0.35)	(1.34)	(0.38)		
GROUPB	0.107*	0.181***	-0.038	0.024	-0.011	0.031
	(1.79)	(3.16)	(0.81)	(0.45)	(0.07)	(0.51)
FDI	0.016**	0.012*	0.000	0.000	-0.031	0.049
	(2.25)	(1.92)	(0)	(0.02)	(0.18)	(1.77)
Inflation	-0.001***	-0.001	0.000	-0.001	-0.004**	-0.001
	(3.73)	(3.85)	(0.30)	(2.31)	(2.34)	(1.11)
Constant	0.746***	-1.119	-0.551*	-1.063	-1.54	-0.665
	(4.13)	(3.88)	(1.74)	(1.76)	(0.41)	(1.23)
Observations	364	515	397	561	233	354
R-squared	0.52	0.57	0.43	0.20	.	.
F-statistic[a]	F(2,32)=	F(2,45)=	F(2,42)=	F(2,60)=	F(1,30)=	F(1,46)=
	1.59	0.92	0.93	0.13	0.05	0.07

[a] For Not Free Countries, only the constraint that the Log of Checks is equal to LCHECKSB is tested.

Table 3.11: OLS Regression of the Basic and Openness Equations

The Basic equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. The Openness Equation includes the Basic equation plus Trade and FDI. Data is averaged over 5-year intervals. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

	Free Countries		Partly Free Countries		Not Free Countries	
	Basic	Openness	Basic	Openness	Basic	Openness
The Dependent variable is Private Credit.	1	2	3	4	5	6
Log of checks	-0.0868	-0.089	0.09**	0.098**	0.068	0.083
	(1.77)	(1.7)	(2.12)	(2.34)	(0.94)	(0.9)
Polarization	-0.012	-0.012	-0.166***	-0.094**	-0.132	-0.113
	(0.45)	(0.42)	(2.64)	(2.06)	(1.52)	(1.25)
Inflation	-0.001***	-0.001***	-0.001***	-0.001***	0	0
	(3.87)	(3.63)	(4.23)	(5.28)	(1.49)	(1.65)
Lgdp95	0.205***	0.202***	0.126***	0.07***	0.11***	0.103**
	(10.55)	(9.47)	(8.01)	(4.62)	(7.08)	(2.65)
Trade		0		0.002***		-0.001
		(0.8)		(4.65)		(1.26)
FDI		0.01		-0.004		0.006
		(1.7)		(0.71)		(0.89)
Constant	-1.132***	-1.094***	-0.613***	-0.39***	-0.459***	-0.36**
	(8.47)	(7.01)	(6.00)	(4.58)	(5.03)	(2.09)
Observations	187	180	109	102	70	61
R-squared	0.52	0.51	0.51	0.64	0.35	0.2

Table 3.12: OLS Regression of the Basic and Openness Equations and Legal Origin

The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. The Openness Equation includes the Basic equation plus Trade and FDI. Data is averaged over 5-year intervals. Each regression includes dummy variables for French, German, Scandinavian, and Socialist legal origins. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

	Free Countries		Partly Free Countries		Not Free Countries	
	Basic	Openness	Basic	Openness	Basic	Openness
The Dependent variable is Private Credit.	1	2	3	4	5	6
Log of Checks	-0.122**	-0.127**	0.006	0.087	0.081	0.144
	(2.07)	(2.22)	(0.13)	(1.84)	(1.08)	(1.4)
Polarization	-0.003	0.004	-0.099**	-0.09	0.283	-0.058
	(0.08)	(0.13)	(2.01)	(1.82)	(1.8)	(0.22)
Lgdp95	0.203***	0.189***	0.152***	0.074***	0.113***	0.052*
	(8.64)	(7.64)	(9.65)	(3.61)	(5.04)	(1.84)
Inflation	-0.001***	-0.001**	-0.001	0	0	0**
	(2.80)	(2.40)	(1.43)	(1.23)	(1.18)	(2.32)
Legor_fr	0.014	-0.015	-0.159***	-0.014	-0.038	0.037
	(0.3)	(0.32)	(3.93)	(0.33)	(0.69)	(0.64)
Legor_ge	0.309***	0.337***	-0.102	0.128*	0***	0***
	(3.65)	(3.94)	(1.75)	(1.87)	(0.00)	(0.00)
Legor_sc	-0.103	-0.092	0***	0***	0***	0***
	(1.08)	(0.98)	(0.00)	(0.00)	(0.00)	(0.00)
Legor_so	-0.154***	-0.197***	-0.159	-0.172	0***	0***
	(2.94)	(3.96)	(1.21)	(1.23)	(0.00)	(0.00)
FDI		0.013		-0.005		-0.008
		(1.66)		(1)		(0.18)
Trade		0		0.002***		0.001
		(0.36)		(3.92)		(0.99)
Constant	-1.101***	-0.988***	-0.665***	-0.41***	-0.486***	-0.245
	(6.04)	(4.59)	(6.69)	(3.91)	(3.26)	(1.48)
Observations	168	163	92	88	41	35
R-squared	0.58	0.58	0.57	0.64	0.61	0.38

Table 3.13: IV Regression of the Basic Equation

The Basic Equation includes the Log of Checks, Polarization, Inflation, and Lgdp95. Regressions A instruments Lgdp95 with Log of Settler Mortality (Lsettler). Regressions B instruments Lgdp95 with Distance from the Equator in Degrees (Disteq). Data is averaged over 5-year intervals. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

Panel A: First Stage Regressions of Lgdp95						
	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
The dependent variable is Private Credit.	1	2	3	4	5	6
Log of checks	0.499**	1.047***	-0.062	0.400	0.650	-0.291
	(2.21)	(4.81)	(0.22)	(1.21)	(1.08)	(0.45)
Polarization	0.111	0.279**	-0.526	-0.278	-0.918	-3.535
	(0.72)	(1.99)	(1.40)	(0.51)	(0.44)	(0.70)
Inflation	0.001	-0.002	-0.002	-0.005	0.008	-0.002
	(0.49)	(1.08)	(0.77)	(1.56)	(0.61)	(0.99)
Instrument	-0.733***	4.123***	-0.781***	0.126	-0.100	5.25***
	(8.13)	(6.40)	(6.25)	(0.10)	(0.54)	(5.04)
Constant	10.705***	6.117***	10.745	6.87***	6.236***	5.370***
	(21.708)	(23.03)	(16.32)	(19.70)	(6.12)	(21.49)
Observations	85	93	69	87	33	62
R-squared	.56	.54	.42	-0.002	-0.069	.32
Panel B: Second Stage Regressions of the Basic Equation						
	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
The dependent variable is Private Credit.	1	2	3	4	5	6
Lgdp95	0.202***	0.272***	0.204***	1.175	0.554	0.146***
	(6.02)	(6.62)	(5.72)	(.10)	(.50)	(3.01)
Lchecks	-0.067	-0.191**	0.059	-0.346	-0.186	0.035
	(1.06)	(2.22)	(1.15)	(0.07)	(0.23)	(.46)
Polarization	-0.009	0.023	-0.099	0.162	0.398	0.299
	(0.25)	(0.63)	(1.09)	(0.05)	(0.35)	(1.48)
Inflation	-0.002**	-0.002**	-0.001	0.004	-0.007	-0.000
	(2.49)	(2.83)	(.13)	(0.07)	(0.72)	(1.03)
Constant	-1.141***	-1.556***	-1.160***	-7.847	-2.990	-0.672**
	(4.69)	(5.79)	(4.63)	(0.09)	(0.48)	(2.35)
Observations	85	93	69	87	33	62
R-squared	.51	.57	.40	.	.	.2

Table 3.14: IV Regression of the Openness Equation

The Openness Equation includes the Log of Checks, Polarization, Inflation, Lgdp95, Trade, and FDI. Regressions A instruments Lgdp95 with Log of Settler Mortality (Lsettler). Regressions B instruments Lgdp95 with Distance from the Equator in Degrees (Disteq). Trade is instrumented with the Log of the Frankel-Romer proxy of natural trade openness (Log FR). Data is averaged over 5 year intervals. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
	1	2	3	4	5	6
Panel A: First Stage Regressions of Lgdp95						
Log of Checks	0.586*	1.092***	-0.124	0.595*	0.445	0.348
	(1.93)	(4.66)	(0.41)	(1.84)	(0.63)	(0.86)
Polarization	0.034	0.289**	-0.168	-0.049	-2.341	-2.381
	(0.17)	(2.00)	(0.40)	(0.10)	(0.48)	(0.76)
FDI	0.011	0.009	0.212***	0.068*	0.208	0.104
	(0.22)	(0.27)	(3.31)	(1.73)	(1.26)	(1.92)
Inflation	0.002	-0.002	-0.001	-0.003	-0.011	-0.000
	(0.67)	(0.95)	(0.33)	(1.14)	90.55)	(0.31)
Instrument	-0.704***	4.11***	-0.409**	0.076	-0.058	4.239***
	(4.07)	(5.84)	(2.26)	(0.06)	(0.30)	(6.35)
Log FR	0.084	-0.017	-0.015	0.332	0.026	0.287**
	(0.56)	(0.17)	(0.60)	(1.66)	(0.66)	(2.38)
Constant	10.235***	6.073***	8.702***	5.600***	5.940	4.268***
	(12.67)	(14.19)	(8.87)	(8.18)	(5.46)	(10.54)
Observations	63	91	57	83	31	54
R-squared	0.39	0.53	0.40	0.05	-0.06	0.48
Panel B: First Stage Regressions of Trade						
Log of Checks	3.207	3.92	-9.896	19.684*	17.239	11.386
	(0.41)	(0.55)	(0.73)	(1.90)	(0.99)	(.78)
Polarization	-6.642	10.93**	-7.365	-12.552	21.460	59.679
	(1.27)	(2.49)	(0.39)	(0.78)	(0.18)	(.53)
FDI	3.167**	2.772**	23.419***	8.360***	13.604***	10.703***
	(2.55)	(2.71)	(8.12)	(6.65)	(3.36)	(5.47)
Inflation	-0.014	-0.001	-0.005	-0.128	-0.160	0.023
	(0.23)	(0.01)	(0.05)	(1.44)	(0.32)	(0.48)
Instrument	-15.704***	25.232	9.248	57.455	2.019	25.835
	(3.51)	(1.18)	(1.14)	(1.45)	(0.43)	(1.08)
Log FR	35.30***	27.922***	-0.705	45.484***	-0.831	20.535***
	(9.07)	(9.13)	(0.64)	(7.14)	(0.85)	(4.75)
Constant	32.91	-16.505	0.018	-61.634***	31.318	-20.366
	(1.57)	(-1.27)	(0)	(2.83)	(1.17)	(1.40)
Observations	63	91	57	83	31	54
R-squared	0.68	0.060	0.61	0.59	0.36	0.441

Panel C: Second Stage Regressions of the Openness Equation						
	Free Countries		Partly Free Countries		Not Free Countries	
	A	B	A	B	A	B
	1	2	3	4	5	6
Lgdp95	0.215***	0.267***	0.067	0.694	-6.050	0.180**
	(4.57)	(5.56)	(1.36)	(0.45)	(0.02)	(2.48)
Trade	-0.002**	-0.002**	0.000	-0.003	-0.197	-0.010***
	(2.02)	(2.47)	(0.32)	(0.27)	(0.02)	(3.23)
Log of Checks	-0.039	-0.149	-0.001	-0.187	6.199	0.087
	(0.43)	(1.40)	(0.02)	(0.28)	(0.02)	(0.38)
Polarization	-0.067)	-0.051	-0.40	-0.130	-9.907	0.720
	(1.47)	(1.27)	(0.73)	(0.40)	(0.02)	(1.32)
FDI	0.028**	0.023***	0.040	-0.006	3.961	0.107***
	(2.48)	(2.92)	(1.42)	(0.15)	(0.02)	(3.37)
Inflation	-0.002**	-0.002***	-0.00	0.001	-0.103	-0.000
	(2.55)	(2.74)	(1.58)	(0.22)	(0.02)	(.98)
Constant	1.153***	-1.409***	-0.281	-4.186	42.525	-0.443***
	(3.27)	(4.59)	(1.86)	(0.44)	(0.02)	(11.19)
Observations	63	91	57	83	3131	54
R-squared	0.48	0.60	0.69	.	.	.

Table 3.15: OLS Estimation of Ownership

The dependent variable is the percentage of the publicly listed firms in each country that are widely held. The Basic equation includes the Log of Checks, Polarization, and Lgdp95. The Openness Equation includes the Basic equation plus Trade and FDI. Explanatory variables are averaged over the years 1996-2000. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

	Widely-held10		Widely-held20	
	Basic	Openness	Basic	Openness
	1	2	3	4
Log of Checks	16.076	25.756	10.437	21.396
	(0.96)	(1.45)	(0.56)	(1.14)
Polarization	-9.407	-11.815	-12.228	-14.42
	(1.13)	(1.41)	(1.37)	(1.58)
Democracy	-9.053	5.045	14.778	0.539
	(0.89)	(0.33)	(.11)	(0.03)
Lgdp95	7.228	8.921*	12.931	14.733*
	(1.45)	(1.78)	(1.67)	(1.92)
Trade		-0.098		-0.104
		(1.20)		(0.98)
FDI		-0.710*		-0.842
		(1.78)		(1.50)
Constant	-48.556	78.850	-74.574	-107.537
	(1.31)	(1.51)	(1.17)	(1.26)
Observations		28	28	28
R-squared	0.21	0.31	0.29	0.38

Table 3.16: OLS Estimation of Ownership and Legal Origin

The dependent variable is the percentage of the publicly listed firms in each country that are widely held. The Basic equation includes the Log of Checks, Polarization, and Lgdp95. The Openness Equation includes the Basic equation plus Trade and FDI. Each regression includes dummy variables for French, German, Scandinavian, and Socialist legal origins. Explanatory variables are averaged over the years 1996-2000. Absolute value of robust t-statistics are in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

	Widely-held10		Widely-held20	
	1	2	3	4
Lchecks	-2.816	0.162	-4.273	-0.080
	(0.12)	(0.01)	(0.19)	(0.00)
Polarization	1.024	-1.042	-4.419	-6.656
	(0.09)	(0.11)	(0.37)	(0.57)
Democracy	76.613	2.250	-21.993	-2.911
	(1.14)	(0.13)	(1.41)	(0.13)
Trade Openness		-0.182*		-0.178
		(1.85)		(1.56)
FDI		0.70		-0.073
		(0.12)		(0.10)
Lgdp95	6.885	10.452	10.486	14.115
	(0.89)	(1.41)	(1.15)	(1.53)
Legor_fr	-23.057	-26.854	-22.144	-25.307
	(1.56)	(1.65)	(1.43)	(1.52)
Legor_ge	-9.666	-15.588	-2.499	-8.606
	(0.53)	(0.84)	(0.12)	(0.43)
Legor_sc	-38.691**	42.617**	-21.637	-25.260
	(2.33)	(2.56)	(1.27)	(1.52)
Constant	-8.444	-48.152	-20.735	-62.556
	(0.13)	(0.66)	(0.25)	(0.60)
Observations	28	28	28	28
R-squared	0.48	0.53	0.40	0.49

Table 3.17: IV Estimation of Ownership

The dependent variable is the percentage of the publicly listed firms in each country that are widely held. The Basic equation includes the Log of Checks, Polarization, and Lgdp95. Regressions A instruments Lgdp95 with Log of Settler Mortality (Lsettler). Regressions B instruments Lgdp95 with Distance from the Equator in Degrees (Disteq). Explanatory variables are averaged over the years 1996-2000. Absolute value of robust t-statistics are in parenthesis.*significant at 10%; **significant at 5%; ***significant at 1%

Panel A: First Stage Regressions of Lgdp95				
	Widely-held10		Widely-held20	
	1	2	3	4
Lchecks	-0.088	2.445**	-0.088	2.445**
	(0.09)	(2.44)	(0.09)	(2.44)
Polarization	0.308	-0.203	0.308	-0.203
	(0.85)	(0.44)	(0.85)	(0.44)
Democracy	-0.582	0.784	-0.582	0.784
	(1.03)	(0.84)	(1.03)	(0.84)
Lsettler/Disteq	-0.697*	1.294	-0.697*	1.294
	(2.02)	(0.43)	(2.02)	(0.43)
Constant	12.22***	5.440**	12.22***	5.440**
	(5.45)	(2.69)	(5.45)	(2.69)
Observations	11	11	11	11
R-squared	0.70	0.52	0.70	0.52
Panel B: Second Stage Regressions of the Basic Equation				
	Widely-held10		Widely-held20	
	1	2	3	4
Lgdp95	-4.979	24.764	5.13	21.715
	(0.23)	(0.32)	(0.28)	(0.30)
Lchecks	44.393	-33.891	37.589	-26.314
	(0.89)	(0.16)	(1.03)	(0.13)
Polarization	7.724	-1.598	8.802	-9.671
	(0.44)	(0.07)	(0.78)	(0.49)
Democracy	-6.009	-20.508	-0.633	-29.740
	(0.19)	(0.5)	(0.02)	(0.56)
Constant	31.800	-144.603	-53.14	-98.926
	(0.16)	(0.33)	(0.27)	(0.24)
Observations	11	12	11	12
R-squared	0.53	1.30	0.67	0.43

Chapter 4: Securities Laws, Firm Size, and Capital Issuance

1. Introduction

The dictum that institutions matter no longer surprises the vast majority of economists. Institutional disparities in country organization go a long way in explaining differences in firm behavior. This chapter seeks to add to the literature investigating the role of institutions in firm level outcomes by examining the effects of securities laws on capital issuance, the means by which firm finance their growth.

Several studies have found a role for legal efficiency in the ability of firms to finance their growth from external sources. Rajan and Zingales (1998) pursue the relationship between financial development and firm size. The authors find that "industrial sectors that are relatively more in need of external finance develop disproportionately faster in countries with more developed financial markets". Kumar, Rajan and Zingales (2001) investigate the linkage between firm size and judicial efficiency. The empirical study mingles institutional and technological explanations for the determinants of firm size in fifteen European countries. The researchers show that (1) countries with more efficient judicial systems have larger firms (2) larger firms tend to operate in capital-intensive industries; however, (3) capital intensive firms in efficient judicial systems tend to be smaller.

Laeven and Woodruff (2004) focus on Mexican firms, which share the same national commercial laws, however, are exposed to legal environments with varying degrees of efficiency and enforcement at the state level. The authors' data set allows them to examine firms that are both large (corporations) and small (single person proprietorships). States with better legal enforcement are found to have larger firms.

Laeven and Woodruff hypothesize that "better legal systems increase the investment of firm owners by reducing the idiosyncratic risk they face." Reduction of risk is associated with the benefits of financial development – minority shareholder protection, better informational exchange between management and investors and improved contracting among firms and their suppliers. These benefits lead to greater capital accumulation, higher levels of external finance, and growth in firm size.

Finally, Beck, Demirguc-Kunt, and Levine (2002) explore judicial independence from the central government and the ability of the legal system to adapt to changing circumstances. Their paper improves on previous research by incorporating the World Business Survey (WBES). This data source covers 4000 small, medium and large firms in 38 countries. The firms are asked about the financing obstacles in general, in meeting collateral requirements, bureaucratic paperwork and acquiring long-term loans. The authors show that firms in common law countries are much more able to garner external finance than those in civil law countries. A limitation of their study is that their results rely on "perceptions of financing obstacles" from the firm survey as opposed to actual restrictions. These perceptions may be caused by cultural or environmental factors that are independent of legal attributes.

Our paper contributes to the literature in legal institutions and firm size by investigating the role of security laws on the ability of firms to raise external finance by issuing capital. The paper takes advantage of two unique data sets in order to accomplish this task. The first data set is compiled by La Porta, Lopez de Silanes, and Shleifer (2004) and quantifies the different laws regulating the issuance of new equity in 49 countries. We refer to the authors as LLS through out the chapter. Securities regulations

are divided into laws governing public and private enforcement. Private security laws aid in the ability of private agents to contract among themselves, while public security laws regulate the organization of a public enforcers analogous to the Securities and Exchange Commission in the US. LLS conclude that while securities laws that enhance private enforcement of contracts improve stock market development, laws governing public enforcement have no effect on development in general, or the ability of small firms to raise external finance in particular.

The second data set features firm accounting information and primary issues and is compiled by Knill (2004). It includes small, medium, and large firms of 54 countries from the years 1996-2003. This data set allows us to analyze access to finance at the firm level and to examine the role of securities legislation on capital issuances of publicly listed firms of all sizes.

Our first objective is to investigate if a country's securities laws are a significant determinant of the probability that the firm issues a security. Second, we asses if securities laws have asymmetric influence on the issuance of small and large firms and we determine if the asymmetry is found in both industrialized countries and emerging markets. Finally, we attempt to confirm at the firm level the conclusion of LLS that only private enforcement matters in increasing access to capital. We find that the composition of laws governing security issuance in each country significantly affects the probability that a firm will issue equity. Furthermore, in contrast to LLS, we show that public enforcement of security laws is a much more important determinant of firm access to capital markets than private enforcement. It is our conclusion that aggregate macroeconomic indicators of stock market size used in the LLS paper belie the

importance of a strong regulator in increasing access to capital, particularly for emerging market firms. Section 2 discusses our economic approach to estimating access to finance. Section 3 describes the data. Section 4 presents the empirical testing strategy and Section 5 provides the results. Section 6 provides a robustness check of our results and Section 7 concludes.

2. Methodology

A challenge to research examining access to external finance is that firm level analysis is limited to a few large publicly listed firms per country. Our data set allows us to investigate the impact of security laws on a wide representation of listed firms and countries. We investigate whether the probability of capital issuance is dependent on a country's security laws, firm characteristics, and macroeconomic factors.

We begin by calculating the need for external funds for firms in our sample in period *t*. We believe that firms that need external funds to make investments and do not issue securities are more financially constrained than the other firms in our data set. Higgens (1977) presents a financial planning model that calculates a firm's need for external funds in period *t*. This equation relates the firm growth rate to its need for external funds and derives the external funds necessary from the "percentage of sales". Demirguc-Kunt and Maksimovic (2002) also use this financial planning model to identify firms that require external finance to meet their investment needs. The 'external funds necessary' (or EFN) for firm *i* in period *t* is calculated as follows:

$$EFN_{i,t} = (A_{i,t-1} / S_{i,t-1})(S_{i,t} - S_{i,t-1}) - (L_{i,t} / S_{i,t})(S_{i,t} - S_{i,t-1}) - M_{i,t}(S_{i,t})(RR_{i,t}) \qquad (1a)$$

where A_{t-1} is the total assets of the firm in time *t-1*, S_{t-1} and S_t are the sales of the firm in times *t-1* and *t* respectively, L_t is the liabilities of the firm in time *t*, M_t is the profit

margin of the firm as defined by net income divided by sales for time *t*, RR is the retention ratio for the firm. As noted by Demirguc-Kunt and Maksimovic (2002) two simplifying assumptions are made in order for this methodology to be implemented. First, both the asset utilization (A/S) and the profit margin of the firm must remain constant per unit of sale. Second, the use of the formula to discern additional funds necessary depends on true values of assets being reported (relative to their depreciable basis).

Using firm-specific information to measure S_t is problematic because *Sales* in period *t* could be determined by weak securities laws that reduce access to external finance, which, is the very situation that we are testing. Therefore, we approximate industry wide rates of desired growth in *Sales* from *t-1* to *t* using US firm level data. We assume that the US industry growth rates are a good proxy for desired sales growth in other countries using the logic of Rajan and Zingales (1998). The authors justify the external dependence of US firms as a proxy for optimal demand for external funds because the US has the most advanced capital markets in the world. Thus, US firms are operating in as close to a frictionless financial environment as there is in the world. Furthermore, Rajan and Zingales reason that industry wide measures of external dependence are reasonable by stating, "Therefore, much of the demand for external funds is likely to arise as a result of technological shocks that raise an industry's investment opportunities beyond what external funds can support. To the extent these shocks are worldwide; the need for funds of the US firms is a good proxy." We assume that since US firms can access external finance optimally, they are able to increase their sales at an optimal rate as well. Moreover, optimal rates of growth persist across industries in other

countries. For each US firm in our data set, we measure growth in *Sales* from year *t-1* to year *t*. Next, we average individual firm growth rates in the same industry and size classification. The term $g^{US}_{j,m}$ is the average growth rate in *Sales* for firms in industry *j* of size *m*. We measure separate growth rates for each size classification *m*, where *m* is either small or large, because small and large firms in the same industry can grow at drastically different rates.[21]

We use $g^{US}_{j,m}$ to approximate desired growth in *Sales* for a firm outside the US in industry *j* and size *m*. The predicted value of *Desired Sales* for firm *i* is equal to

$$S^{*}_{i,t} = g^{US}_{j,m}(S_{i,t-1}) \qquad (2)$$

We substitute $S^{*}_{i,t}$ for actual *Sales* in period t into equation (1a). Equation (1b) measures the external funds necessary to increase *Sales* in year *t-1* to *Desired Sales* in year *t*.

$$EFN^{*}_{i,t} = (A_{i,t-1} / S_{i,t-1})(S^{*}_{i,t} - S_{i,t-1}) - (L_{i,t} / S^{*}_{i,t})(S^{*}_{i,t} - S_{i,t-1}) - M_{i,t}(S^{*}_{i,t})(RR_{i,t}) \qquad (1b)$$

We drop all US firms from the sample to avoid bias in our empirical model.

Our econometric model is based on the findings of Korajczyk and Levy who examine capital structure choice in the presence of financing constraints for US firms (2003). They find that a firm's choice of security issuance (either debt or equity) is based on macroeconomic conditions and firm specific information. We use the independent variables found in the paper to test the effect of securities laws on access to external funds. However, our econometric approach differs slightly from Korajczyk and Levy (2003) because our dependent variable lumps the decision to issue debt or equity into one action. Thus, we are not modeling capital structure choice and can focus our estimation

[21] Size is not a concern for Rajan and Zingales (1998) because they only have data for large publicly traded firms.

entirely on financing constraints that prevent a firm in the panel from acquiring external finance when it wants to.

We use a probit model to analyze the event that a firm *i* issues a security in time *t*. Y=1 if the firm issues a security, and equals 0 if the firm does not issue.

The model we want to estimate is then

$$\Pr ob(Y_{i,t} = 1) = \Phi(\alpha + \beta_1 F_{i,t-1} + \beta_2 Z_{k,t-1} + \beta_3 EFN_{i,t} + \beta_4 SECURITIES_k + \beta_5 I_j + \beta_6 T_t) \quad (3)$$

Φ represents the standard normal distribution. The constant term is defined by α. $F_{i,t-1}$ is a vector of lagged firm-specific variables such as cash flow, debt/asset level, size, profitability, risk, uniqueness of assets, trade credit and asset tangibility. $Z_{k,t-1}$ is a vector of lagged macroeconomic variables such as GDP, corruption, shareholder rights, the efficiency of the judiciary and the availability of domestic credit and foreign capital. $EFN^*_{i,t}$, as described above, measures the external funds needed to increase *Sales* in year *t-1* to *Desired Sales* in year *t*. *SECURITIES* is the primary variable of interest and represents the composition of securities laws in country *k*. I_j represents the industry indicators and T_t is time dummies. Equation (3) allows us to investigate if the composition of securities laws in Country *k* increases the probability that a firm will issue a security when it requires external funds to finance its investments.

In addition, to estimating Equation (3) for the entire sample of non-US firms in the data, we also estimate the equation separately for the economically advanced G 10 countries and emerging markets. We divide the data set into these two sub samples in order to investigate whether differences in institutional quality of the legal system

between G10 and emerging market countries affect the impact of securities laws on capital issuance.

3. Data

Knill (2004) collects observations for common stock, non-convertible debt, convertible debt, non-convertible preferred stock and convertible preferred stock issued domestically. The data covers all domestic issues of securities around the world from the time period 1/1/1996 through 3/31/2003 and is collected from the SDC Global New issues database. Table 4.1 shows the amount of each type of security issued by country. Financials for the companies issuing domestically in a given year are from REUTERS. This data set enables us to have a much richer sample of global new issues around the world of both smaller and larger firms than afforded by SDC Platinum alone. REUTERS provides financial information on all publicly traded firms for the majority of countries in the world and does not suffer from the bias toward large firms to the extent that other international databases such as Worldscope/Datastream/Research Insight do. In fact, REUTERS even covers pink sheets and OTC/Bulletin Board firms whereas the others do not. As such, the coverage is much more comprehensive and the average firm size is much smaller.

In order to address sample selection bias from a data set composed entirely of firms that issue domestic capital in a given year, Knill also collects data on firms not issuing capital during this period of time to represent those public companies that either cannot issue capital or are internally 'wealthy' to the point where there are financially unconstrained. For emerging market country firm-year observations of the non-issuing firms, financials are collected for 1996-2003 for the most exhaustive list of firms for each

country as possible from REUTERS, collecting the exact same data utilized for the issuer dataset. Developed country firm-year observations are collected from Worldscope, due to the inability of REUTERS to provide such large amounts of data given the practitioner-oriented setup of this information-rich database. This is not believed to cause bias due to the careful matching of accounting information and the quality of information that is provided for the countries. Therefore, our data set includes security issuance (or non-issuance) and financial accounting information for all listed firms available in the REUTERS and Worldscope databases.

Following Korajczyk and Levy (2003), financial services are excluded due to the special circumstances of their asset base and utility firms (Macro Industry: Financial Services, Real Estate and Energy and Power) due to the abnormal stability and predictability of cash flow. Knill also excludes those firms that have gone bankrupt due to the special set of issues that are included in capital structure determination when a company is failing[22]. This follows the methodology of Asquith et al. (1994) who find that such situations generally cause a major restructuring of capital structure outside of the scope of financial constraint relaxation. Lastly, Initial Public Offerings (IPO)s are excluded. Welch (2002) finds that the firms who undertake IPOs find themselves in unique environment, similar to those of the other deletions, which hosts a different set of issues than the post-IPO period. Including these firms would bias the results.

The only firms not covered in REUTERS are those that have gone bankrupt or have merged with another firm. The first group has deliberately been excluded from the sample as mentioned above. The second group would only be a problem if the issuing

[22] Firms going bankrupt would have additional difficulty obtaining capital, which would convolute results.

company had acquired a firm in the sense that the capital structure may have changed thus changing the financial environment examined. A cross-examination of the Global New Issues database with the Mergers & Acquisitions database provides information on whether any of the firms in the sample have been involved in a merger or acquisition.

Our dependent variable is *Capital issuance*. *Capital Issuance* is a dummy variable, which equals 1 if firm *i* issued some type of capital (common stock, non-convertible debt, convertible debt, non-convertible preferred stock and convertible preferred stock) in time *t* and 0 otherwise. We explain the probability of capital issuance by including as independent variables indexes of securities laws, firm specific variables and macroeconomic indicators. We discuss each type of explanatory variable below. A detailed list of variables and definitions is given in Appendix D.

Securities laws fall into two broad categories, public enforcement and private enforcement. *Private Enforcement* is calculated in the La Porta et al. (2004) data set by combining indexes of disclosure and liability. The *disclosure index* covers five distinct areas (1) *insiders compensation*; (2) *ownership by large shareholders*; (3) *inside ownership*; (4) *contracts* outside the normal course of business; and (5) *transactions* with related parties. The *liability index* is the average of four levels of accountability in the issuance of stock. These levels of accountability summarizes the burden proof for the issuer of the stock (*bdn_iss*), the company directory (*bdn_dir*), the distributor (*bdn_dis*), and the accountant (*bdn_acc*).

Public Enforcement regulates the supervisory behavior of the main regulatory government authority in charge of the stock market. *Public Enforcement* is calculated by the combining the following four sub indexes: (1) *supervisory index*; (2) *investigative*

powers index; (3) non criminal sanctions index (*orders*), and (4) *criminal sanctions* index. The *supervisor* index is assessed on its independence from the central government and that all hirings and firings are given due process (*appointment*), whether the supervisor only regulates stock markets and not banks too (*focus*), and if the supervisor has the authority to regulate primary offerings and listings on the stock market (*regulatory powers*). The *investigative* index assesses whether the supervisor can subpoena documents and witnesses. The *orders* index involves non criminal sanctions for violations of disclosure standards, such as compensating investors for losses, or instituting recommendations of the supervisor. The orders can be given to the issuer (*ord_iss*), distributor (*ord_dis*) or accountant (*ord_acc*). Finally, the *criminal* index is a measure the supervisor's ability to impose criminal sanctions against the director (*crim_dir*), distributor (*crim_dis*), issuer (*crim_iss*) and accountant (*crim_acc*).

Along with securities laws, access to capital is also explained by firm specific variables. REUTERS obtains firm financial statistics for listed firms from country stock exchanges. Variable definitions vary from country to country and are measured in different currencies. To make variables comparable across countries, firm variables are scaled by total assets unless otherwise noted.

As many empiricists have attributed size as a determinant of capital structure, we assign size categories based on *Total Assets*. Korajczyk and Levy (2003) and Baker and Wurgler (2002) find a positive relationship between leverage and size. Titman and Wessels (1988) find that size influences not only the extent of leverage but also the type.

Our proxy for this follows both Titman and Wessels (1988) and Rajan and Zingales (1995) and is calculated as total assets/GDP[23].

The ratio of *Cash to Total Assets* describes the feasibility of using internal funds to finance growth. According to the pecking order of capital structure choice (Myers, 1984) firms prefer to finance investments from internal funds, then bank loans, and finally from capital issuance. We expect that the availability of internal funds will decrease the likelihood that a firm would issue a security in a given year.

Uniqueness of assets is included based on the theory that a high uniqueness increases the expected costs of bankruptcy. As assets of a company become more distinctive, the ability to sell those assets when necessary (i.e. the liquidity of those assets) decreases thus increasing liquidity risk. Within-country industry averages are used in those cases where there is missing data. This should not be problematic due to the uniformity of the nature of assets in firms within the same industry.

Profitability of firms would be an obvious influence on firms inasmuch as this impacts how well a firm can either pay interest and/or dividends. Titman and Wessels (1988) provide two measurements for this variable that are applicable universally. They are operating income divided by sales and operating income divided by total assets. We only provide results for profitability based on sales for brevity. We also include standard deviation of the firm's profitability ratio over the three years prior to issue (*Risk*) as an independent variable. Firms with riskier profitability are less likely to issue capital.

Also relevant to capital structure determination is *Asset Tangibility***.** This refers to how palpable the assets of a firm are and relates to capital structure concerns through its

[23] This is done annually so that firms may switch size groupings over years. The analyses are also done using average size of the eight year periods. As results are unchanged, they are omitted for brevity.

limitations on debt levels due to the ability to provide collateral. A firm has less collateral the less tangible its assets are. This, arguably, could be said to increase the probability of bankruptcy due to the inability to obtain funds when there are especially needed. This follows logically from the fact that a company without material assets would not be able to liquidate to obtain the necessary funds to pay off debtors if it were necessary. This variable is created by calculating fixed assets divide by book value of assets (following Rajan and Zingales 1995). Once again, within-country industry averages are used in those cases where there is missing data. For the same reasons given above justifying the rationale for industry average substitution as proxies for uniqueness of assets, industry averages are suitable proxies here.

To correct for any additional access a firm might have in other nations which might affect financial constraints (Lins et al., 1999) it is vital to include an indication of whether a firm has listings in other countries (i.e. ADR on a U.S. stock exchange). We include a dummy variable for Cross listing that takes on a value of 1 if a firm is listed on an exchange outside of its nation and 0 otherwise. Finally, differences in industry classification are avoided by using as industry indicator the SDC Platinum Macro industry code as our categorization. The industry dummy is included to account for any industry fixed effects.

Given the fact that there are over 20,000 firms in our sample, it is not surprising that the range of firm-level statistics such as cash, uniqueness, profitability and risk span a range that is considerable in size. Smaller firms seem to have much more leverage than their larger peers (Rajan and Zingales, 1995). Profitability and risk for the smaller firms are considerably larger, reflecting the higher growth rate of the smaller firms (and based

on the fact that the figure is scaled by assets, controlling for size). The majority of the sample is not cross listed. Table 4.2 summarizes the firm specific variables and demonstrates the incredible range of variation in the financial accounting data.

Based on results from such papers as Korajcyk and Levy (2003) and Booth, Demirguc-Kunt, and Maksimovic (1999), we include macroeconomic factors to capture their impact on capital structures in different countries. All of our country-level control variables are averaged over the years t-1 through t-3. Unless otherwise stated, macroeconomic indicators are obtained via the International Finance Corporation (IFC).

GDP growth is the percentage growth in gross domestic product per capita and is included to control for business cycle effects on issuance. Securities issuance tends to occur counter cyclically because in good times firms have enough cash on hand to fund investments internally, while in bad times they are more likely to raise money for external capital markets.

We also control for the availability of domestic and foreign capital in each country in order to isolate the role of securities laws on access to capital from both the size of a country's domestic financial markets and the openness of the country to foreign funds. *Domestic capital* is the sum of market capital and private domestic credit, scaled by GDP. *Market Cap* is equal to the Listed shares * their value and domestic credit is credit extended to banks and other financial intermediaries scaled. *Foreign capital* is all foreign investment – Foreign direct investment, Foreign portfolio investment, and foreign bank lending and official flows – scaled by GDP.

Additionally, LLS note that better law enforcement could be associated with increased access to capital regardless of the content of the securities laws. To focus the

regression analysis on the relationship between the composition of securities legislation and capital issuance we control for the quality of the country's legal institutions. *Judicial Efficiency* controls for the efficiency of the legal system in executing the laws. *Corruption* controls for the degree to which securities laws are fairly executed. Higher values of this variable is associated with less corruption. Finally, *Anti Director Rights* controls for investor protection given by corporate laws at the firm level as opposed to national securities laws.

Table 4.3 summarizes the macroeconomic variables. There is considerable variation in all the macroeconomic controls, especially GDP growth and the availability of domestic and foreign capital. Table 4.4 presents the correlations between capital issuance and the firm characteristics. *Profitability*, *Uniqueness*, *Asset Tangibility,* and *Cash* on hand are all negatively correlated with our capital issuance indicator. Table 4.5 displays the pair wise correlations between the dependent variable, capital issuance indicator, and the macro characteristics. The variables governing the legal environment, *Anti Director Right*s, *Judicial Efficiency*, and the *Private Enforcement* index, are all negatively correlated with issuance. Only *Public Enforcement* manifests a positive correlation with securities issuance, foreshadowing our regression results.

4. Microeconomic Testing Strategy of LLS (2004)

Our objective is to test the accuracy of LLS conclusions at the micro level. The authors present three different theories of optimal public policy in the regulation of the private transactions between the issuers of securities (firms) and investors. The first theory states that law simply codifies existing market arrangements and therefore serves no purpose in improving securities transactions. The second theory asserts that the

codification of arrangements covering disclosure and liability aid in the efficiency of private transactions by clarifying liability rules and standardizing security contracts. Both of these theories assert that public enforcement of securities laws by the government is at best unnecessary and at worse harmful to investors and firms. The last theory presented by LLS states that government regulation of securities markets corrects market failure due to information asymmetry by imposing sanctions and securing information by subpoena. The authors find that law matters in supporting stock market development, however only security laws enforcing private transactions are important. They argue that public enforcement of securities laws are irrelevant and have no effect on macro indicators of stock market development.

In contrast to LLS, we find that the firm level results are more in line with the theory that government regulation is needed to support trade and to reduce the transaction cost of issuance. We show that public enforcement of securities is especially important in improving access to capital for emerging market firms.

We examine the LLS conclusion by estimating the probit model defined in Equation 3. We regress the probability of capital issuance for each firm-year observation on *Public Enforcement*, *Private Enforcement*, firm characteristics and macro controls. We use the STATA cluster command in each regression by firm. This command helps us avoid spurious results caused by omitted variable bias at the firm level. For each regression, we calculate the marginal coefficients so that each coefficient represents the increase in probability of capital issuance explained by the independent variable.

Our large sample size allows us to analyze the data in the two different dimensions of firm size and institutional quality. We show that securities laws have

disparate effects on small and large firms and for firms in developed as opposed to emerging economies. We test the null hypothesis that the coefficients for small firms and large firms are equal in the whole sample of countries and the G10 and emerging markets sub samples by computing the likelihood ratio statistic

$$LR = -2(\ln L_R - \ln L_{U1} - \ln L_{U2}) \quad (4)$$

where *ln* L_R is the restricted log-likelihood function of the entire sample of firm year observations, and *ln* L_{U1} and *ln* L_{U2} are the unrestricted log-likelihood functions for small firms and large firms, respectively. The likelihood ratio is distributed chi-squared with the degrees of freedom equal to the number of restrictions. We calculate the test statistic for each of the three sub samples – all firm year observations, G10 firms, and emerging market firms.

5. Results

Before looking at the individual regressions, we can make some general comments about how the firm specific variables affect capital issuance. *Cash* on hand, *Uniqueness of Assets*, and *Profit Risk* are consistently negative determinants of issuance over the different sub samples. This is an expected result since the availability of internal funds reduces the desire for external finance while uniqueness and risk have also been shown to decrease issuance. Additionally, we find that External Finance Need (*EFN*) is a more important determinant of capital issuance for the small firms in our sample than for large firms. Large firms have more access to capital and can issue either to garner investment capital or to optimize their existing capital structure. Small firms have less access and tend only to go to the capital markets when they need funds.

There are also differences in the effects of the firm-specific variables between firm located in a G10 or emerging market country. For instance, *Profitability* is a positive variable for large emerging market firms. *Profitability* determines the ability of the firm to pay dividends an interest and in countries with weak investor protection, profit is an important signal of the ability (if not willingness) to pay. *Cross listing* is only positive for large G10 firms. There may be benefits to small and EM firms from issuing capital in foreign as opposed to domestic markets as a signal of financial well-being, which reduces their domestic issues.

We also note some general trends in the data in regards to the macroeconomic variables. In almost all of the regressions, the coefficients enter significantly at the 1% level. *Growth in GDP* is a negative determinant of capital issuance in G10 countries and positive in the emerging markets. For the G10 countries, this result is consistent with the tendency of capital issuance to be counter cyclical. Since GDP growth controls for the business cycle in good times (GDP growth is high) firms have enough internal funds to finance investment and may not need to access capital markets. Additionally, the availability of *Domestic Capital* often enters the regression equation as a negative component of issuance. Since this variable is largely composed bank loans, *Domestic Capital* maybe proxying for alternative sources of capital other than the securities markets. *Foreign Capital* flows are positively related to capital issuance in emerging market firms and negatively related to issuance for G10 firms. This result is independent of firm size.

Corruption, *Anti Director Rights,* and *an Efficient Judiciary* control for the fairness and effectiveness of investor protection. The probability of issuance is higher in

less corrupt countries. Except for large firms in the G10, *Anti Director Rights* have a negative effect on issuance and an *Efficient Judiciary* has a positive effect. Interestingly, for the large G10 firms *Anti Director Rights* are positively related to issuance and an *Efficient Judiciary* has a negative relationship.

We use the two aggregate securities law indexes, *Public* and *Private Enforcement*, to summarize effects of securities laws on capital issuance. Recall that the *Public Enforcement* index aggregates *supervisor* independence, *investigative* powers, *orders* and *criminal* sanction. The *Private Enforcement* index is composed of *disclosure* and *burden of proof*. Table 4.6A displays the effects of *Public* and *Private Enforcement* for all firms in our data set. The first regression includes *Public Enforcement* as the main explanatory variable of security laws in each country. The second regression contains *Private Enforcement* only. Finally, the third regression displays a horserace between *Public* and *Private Enforcement*.

Regression 1 generates our primary result; *Public Enforcement* has a large positive and significant role in capital issuance. The variable's coefficient is 0.289 and is significant at the 1% level. Regression 1 shows that capital issuance is pro cyclical over the whole sample of firm year observations as *GDP_growth* is positive and significant. The availability of domestic capital is a negative determinant of capital issuance and is significant at the 1% level. *Corruption* plays a negligible role in issuance however the other two measures of the fairness and efficiency of the legal system, *Anti Director Rights* and *Efficient Judiciary* are significant components of capital issuance. Protection of shareholders by corporate laws (anti director rights) is negative, while an efficient judiciary makes a positive contribution.

Regression 2 examines the role of *Private Enforcement* on our dependent variable. We find that enforcement of private transactions plays a negligible role in capital issuance. In the final regression in Table 4.8A, we include both *Public* and *Private Enforcement* in the regression in order to discern the independent contribution of each variable on capital issuance. The coefficient on *Public Enforcement* remains unchanged from Regression 1. It is positive and significant at the 1% level and has a coefficient of 0.289. *Private Enforcement* is statistically insignificant.

In the next two tables, Tables 4.7B and 4.7C, we investigate whether securities laws have disparate effect on small and large firms. A firm is categorized as small (large) if its *Total Assets* are below (above) the median for all firms in its country of origin. We find that for small firms presented in Table 4.6B, *Public Enforcement* has a larger impact on capital issuance than that of the whole sample. The coefficient on *Public Enforcement* is 0.445 (compared to 0.289 in Table 4.6A). Regression 2 reveals that *Private Enforcement* of securities laws is a significant and negative determinant of capital issuance for small firms. This result is repeated in Regression 3 when both indexes of enforcement are included. The coefficient on *Private Enforcement* is -0.301 and is significant at the 1% level. *Public Enforcement* on the other hand has a positive coefficient of 0.453 and is also significant at the 1% level.

The dominance of *Public* over *Private Enforcement* does not hold for the large firms in the sample. In Regression 1 of Table 4.6C, *Public Enforcement* is shown to have an insignificant effect on issuance. Regression 2 shows that *Private Enforcement* is positive for large firms and significant at the 1% level with a coefficient of 0.198. The

horse race between both securities indexes presented in Regression 3 shows that both variables makes a significant contribution to capital issuance for the large firms overall.

We wrap up the analysis of Tables 4.7A-C by testing whether the differences in small and large firms are statistically significant. The likelihood ratio test statistic for the equality of coefficient of small and large firms in Regression 1 of Tables 4.7A-C is given by Equation 4.

$$\begin{aligned} LR &= -2\left(\ln L_R - \ln L_{U1} - \ln L_{U2}\right) \\ &= -2(-23194.76 + 6059.02 + 15060.69) \\ &= 4150.10 \end{aligned}$$

The test statistic is distributed chi-square with 56 degrees of freedom. At a 1% level of significance the critical value from of the chi-square distribution is 83.52. The null hypothesis of equality of coefficients between small and large firms is resoundingly rejected. We calculate the likelihood ratio statistic for Regressions 2 and 3 at 3333.82 and 2208.68 respectively. The critical values of chi-square at a 1% level of significance for Regressions 2 and 3 are 83.52 and 85.95, respectively. These test statistics support our finding that securities laws have disparate effects on small and large firms. *Public Enforcement* increases issuance in small firms and *Private Enforcement* decreases the probability of issuance. In contrast, both enforcement indexes make a positive contribution to the probability of large firm issuance overall.

Next, we isolate G10 firms in our sample. The sub sample is composed of all the countries in the G10 except for the US, which was dropped from the sample to prevent biasness in the results as described in the methodology section. Overall G10 countries have better institutional quality than the other countries in the data set, allowing us to investigate the role of security laws in a good institutional environment. We divide firms

into small and large groups as before. In Table 4.7A, we find that *Public Enforcement* has a smaller effect on issuance for small G10 firms than for the whole sample. Its coefficient is -0.190 compared to 0.289 for the entire sample. Regression 2 manifests a significant negative relationship between *Private Enforcement* and capital issuance. In Regression 3, the results indicate that when both indexes are included in the regression *Public Enforcement* is a positive factor in the issuance of small G10 firms while *Private Enforcement* is a significant deterrent to issuance.

Table 4.6B demonstrates the difference between small and large G10 firms' response to security laws. In Regression 1, *Public Enforcement* has a coefficient of -0.401 and is significant at the 1% level. *Private Enforcement* is also shown to have a negative effect on issuance in Regression 2. We also observe in Regression 3 that laws regulating both private and public enforcement have negative impacts on large firm issuance. The coefficients on *Public* and *Private Enforcement* are -0.422 and -0.340, respectively. Calculations of the likelihood ratio statistics for all three regressions in Tables 4.8A & B reject equality of coefficients between small and large G10 firms at the 1% level. The likelihood ratio statistics are 2740.96, 2610.24, and 2736.66 for Regressions 1, 2 and 3, respectively. The critical values of the test from the chi-square distribution are 83.52 for Regression 1 and 2 and 85.95 for Regression 3.

Finally, we investigate the role of securities indexes in firms whose country origin is not in the G10. We define those countries as emerging markets. Table 4.8A displays the results for all firm year observations in emerging market countries. For small emerging market firms *Public Enforcement* is positive and significant at 0.459 as shown in Regression 1 of Table 4.8A. *Private Enforcement* enters Regression 2 negatively and

significantly at the 5% level. Regression 3 displays the result that the largest impact of the securities indexes on capital issuance is for small emerging market firms. The coefficients are 1.001 and -1.054 for *Public* and *Private Enforcement*, respectively. Both variables are significant at the 1% level.

Table 4.8B shows that large emerging market firms behave similarly to small emerging market firms in their response to the public regulation of securities laws. However, in contrast to the other sub samples of our data set, *Private Enforcement* is positive and significant in Regression 2. When both security laws indexes are included in Regression 3, only *Public Enforcement* retains a positive relationship with issuance.

Securities laws have a similar effect on small and large emerging market firms. However, likelihood ratio tests strongly reject the null hypotheses of equality of coefficients between all the explanatory variables. The statistics for Regressions 1-3 in Tables 4.8A and 4.8B are 742.86, 750.64, and 811.08, respectively. The critical values of the test from the chi-square distribution are 83.52 for Regression 1 and 2 and 85.95 for Regression 3.

In the last series of regressions, we estimate the impact of each separate sub index of *Public* and *Private Enforcement* in six individual regression equations for each of the three sub samples. We report the results of these regressions for the securities laws indexes only in Appendix E. Over the whole sample of firms *supervisor* characteristics, and the supervisor's *investigative* powers are positive determinants of capital issuance. However, the significance and sign of the security indexes depend on the sub sample examined. For instance, the *supervisor* characteristics, *investigative* power, *criminal* and non-criminal sanctions significantly decrease the probability of issuance for large G10

firms. In contrast, all firms in emerging markets increase their securities issuance when there is a strong supervisor with investigative powers and the authority to impose sanctions.

6. Robustness Check

A reason for skepticism of the results we present may be found in the large z-statistics given by the enforcement variables. For example, in the all-firm regressions presented in Table 4.6A, in Regression 3, *Public Enforcement* has a z-statistic equal to 21.01. A reader may question the plausibility of these results given the cross-country nature of the panel. A useful robustness check is to cluster the standard errors by country in order to account for the cross-country nature of the regression analysis. Table 4.9A repeats the analysis for all firms in Table 4.6A with the standard errors clustered at the country level, and Table 4.9B presents these results for the regressions in which both *Public* and *Private Enforcement* are included for each firm category. As Table 4.9A demonstrates *Public Enforcement* remains significant at the 1% level in Regressions 1 and 3, while *Private Enforcement* remains insignificant in Regressions 2 and 3. Though clustering the standard errors by country leads to a sizable reduction in the z-statistics for most of the variables, the significant relationship between public enforcement of securities laws and capital issuance remains unchanged.

Table 4.9 suggests that overall, small firms increase issuance when securities laws are publicly enforced. There is not significant relationship between securities law enforcement and capital issuance for large firms overall when standard errors are clustered by country. Additionally, the significance of *Public Enforcement* for small G10 firms disappears, however this analysis supports our original conclusion that these firms

are harmed by private enforcement of securities laws. Also supported by the robustness check, is that *Public Enforcement* is a negative and significant at the 1% level for large G10 firms and is positive and significant at the 1% level for small and large Emerging Market firms.

7. *Conclusions*

The main conclusion of LLS is that private enforcement of securities regulation increases the level of stock market development while public enforcement has a negligible effect on stock markets.

> Public enforcement plays, at best, a modest role in the development of stock markets. Specifically, there is no evidence that such factors as Supervisor's independence or focus work. Both the Supervisor's investigative powers and the strength of both criminal and non-criminal sanctions only matter for a narrow set of outcomes. In contrast, the development of stock markets is strongly associated with measures of private enforcement such as extensive disclosure requirements and a relatively low burden of proof on investors seeking to recover damages resulting from omissions of material information from the prospectus.

Our paper questions this conclusion by examining the impact of securities regulation at the firm level. Our data set allows us to investigate effect of securities regulation on listed small and large firms and in developing and industrialized countries. We find that securities laws have disparate effects on capital issuance between small and large firms in G10 and emerging market countries. Private Enforcement of securities laws is found to be a deterrent to capital issuance for small firms and firms in emerging

markets. Public Enforcement significantly increases the probability of issuance for all emerging market firms.

Our results suggest that private enforcement of securities laws is not the panacea to stock market development described in LLS. Instead, our results encourage the establishment of a strong regulatory authority in countries with weak institutions, while LLS support strengthening laws regulating private transactions. Both courses of actions have dramatically different effects on capital issuance, therefore securities laws should be structured in a way that increases the availability of capital for all firms.

Table 4.1: Security Issuance by Country

Country	*Debt*	*Conv. Debt*	*Equity*	*Preferred*	*Conv. Preferred*	*Total*
Argentina	29	10	61	2		102
Australia	21	58	8245	48		8372
Austria	2		91			93
Bangladesh			5			5
Belgium			173			173
Bermuda			10	1		11
Bolivia	6			1		7
Brazil	94	25	51	35		205
Canada			26	14		40
Chile	37		160			197
China	7		1291			1298
Colombia	23		32			55
Costa Rica	3					3
Czech Republic			4			4
Denmark		1	192			193
Finland	6	1	224			231
France	48	11	1207			1266
Germany	6	1	585	7		599
Greece		2	133			135
Hong Kong	4	5	900			909
Hungary			16			16
India	125		179			304
Indonesia	40		128			168
Ireland			41			41
Israel			8			8
Italy	3		203	1		207
Japan	2149	239	1951			4339
Luxembourg			7	1		8
Malaysia	64	2	418	1		485
Mexico	91	1	33			125
Netherlands	10	1	136	6		153
New Zealand	2	5	42	3		52
Norway	1	1	102			104
Pakistan			22			22
Papua New Guinea			6			6
Peru	143		3			146
Philippines	18		42			60
Poland		2	32			34

Table 4.1: Security Issuance by Country (cont.)

Country	*Debt*	*Conv. Debt*	*Equity*	*Preferred*	*Conv. Preferred*	*Total*
Portugal			46	1		47
Singapore	59		314			373
South Africa			4			4
South Korea			397	9		406
Spain	5		98			103
Sri Lanka			11			11
Sweden	22		236			258
Switzerland	51	7	104	1		163
Taiwan	739	2	316			1057
Thailand	71	2	77			150
Turkey			11			11
US	42	121	3438	3620	17	7238
United Kingdom	7		1855	12		1874
Venezuela	19		38	1		58
Total	3947	497	23692	3764	17	31929

Table 4.2: Summary Statistics of Firm Specific Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Capital Issuance	108280	0.22	0.41	0.00	1.00
Cash/TA	71742	0.14	0.16	0.00	1.14
Cross listing	108280	0.10	0.30	0.00	1.00
EFN	68977	-1.83E+10	1.96E+12	-4.70E+14	2.37E+12
Risk	103990	-3.36	1.52	-13.82	9.38
Profitability	108280	-0.05	1.31	-165.94	15.48
Uniqueness	71742	0.01	0.41	-76.53	48.80
Asset Tangibility	108280	0.39	0.48	0.00	73.42

Table 4.3: Summary Statistics of Macroeconomic Variables

Variable	Obs	Mean	Std. Dev	Min	Max
GDP Growth	330	0.030	0.032	-0.131	0.111
Domestic Capital	284	154.943	104.721	28.755	536.873
Foreign Capital	313	0.030	5.719	-27.002	23.839
Corruption	336	3.848	1.296	1	6
Criminal	340	0.502	0.255	0	1
Anti-director	340	3.085	1.346	0	5
Judicial Efficiency	336	7.813	2.143	2.5	10
Private Enforcement Index	340	0.558	0.213	0.11	1
Public Enforcement Index	340	0.501	0.232	0	0.896

Table 4.4: Firm Specific Correlations (with Capital Issuance Indicator)

	Capital Issuance	Cash/TA	Cross listing	EFN	Risk	Profitability	Uniqueness
Cash/TA	-0.022***	1.000					
Cross listing	0.038***	-0.002	1.000				
EFN	0.002	0.003	-0.018***	1.000			
Risk	0.015***	0.179***	0.070***	-0.013***	1.000		
Profitability	-0.036***	-0.014***	0.007*	0.000	-0.036***	1.000	
Uniqueness	-0.009**	-0.006	-0.002	0.000	-0.002	-0.013***	1.000
Asset Tangibility	-0.008**	-0.226***	0.030***	-0.004	-0.086***	0.008**	0.000

Table 4.5 Macroeconomic Variable Correlations (with Capital Issuance Indicator)

	Capital Issuance	GDP Growth	Domestic Capital	Foreign Capital	Anti-director	Judicial Efficiency	Private Enforcement
GDP Growth	0.072***	1.000					
Domestic Capital	-0.135***	0.041***	1.000				
Foreign Capital	0.029***	0.157***	0.106***	1.000			
Anti-director	-0.156***	0.183***	0.531***	0.280***	1.000		
Judicial Efficiency	-0.044***	-0.010***	0.534***	0.060***	0.580***	1.000	
Private Enforcement	-0.171***	0.213***	0.488***	0.325***	0.825***	0.462***	1.000
Public Enforcement	0.002	0.407***	0.072***	0.355***	0.492***	0.065***	0.554***

Table 4.6A: All Firms

The dependent variable is dummy variable for whether the firm issues capital in period t. Probit estimation is used and standard errors are clustered by firm. All country-level control variables are averaged over the years t-1 through t-3. Industry and time fixed effects have been suppressed. Absolute value of z statistics in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

	1	2	3
Cash_TA	-0.039*	-0.065**	-0.039*
	[1.66]	[2.57]	[1.64]
Uniqueness	0.000**	0.000**	0.000**
	[2.08]	[2.13]	[2.09]
Asset_Tang	0.009	0.003	0.009
	[1.49]	[0.39]	[1.57]
EFN	0.018**	0.020**	0.018**
	[2.30]	[2.24]	[2.30]
Profitability	0.000	0.000	0.000
	[1.49]	[1.39]	[1.49]
LRisk	-0.035***	-0.020***	-0.035***
	[12.29]	[6.39]	[12.35]
Cross listing	-0.030***	-0.014*	-0.03***
	[3.81]	[1.80]	[3.85]
GDP_growth	0.011***	0.022***	0.012***
	[8.43]	[13.73]	[8.39]
Domestic Capital	-0.001***	-0.001***	-0.001***
	[18.70]	[13.83]	[18.45]
Foreign Capital	0.009***	0.018***	0.009***
	[12.63]	[14.89]	[12.58]
Corruption	0.003	0.034***	0.003
	[1.04]	[8.24]	[0.88]
Anti Director Rights	-0.006***	-0.035***	-0.055***
	[16.80]	[8.24]	[12.17]
Judicial Efficiency	0.060***	0.025***	0.061***
	[17.40]	[8.71]	[17.48]
Public Enforcement	0.289***		0.289***
	[21.02]		[21.01]
Private Enforcement		-0.016	-0.027
		[0.54]	[0.89]
Observations	45179	45179	45179
Log Likelihood	-23194.76	-23756.63	-23194.06
Pseudo R-squared	0.08	0.06	0.08

Table 4.6B Small Firms

The dependent variable is dummy variable for whether the firm issues capital in period t. Probit estimation is used and standard errors are clustered by firm. Size is determined by Total Assets divided by GDP. Firms with Total Assets below the median for each country are defined as small. All country-level control variables are averaged over the years t-1 through t-3. Industry and time fixed effects have been suppressed. Absolute value of z statistics in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

	1	2	3
Cash_TA	-0.043**	-0.063**	-0.036*
	[2.14]	[2.34]	[1.89]
Uniqueness	0.000*	0.000	0.000**
	[1.94]	[0.43]	[1.98]
Asset_Tang	-0.125***	-0.197***	-0.112***
	[6.64]	[7.58]	[6.32]
EFN	0.006*	.009*	0.006*
	[1.93]	[1.81]	[1.93]
Profitability	-0.001***	-0.001**	-0.001***
	[3.13]	[2.53]	[3.25]
LRisk	-0.009***	0.016***	-0.011***
	[3.67]	[5.34]	[4.56]
Cross Listing	-0.021**	-0.024**	-0.019**
	[2.21]	[2.17]	[2.16]
GDP_growth	0.012***	0.031***	0.012***
	[8.64]	[12.89]	[8.84]
Domestic Capital	0.000***	0.000**	-0.001***
	[9.87]	[2.52]	[9.11]
Foreign Capital	0.006***	0.011***	0.005***
	[8.05]	[9.86]	[7.23]
Corruption	0.016***	0.055***	0.009**
	[4.24]	[11.81]	[2.44]
Anti Director Rights	-0.088***	-0.040	-0.056***
	[23.14]	[7.13]	[13.35]
Judicial Efficiency	0.040***	0.005	.043***
	[11.14]	[1.47]	[11.80]
Public Enforcement	0.445***		0.453***
	[26.67]		[27.18]
Private Enforcement		-0.204***	-0.309***
		[5.23]	[10.05]
Observations	18708	18708	18708
Log Likelihood	-6059.02	-7021.24	-5960.72
Pseudo R-squared	0.33	0.22	0.34

Table 4.6C: Large Firms

The dependent variable is dummy variable for whether the firm issues capital in period t. Size is determined by Total Assets divided by GDP. Firms with Total Assets above the median for each country are defined as large. Probit estimation is used and standard errors are clustered by firm. All country-level control variables are averaged over the years t-1 through t-3. Industry and time fixed effects have been suppressed. Absolute value of z statistics in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

	1	2	3
Cash_TA	-0.082**	-0.103***	-0.086**
	[2.40]	[3.07]	[2.54]
Uniqueness	0.000**	0.000**	0.000**
	[1.99]	[1.99]	[1.97]
Asset_Tang	0.027	0.018**	0.024
	[1.24]	[2.38]	[1.30]
EFN	0.033*	0.033*	0.033*
	[1.83]	[1.91]	[1.81]
Profitability	0.000	0.000	0.000
	[1.41]	[1.40]	[1.37]
LRisk	-0.037***	-0.032***	-0.036***
	[1.54]	[10.01]	[11.37]
Cross Listing	-0.014	-0.005	-0.011
	[1.45]	[0.56]	[1.16]
GDP_growth	0.008***	0.010***	0.007***
	[3.93]	[4.99]	[3.49]
Domestic Capital	-0.001***	-0.001***	-0.001***
	[13.60]	[13.62]	[13.81]
Foreign Capital	0.008***	0.009***	0.008***
	[8.02]	[8.72]	[7.95]
Corruption	0.017***	0.030***	0.020***
	[3.86]	[6.67]	[4.45]
Anti Director Rights	-0.015***	-0.027***	-0.035***
	[3.15]	[4.63]	[5.65]
Judicial Efficiency	0.033***	0.019***	0.030***
	[7.84]	[5.20]	[7.51]
Public Enforcement	0.087		0.089***
	[1.43]		[5.23]
Private Enforcement		0.198***	0.208***
		[4.73]	[4.92]
Observations	26295	26295	26295
Log Likelihood	-15060.69	-15068.48	-15041.76
Pseudo R-squared	0.05	0.05	0.05

Table 4.7A: G10 Small Firms

The dependent variable is dummy variable for whether the firm issues capital in period t. Size is determined by Total Assets divided by GDP. Firms with Total Assets below the median for each country are defined as small. . Probit estimation is used and standard errors are clustered by firm. All country-level control variables are averaged over the years t-1 through t-3. Industry and time fixed effects have been suppressed. Absolute value of z statistics in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

	1	2	3
Cash_TA	-0.009*	-0.012***	-0.009*
	[1.92]	[2.75]	[1.87]
Uniqueness	-0.009**	-0.010**	-0.009**
	[2.13]	[2.27]	[2.10]
Asset_Tang	-0.009	-0.007*	-0.006
	[1.62]	[1.90]	[.1.25]
EFN	0.003***	0.004***	0.003***
	[3.16]	[3.01]	[3.20]
Profitability	-0.001**	-0.001**	-0.001**
	[2.54]	[1.92]	[2.47]
LRisk	-0.005***	-0.005***	-0.005***
	[6.58]	[6.65]	[6.72]
Cross Listing	0.000	-0.001	-0.001
	[0.34]	[0.26]	[0.42]
GDP_growth	-0.657***	-0.340	-0.446***
	[4.59]	[0.63]	[3.81]
Domestic Capital	0.000***	0.000***	0.000***
	[8.71]	[7.63]	[8.24]
Foreign Capital	-0.002***	-0.002***	-0.002***
	[9.01]	[9.09]	[9.06]
Corruption	0.009***	0.009***	.006***
	[6.99]	[6.00]	[6.28]
Anti Director Rights	-0.005***	0.002	-0.001
	[3.10]	[1.34]	[1.66]
Judicial Efficiency	0.003	0.001***	0.005
	[0.91]	[3.68]	[1.20]
Public Enforcement	0.019		0.017***
	[7.67]		[7.29]
Private Enforcement		-0.080**	-0.071***
		[4.88]	[2.77]
Observations	12207	12207	12207
Log Likelihood	-1652	-1692.05	-1647.69
Pseudo R-squared	0.39	0.37	0.41

Table 4.7B G10 Large Firms

The dependent variable is dummy variable for whether the firm issues capital in period t. Size is determined by Total Assets divided by GDP. Firms with Total Assets above the median for each country are defined as large. Probit estimation is used and standard errors are clustered by firm. All country-level control variables are averaged over the years t-1 through t-3. Industry and time fixed effects have been suppressed. Absolute value of z statistics in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

	1	2	3
Cash_TA	-0.069	-0.041	-0.067
	[1.58]	[1.30]	[1.58]
Uniqueness	-0.116**	-0.113**	-0.118**
	[2.18]	[2.02]	[2.18]
Asset_Tang	0.109***	0.118***	0.113***
	[4.49]	[4.63]	[4.49]
EFN	0.025	0.025	0.025
	[0.94]	[1.01]	[0.94]
Profitability	-0.134***	-0.127***	-0.134***
	[3.22]	[3.23]	[3.22]
Lrisk	-0.053***	-0.060***	-0.053***
	[12.15]	[12.65]	[12.15]
Cross Listing	0.033**	0.011**	0.031***
	[2.49]	[2.03]	[2.49]
GDP_growth	-6.39***	-4.238***	-6.016***
	[9.27]	[9.74]	[9.19]
Domestic Capital	0.001***	0.000***	-0.001***
	[7.93]	[10.42]	[7.5]
Foreign Capital	-0.014***	0.000***	-0.013***
	[8.81]	[8.71]	[8.80]
Corruption	0.097***	0.007***	0.090***
	[10.64]	[9.75]	[10.46]
Anti Director Rights	0.080***	-0.012***	0.110***
	[7.51]	[4.13]	[6.04]
Judicial Efficiency	-0.139***	-0.009***	-0.140***
	[7.73]	[6.05]	[7.67]
Public Enforcement	-0.401***		-0.422***
	[5.36]		[4.75]
Private Enforcement		-0.139***	-0.340
		[2.61]	[0.03]
Observations	18471	18471	18471
Log Likelihood	-9894.86	-9913.74	-9894.86
Pseudo R-squared	.09	.09	.09

Table 4.8A: Small Emerging Market Firms

The dependent variable is dummy variable for whether the firm issues capital in period t. Probit estimation is used and standard errors are clustered by firm. Size is determined by Total Assets divided by GDP. Firms with Total Assets below the median for each country are defined as small. All country-level control variables are averaged over the years t-1 through t-3. Industry and time fixed effects have been suppressed. Absolute value of z statistics in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

	1	2	3
Cash_TA	-0.173***	-0.152***	-0.182***
	[3.73]	[3.33]	[3.92]
Uniqueness	0.000*	0.000**	0.000*
	[1.92]	[2.04]	[1.83]
Asset_Tang	-0.410***	-0.449***	-0.381***
	[8.90]	[9.53]	[8.41]
EFN	0.007*	0.008*	0.006*
	[1.93]	[1.92]	[1.87]
Profitability	-0.009***	-0.009**	-0.008**
	[2.19]	[2.19]	[2.14]
Lrisk	-0.011*	-0.006	-0.017***
	[1.98]	[1.18]	[3.17]
Cross Listing [d)	-0.084***	-0.106***	-0.051**
	[3.40]	[4.45]	[2.00]
GDP_growth	0.003	0.004	0.007**
	[1.09]	[1.76]	[2.49]
Domestic Capital	0.000	0.000	0.000
	[2.38]	[0.31]	[0.13]
Foreign Capital	0.005	0.005	0.000
	[0.76]	[0.76]	[0.02]
Corruption	0.127***	0.118***	.127***
	[3.23]	[3.54]	[0.08]
Anti Director Rights	-0.059***	0.006	-0.049***
	[4.58]	[0.46]	[3.74]
Judicial Efficiency	0.022***	0.028***	0.026***
	[2.92]	[3.62]	[3.32]
Public Enforcement	0.459***		1.001***
	[8.49]		[12.12]
Private Enforcement		-0.166**	-1.054***
		[2.16]	[9.53]
Observations	6501	6501	6501
Log Likelihood	3323.59	3374.17	3234.88
Pseudo R-squared	0.25	0.24	0.27

Table 4.8B: Large Emerging Market Firms

The dependent variable is dummy variable for whether the firm issues capital in period t. . Probit estimation is used and standard errors are clustered by firm. Size is determined by Total Assets divided by GDP. Firms with Total Assets below the median for each country are defined as small. All country-level control variables are averaged over the years t-1 through t-3. Industry and time fixed effects have been suppressed. Absolute value of z statistics in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

	1	2	3
Cash_TA	-0.130**	-0.127**	-0.133**
	[2.17]	[2.13]	[2.24]
Uniqueness	0.000**	0.000**	0.000**
	[2.51]	[2.35]	[2.55]
Asset_Tang	-0.087**	-0.100***	-0.086**
	[2.36]	[2.69]	[2.34]
EFN	0.005	0.009	0.003
	[0.26]	[0.45]	[0.19]
Profitability	0.000*	0.000*	0.000*
	[1.81]	[1.85]	[1.81]
Lrisk	-0.008*	-0.004	-0.009**
	[1.82]	[1.03]	[2.01]
Cross Listing (d)	-0.049***	-0.054***	-0.047***
	[3.21]	[3.56]	[3.09]
GDP_growth	0.009***	0.009***	0.010***
	[4.03]	[4.02]	[2.98]
Domestic Capital	-0.001***	-0.001***	-0.001***
	[5.79]	[5.32]	[4.38]
Foreign Capital	0.006**	0.008**	0.005***
	[4.79]	[5.68]	[4.91]
Corruption	0.068***	0.070***	0.066***
	[5.79]	[6.08]	[3.74]
Anti Director Rights	-0.019	0.002	-0.015
	[1.36]	[0.13]	[1.06]
Judicial Efficiency	-0.005	-0.005	-0.006
	[0.76]	[0.70]	[0.78]
Public Enforcement	0.268***		0.360***
	[6.15]		[5.78]
Private Enforcement		0.136**	-0.194**
		[2.22]	[2.22]
Observations	7824	7824	7824
Log Likelihood	4546.79	4572.79	4542.18
Pseudo R-squared	0.08	0.07	0.08

Table 4.9A: All Firms – Standard Errors Clustered by Country

The dependent variable is dummy variable for whether the firm issues capital in period t. Probit estimation is used and regressions are clustered by country. All country-level control variables are averaged over the years t-1 through t-3. Industry and time fixed effects have been suppressed. Absolute value of z statistics in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

	1	2	3
Cash_TA	-0.039	-0.065**	-0.039
	[0.54]	[0.83]	[0.54]
Uniqueness	0.000	0.000**	0.000
	[1.27]	[1.07]	[1.27]
Asset_Tang	0.009	0.003	0.009
	[0.29]	[0.15]	[0.29]
EFN	0.018**	0.020**	0.018***
	[2.65]	[2.66]	[2.65]
Profitability	0.000	0.000	0.000
	[1.17]	[1.13]	[1.16]
LRisk	-0.035	-0.020	-0.035*
	[1.77]	[0.96]	[1.76]
Cross listing	-0.030	-0.014*	-0.03
	[1.31]	[0.62]	[1.31]
GDP_growth	0.011**	0.022***	0.012**
	[2.32]	[3.36]	[2.44]
Domestic Capital	-0.001***	-0.001*	-0.001**
	[2.62]	[1.68]	[2.49]
Foreign Capital	0.009***	0.012	0.009***
	[2.27]	[1.70]	[2.20]
Corruption	0.003	0.034	0.003
	[1.17]	[1.17]	[0.16]
Anti Director Rights	-0.006**	-0.035	-0.055***
	[2.57]	[1.07]	[1.64]
Judicial Efficiency	0.060***	0.025*	0.061***
	[3.02]	[1.81]	[3.22]
Public Enforcement	0.289***		0.289***
	[3.35]		[3.36]
Private Enforcement		-0.016	-0.027
		[0.09]	[0.16]
N	45179	45179	45179
Log Likelihood	-23194.76	-23756.63	-23194.06
Pseudo R-sq	0.08	0.06	0.08

Table 4.9B: All Firm Groupings – Standard Errors Clustered by Country

The dependent variable is dummy variable for whether the firm issues capital in period t. . Probit estimation is used and standard errors are clustered by country. Size is determined by Total Assets divided by GDP. Firms with Total Assets below the median for each country are defined as small. All country-level control variables are averaged over the years t-1 through t-3. Industry and time fixed effects have been suppressed. Absolute value of z statistics in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

	All Firms		G10 Firms		Emerging Firms	
	Small	Large	Small	Large	Small	Large
Cash_TA	-0.036	-0.086*	-0.009*	-0.067	-0.182**	-0.133**
	[0.75]	[1.68]	[1.38]	[1.04]	[1.99]	[2.38]
Uniqueness	0.000	0.000*	-0.009**	-0.118*	0.000	0.000
	[0.80]	[1.66]	[1.62]	[1.89]	[0.57]	[0.73]
Asset_Tang	-0.112*	0.024	-0.006	0.113*	-0.381***	-0.086*
	[1.94]	[0.40]	[0.68]	[1.69]	[4.95]	[1.86]
EFN	0.006***	0.033	0.003**	0.025	0.006***	0.003
	[2.66]	[1.38]	[2.08]	[0.76]	[2.73]	[0.23]
Profitability	-0.001***	0.000	-0.001**	-0.134	-0.008**	0.000
	[2.89]	[0.91]	[2.22]	[1.63]	[3.82]	[1.05]
Lrisk	-0.011*	-0.036**	-0.005*	-0.053***	-0.017***	-0.009
	[1.85]	[2.17]	[1.86]	[3.75]	[2.99]	[0.90]
Cross Listing	-0.019	-0.011	-0.001	0.031***	-0.051*	-0.047***
	[1.46]	[0.86]	[0.25]	[3.00]	[1.80]	[3.49]
GDP_growth	0.012***	0.007	-0.446**	-6.016***	0.007**	0.010**
	[3.84]	[1.38]	[2.40]	[1.76]	[1.26]	[2.34]
Domestic Capital	-0.001	-0.001***	0.000***	-0.001	0.000	-0.001***
	[1.60]	[3.08]	[2.70]	[1.21]	[0.05]	[2.91]
Foreign Capital	0.005*	0.008**	-0.002**	-0.013*	0.000	0.005***
	[1.78]	[2.11]	[2.37]	[1.65]	[0.02]	[1.67]
Corruption	0.009**	0.020	0.006**	0.090*	0.127***	0.066***
	[0.43]	[1.37]	[2.18]	[1.82]	[3.97]	[2.98]
Anti Director Rights	-0.056***	-0.035	-0.001	0.110**	-0.049	-0.015
	[2.90]	[1.12]	[0.23]	[2.41]	[1.44]	[0.90]
Judicial Efficiency	0.043***	0.030***	0.005*	-0.140*	0.026	-0.006
	[2.66]	[2.63]	[1.76]	[1.70]	[0.30]	[0.43]
Public Enforcement	0.453***	0.089	0.017	-0.422***	1.001***	0.360***
	[4.02]	[1.40]	[1.43]	[3.10]	[4.21]	[3.90]
Private Enforcement	-0.309**	0.208	-0.071**	-0.340	-1.054***	-0.194
	[2.17]	[1.29]	[2.42]	[1.25]	[4.21]	[1.16]
Observations	18708	26295	12207	18471	6501	7824
Log Likelihood	-5960.72	-15041.76	-1647.69	-9894.86	-3234.88	-4542.18
Pseudo R-squared	0.34	0.05	0.41	0.09	0.27	0.08

Appendices

Appendix A: Derivatives of the Constrained Capital Equation

$$k = k_c = \frac{g^2\lambda^2 + 2wi(\lambda)^2 + g\lambda\sqrt{g^2\lambda^2 + 4wi(\lambda)^2}}{2i(\lambda)^2} \text{ when } \lambda<1. \tag{2.3}$$

A1. Derivative of constrained capital with respect to financial development, λ

$$\frac{\partial k_c}{\partial \lambda} = \frac{-g^2\lambda^2 + 2wi(\lambda)^2 + g\lambda i'(\lambda)\sqrt{g^2\lambda^2 + 4wi(\lambda)^2}}{i(\lambda)^3} + \frac{2g^2\lambda + g\sqrt{g^2\lambda^2 + 4wi(\lambda)^2} + 4wi(\lambda)i'(\lambda) + \frac{g\lambda(2g^2\lambda + 8wi(\lambda)i'(\lambda)}{2\sqrt{g^2\lambda^2 + 4wi(\lambda)^2}}}{2i(\lambda)^2}$$

A2. Derivative of constrained capital with respect to productivity, *g*

$$\frac{\partial k_c}{\partial g} = \frac{2g\lambda^2 + \frac{g^2\lambda^2}{\sqrt{g^2\lambda^2 + 4wi(\lambda)^2}} + \lambda\sqrt{g^2\lambda^2 + 4wi(\lambda)^2}}{2i(\lambda)^2}$$

A.3 Derivative of constrained capital with respect to initial wealth, *w*

$$\frac{\partial k_c}{\partial w} = \frac{2i(\lambda)^2 + \frac{2g\lambda i(\lambda)^2}{\sqrt{g^2\lambda^2 + 4wi(\lambda)^2}}}{2i(\lambda)^2}$$

Appendix B: Derivatives of the Firm Profit Equations with respect to λ

B.1 Large firm profit

$$\left(M - \frac{(1-2\lambda)^2}{M}\right)\left(\frac{1}{2}\,g\sqrt{\frac{g^2}{i[\lambda\_]^2}} + \frac{g^2}{4\,i[\lambda\_]}\right)$$

B.2 Derivative of large firm profit with respect to λ

$$\frac{4\,(1-2\lambda)\left(\frac{1}{2}\,g\sqrt{\frac{g^2}{i[\lambda\_]^2}} + \frac{g^2}{4\,i[\lambda\_]}\right)}{M} + \left(M - \frac{(1-2\lambda)^2}{M}\right)\left(-\frac{g^3\,i'[\lambda\_]}{2\sqrt{\frac{g^2}{i[\lambda\_]^2}}\;i[\lambda\_]^3} - \frac{g^2\,i'[\lambda\_]}{4\,i[\lambda\_]^2}\right)$$

B.3 Constrained firm capital demand

$$\frac{(1-2\lambda)^2 - \left(1-\frac{g\lambda}{i[\lambda\_]}\right)^2}{2M} + \frac{g^2\lambda^2\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)}{2M\,i[\lambda\_]^2} + \frac{g\lambda\left(g^2\lambda^2 + 4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2\right)^{3/2}}{12M\,i[\lambda\_]^2}$$

B.4 Constrained firm profit

$$g\sqrt{\frac{(1-2\lambda)^2 - \left(1-\frac{g\lambda}{i[\lambda\_]}\right)^2}{2M} + \frac{g^2\lambda^2\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)}{2M\,i[\lambda\_]^2} + \frac{g\lambda\left(g^2\lambda^2 + 4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2\right)^{3/2}}{12M\,i[\lambda\_]^2}} - i[\lambda\_]\left(\frac{(1-2\lambda)^2 - \left(1-\frac{g\lambda}{i[\lambda\_]}\right)^2}{2M} + \frac{g^2\lambda^2\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)}{2M\,i[\lambda\_]^2} + \frac{g\lambda\left(g^2\lambda^2 + 4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2\right)^{3/2}}{12M\,i[\lambda\_]^2}\right)$$

B.5 Derivative of constrained firm profit with respect to λ

$$-\left(\frac{(1-2\lambda)^2-\left(1-\frac{g\lambda}{i[\lambda\_]}\right)^2}{2M}+\frac{g^2\lambda^2\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)}{2Mi[\lambda\_]^2}+\frac{g\lambda\left(g^2\lambda^2+4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2\right)^{3/2}}{12Mi[\lambda\_]^2}\right)i'[\lambda\_]-$$

$$i[\lambda\_]\left(\frac{g^2\lambda\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)}{Mi[\lambda\_]^2}+\frac{g\left(g^2\lambda^2+4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2\right)^{3/2}}{12Mi[\lambda\_]^2}-\frac{g^2\lambda^2\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i'[\lambda\_]}{Mi[\lambda\_]^3}-\frac{g\lambda\left(g^2\lambda^2+4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2\right)^{3/2}i'[\lambda\_]}{6Mi[\lambda\_]^3}+\right.$$

$$\left.\frac{g^2\lambda^2\left(-2+\frac{g}{i[\lambda\_]}-\frac{g\lambda i'[\lambda\_]}{i[\lambda\_]^2}\right)}{2Mi[\lambda\_]^2}+\frac{1}{8Mi[\lambda\_]^2}\left(g\lambda\sqrt{g^2\lambda^2+4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2}\left(2g^2\lambda+8\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]\,i'[\lambda\_]+4i[\lambda\_]^2\left(-2+\frac{g}{i[\lambda\_]}-\frac{g\lambda i'[\lambda\_]}{i[\lambda\_]^2}\right)\right)\right)+\right.$$

$$\left.\frac{-4(1-2\lambda)-2\left(1-\frac{g\lambda}{i[\lambda\_]}\right)\left(-\frac{g}{i[\lambda\_]}+\frac{g\lambda i'[\lambda\_]}{i[\lambda\_]^2}\right)}{2M}\right)+$$

$$\left(g\left(\frac{g^2\lambda\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)}{Mi[\lambda\_]^2}+\frac{g\left(g^2\lambda^2+4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2\right)^{3/2}}{12Mi[\lambda\_]^2}-\frac{g^2\lambda^2\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i'[\lambda\_]}{Mi[\lambda\_]^3}-\frac{g\lambda\left(g^2\lambda^2+4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2\right)^{3/2}i'[\lambda\_]}{6Mi[\lambda\_]^3}+\frac{g^2\lambda^2\left(-2+\frac{g}{i[\lambda\_]}-\frac{g\lambda i'[\lambda\_]}{i[\lambda\_]^2}\right)}{2Mi[\lambda\_]^2}+\right.\right.$$

$$\left.\left.\frac{1}{8Mi[\lambda\_]^2}\left(g\lambda\sqrt{g^2\lambda^2+4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2}\left(2g^2\lambda+8\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]\,i'[\lambda\_]+4i[\lambda\_]^2\left(-2+\frac{g}{i[\lambda\_]}-\frac{g\lambda i'[\lambda\_]}{i[\lambda\_]^2}\right)\right)\right)+\right.\right.$$

$$\left.\left.\frac{-4(1-2\lambda)-2\left(1-\frac{g\lambda}{i[\lambda\_]}\right)\left(-\frac{g}{i[\lambda\_]}+\frac{g\lambda i'[\lambda\_]}{i[\lambda\_]^2}\right)}{2M}\right)\right)\Big/\left(2\sqrt{\frac{(1-2\lambda)^2-\left(1-\frac{g\lambda}{i[\lambda\_]}\right)^2}{2M}+\frac{g^2\lambda^2\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)}{2Mi[\lambda\_]^2}+\frac{g\lambda\left(g^2\lambda^2+4\left(-2\lambda+\frac{g\lambda}{i[\lambda\_]}\right)i[\lambda\_]^2\right)^{3/2}}{12Mi[\lambda\_]^2}}\right)$$

Appendix C: Description of Variables, Chapter 3

Variable	Definition	Source
Private Credit	Private credit by deposit money banks and other financial institutions to GDP, calculated using the following deflation method: $\{(0.5)*[F_t/P\_e_t + F_{t-1}/P\_e_{t-1}]\}/[GDP_t/P\_a_t]$ where F is credit to the private sector, P_e is end-of period CPI, and P_a is average annual CPI	Beck, Demirguc-Kunt, and Levine (2003)
Checks	The numbers of veto players in the political system, adjusting for whether these veto players are independent of each other as determined by the level of electoral competitiveness, their respective party affiliations and the electoral rules.	Database of Political Institutions Beck, Clark, Groff, Keefer, and Walsh. (2001)
Political Polarization	Maximum polarization between the executive party and the four principle parties of the legislature	Database of Political Institutions Keefer (2002)
Lgdp95	The natural log of GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant U.S. dollars.	World Bank Indicators (2003)
Trade	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	World Bank Indicators (2003)
FDI	Foreign direct investment is net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments.	World Bank Indicators (2003)

Inflation	Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole.	World Bank Indicators (2003)
Natural Openness	The Natural logarithm of aggregated fitted values if bilateral trade equation with geographic variables	Frankel and Romer (1999)
Lsettler	Natural logarithm of estimated European settlers' mortality rate.	Acemoglu, Johnson, and Robinson (2001)
Disteq	Distance from Equator of capital city measured as abs(Latitude)/90.	World Bank (2002)
Engfrac	Fraction of Population speaking English as a 1st language	Hall and Jones (1999)
Legor_uk	British Legal Origin	La Porta et al. (1998)
Legor_fr	French Legal Origin	La Porta et al. (1998)
Legor_ge	German Legal Origin	La Porta et al. (1998)
Legor_sc	Scandanvian Legal Origin	La Porta et al. (1998)
Legor_so	Socialist Legal Origin	La Porta et al. (1998)
GROUPB	A dummy variable that equals 1 if the country-year observation is greater than 1995 and 0 otherwise.	
LCHECKSB	An interaction term equal to Log of Checks * GROUPB	
POLARIZB	An interaction term equal to Polarization * GROUPB	
Widely-Held10	The proportion of firms in a country that are widely held, where control is inferred at 10%	Morck, Wolfenzon, and Yeung (2004)
Widely-Held20	The proportion of firms in a country that are widely held, where control is inferred at 20%	Morck, Wolfenzon, and Yeung (2004)

Appendix D: Description of Variable, Chapter 4

Variable	Description
Securities Law, Source and definitions: La Porta et al. (2004)	
Disclose	The index of disclosure equals the arithmetic mean of: (1) Prospect; (2) Compensation; (3) Shareholders; (4) Inside ownership; (5) Contracts Irregular; (6) and Transactions.
Prospectus	Equals one if the law prohibits selling securities that are going to be listed on the largest stock exchange of the country without delivering a prospectus to potential investors; equals zero otherwise.
Compensa	An index of prospectus disclosure requirements regarding the compensation of directors and key officers. Equals one if the law or the listing rules require that the compensation of each director and key officer be reported in the prospectus of a newly-listed firm; equals one-half if only the aggregate compensation of directors and key officers must be reported in the prospectus of a newly-listed firm; equals zero when there is no requirement to disclose the compensation of directors and key officers in the prospectus for a newly-listed firm.
Sharehol	An index of disclosure requirements regarding the Issuer's equity ownership structure. Equals one if the law or the listing rules require disclosing the name and ownership stake of each shareholder who, directly or indirectly, controls ten percent or more of the Issuer's voting securities; equals one-half if reporting requirements for the Issuer's 10% shareholders do not include indirect ownership or if only their aggregate ownership needs to be disclosed; equals zero when the law does not require disclosing the name and ownership stake of the Issuer's 10% shareholders. No distinction is drawn between large-shareholder reporting requirements imposed on firms and those imposed on large shareholders themselves.
Insideow	An index of prospectus disclosure requirements regarding the equity ownership of the Issuer's shares by its directors and key officers. Equals one if the law or the listing rules require that the ownership of the Issuer's shares by each of its director and key officers be disclosed in the prospectus; equals one-half if only the aggregate number of the Issuer's shares owned by its directors and key officers must be disclosed in the prospectus; equals zero when the ownership of Issuer's shares by its directors and key officers need not be disclosed in the prospectus.
Contract	An index of prospectus disclosure requirements regarding the Issuer's contracts outside the ordinary course of business. Equals one if the law or the listing rules require that the terms of material contracts made by the Issuer outside the ordinary course of its business be disclosed in the prospectus; equals one-half if the terms of only some material contracts made outside the ordinary course of business must be disclosed; equals zero otherwise.
Transact	An index of the prospectus disclosure requirements regarding transaction between the Issuer and its directors, officers, and/or large shareholders (i.e., "related parties"). Equals one if the law or the listing rules require that all transactions in which related parties have, or will have, an interest be disclosed in the prospectus; equals one-half if only some transactions between the Issuer and related parties must be disclosed in the prospectus; equals zero if transactions between the Issuer and related parties need not be disclosed in the prospectus.
bdn_proof	The index of burden of proof equals the arithmetic mean of: (1) Burden director; (2) Burden distributor; and (3) Burden accountant.

bdn_dire	Index of the procedural difficulty in recovering losses from the Issuer's directors in a civil liability case for losses due to misleading statements in the prospectus. Equals one when investors are only required to prove that the prospectus contains a misleading statement. Equals two-thirds when investors must also prove that they relied on the prospectus and/or that their loss was caused by the misleading statement. Equals one-third when investors prove that the director acted with negligence and that they either relied on the prospectus or that their loss was caused by the misleading statement or both. Equals zero if restitution from directors is unavailable or the liability standard is intent or gross negligence.
bdn_dist	Index of the procedural difficulty in recovering losses from the Distributor in a civil liability case for losses due to misleading statements in the prospectus. Equals one when investors are only required to prove that the prospectus contains a misleading statement. Equals two-thirds when investors must also prove that they relied on the prospectus and/or that their loss was caused by the misleading statement. Equals one-third when investors prove that the Distributor acted with negligence and that they either relied on the prospectus or that their loss was caused by the misleading statement or both. Equals zero if restitution from the Distributor is unavailable or the liability standard is intent or gross negligence.
bdn_acco	Index of the procedural difficulty in recovering losses from the Accountant in a civil liability case for losses due to misleading statements in the audited financial information accompanying the prospectus. Equals one when investors are only required to prove that the audited financial information accompanying the prospectus contains a misleading statement. Equals two-thirds when investors must also prove that they relied on the prospectus and/or that their loss was caused by the misleading accounting information. Equals one-third when investors prove that the Accountant acted with negligence and that they either relied on the prospectus or that their loss was caused by the misleading statement or both. Equals zero if restitution from the Accountant is unavailable or the liability standard is intent or gross negligence.
Supervisor	The index of characteristics of the Supervisor equals the arithmetic mean of: (1) Appointment; (2) Tenure; (3) Focus; and (4) Rules.
Appoint	Equals one if a majority of the members of the Supervisor are unilaterally appointed by the Executive branch of government; equals zero otherwise.
Tenure	Equals one if members of the Supervisor cannot be dismissed at the will of the appointing authority; equals zero otherwise.
Focus	Equals one if separate government agencies or official authorities are in charge of supervising commercial banks and stock exchanges; equals zero otherwise.
Rules	Equals one if the Supervisor can generally issue regulations regarding primary offerings and/or listing rules on stock exchanges without prior approval of other governmental authorities. Equals one-half if the Supervisor can generally issue regulations regarding primary offerings and/or listing rules on stock exchanges only with the prior approval of other governmental authorities. Equals zero otherwise.
Investing	The index of investigative powers equals the arithmetic mean of: (1) Document; and (2) Witness.
Document	An index of the power of the Supervisor to command documents when investigating a violation of securities laws. Equals one if the Supervisor can generally issue an administrative order commanding all persons to turn over documents; equals one-half if the Supervisor can generally issue an administrative

	order commanding publicly-traded corporations and/or their directors to turn over documents; equals zero otherwise.
Witness	An index of the power of the Supervisor to subpoena the testimony of witnesses when investigating a violation of securities laws. Equals one if the Supervisor can generally subpoena all persons to give testimony; equals one-half if the Supervisor can generally subpoena the directors of publicly-traded corporations to give testimony; equals zero otherwise.
Orders	The index of orders equals the arithmetic mean of: (1) Orders issuer; (2) Orders distributor; and (3) Orders accountant.
ord_iss	An index aggregating stop and do orders that may be directed at the Issuer in case of a defective prospectus. The index is formed by averaging the sub-indexes of orders to stop and to do. The sub-index of orders to stop equals one if the Issuer may be ordered to refrain from a broad range of actions; equals one-half if the Issuer may only be ordered to desist from limited actions; equals zero otherwise. The sub-index of orders to do equals one if the Issuer may be ordered to perform a broad range of actions to rectify the violation; equals one-half if the Issuer may only be ordered to perform limited actions; equals zero otherwise.
ord_dis	An index aggregating stop and do orders that may be directed at the Distributor in case of a defective prospectus. The index is formed by averaging the sub-indexes of orders to stop and to do. The sub-index of orders to stop equals one if the Distributor may be ordered to refrain from a broad range of actions; equals one-half if the Distributor may only be ordered to desist from limited actions; equals zero otherwise. The sub-index of orders to do equals one if the Distributor may be ordered to perform a broad range of actions to rectify the violation; equals one-half if the Distributor may only be ordered to perform limited actions; equals zero otherwise.
ord_acc	An index aggregating stop and do orders that may be directed at the Accountant in case of a defective prospectus. The index is formed by averaging the sub-indexes of orders to stop and to do. The sub-index of orders to stop equals one if the Accountant may be ordered to refrain from a broad range of actions; equals one-half if the Accountant may only be ordered to desist from limited actions; equals zero otherwise. The sub-index of orders to do equals one if the Accountant may be ordered to perform a broad range of actions to rectify the violation; equals one-half if the Accountant may only be ordered to perform limited actions; equals zero otherwise.
Criminal	The index of criminal sanctions equals the arithmetic mean of: (1) Criminal director; (2) Criminal distributor; and (3) Criminal accountant.
Crim_dir	An index of criminal sanctions applicable to the Issuer's directors and key officers when the prospectus omits material information. The sub-index for directors equals zero when directors cannot be held criminally liable when the prospectus is misleading. Equals one-half if directors can be held criminally liable when aware that the prospectus is misleading. Equals one if directors can also be held criminally liable when negligently unaware that the prospectus is misleading. The sub-index for key officers is constructed analogously.
Crim_dis	An index of criminal sanctions applicable to the Distributor (or its officers) when the prospectus omits material information. Equals zero if the Distributor cannot be held criminally liable when the prospectus is misleading. Equals one-half if the Distributor can be held criminally liable when aware that the prospectus is misleading. Equals one if the Distributor can also be held criminally liable when

	negligently unaware that the prospectus is misleading.
Crim_acc	An index of criminal sanctions applicable to the Accountant (or its officers) when the financial statements accompanying the prospectus omit material information. Equals zero if the Accountant cannot be held criminally liable when the financial statements accompanying the prospectus are misleading. Equals one-half if the Accountant can be held criminally liable when aware that the financial statement accompanying the prospectus are misleading. Equals one if the Accountant can also be held criminally liable when negligently unaware that the financial statements accompanying the prospectus are misleading.
Private Enforcement	The index of private enforcement equals the arithmetic mean of: (1) Disclosure Index; and (2) Burden of proof index.
Public Enforcement	The index of public enforcement equals the arithmetic mean of: (1) Supervisor characteristics index; (2) Investigative powers index; (3) Orders index; and (4) Criminal index.
Firm Characteristics, Source: Knill (2004)	
Asset tangibility	Fixed assets divided by the book value of total assets; industry average is used in cases of missing data *FA/TA*
Capital Issuance	A dummy variable which equals 1 if firm i issued some type of capital (equity, debt, convertible, etc.) in time t and 0 otherwise
Cross listing	A dummy variable which takes on a value of 1 if the firm has stock listed on additional exchanges and a 0 otherwise
Desired Growth in Sales	For each US firm in our data set, we measure growth in *Sales* from year *t-1* to year *t*. Next, we average individual firm growth rates in the same industry and size classification. The term $g_{j,m}^{US}$ is the average growth rate in *Sales* for firms in industry *j* of size *m*. We use $g_{j,m}^{US}$ to approximate desired growth in *Sales* for a firm outside the US in industry *j* and size *m*.
EFN	The 'external funds necessary' (or EFN) for firm *i* in period *t* is calculated as follows: $EFN_{i,t} = (A_{i,t-1} / S_{i,t-1})(S_{i,t} - S_{i,t-1}) - (L_{i,t} / S_{i,t})(S_{i,t} - S_{i,t-1}) - M_{i,t}(S_{i,t})(RR_{i,t})$ where A_{t-1} is the total assets of the firm in time *t-1*, S_{t-1} and S_t are the sales of the firm in times *t-1* and *t* respectively, L_t is the liabilities of the firm in time *t*, M_t is the profit margin of the firm as defined by net income divided by sales for time *t*, RR is the retention ratio for the firm.
Growth in assets	Growth in total assets $(TA_t - TA_{t-1})/TA_{t-1}/(Year_t - Year_{t-1})$
Industry	Macro Industry Code from SDC Platinum
Profitability	Operating income divided by sales *OpInc/Sales*
Risk	Standard deviation of the firm's profitability ratio over the three years prior to issue; industry average is used in cases of missing data $SD(ROA_t, ROA_{t-1}, ROA_{t-2})$
Uniqueness of assets	Selling expense divided by sales; industry average is used in cases of missing data SellExp/Sales

Macroeconomic Characteristics	
Anti Director	This index of Anti-director rights is formed by adding one when: (1) the country allows shareholders to mail their proxy vote; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3)cumulative voting or proportional representation of minorities on the board of directors is allowed; (4) an oppressed minorities mechanism is in place; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to ten percent (the sample median); or (6) when shareholders have preemptive rights that can only be waved by a shareholders meeting. The range for the index is from zero to six. Source: *La Porta et al. (1998)*
Corruption	An assigned value from 0 to 6 of perceived Corruption in a country, 0 being the most Corrupt and 6 the least. The index is based on the likelihood of solicited bribes from a country in relation to such factors of business as exchange controls, tax assessment, and loan protection. Source: International Country Risk Guide
Dom Credit_GDP	Credit provided by monetary authorities and deposit money banks, as well as other banking institutions (where data is available). It includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. Source: WDI
Efficient Judiciary	Assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country risk rating agency International Country Risk (ICR). Average between 1980 and 1983. Scale from 0 to10, with lower scores representing lower efficiency levels. *Source: International Country Risk*
GDP Growth	GDP per capital growth (%). Source: WDI
Inflation	Inflation levels expressed in percent averaged annually over the period 1996-2002. Source: WDI
MktCap Percent	Listed shares * their value, scaled by GDP
Domestic Capital	Sum of all sources of capital in the domestic economy, equal to MktCap Percent + Domestic Credit
Foreign Capital	All foreign investment (Foreign direct investment + Foreign portfolio investment + other (foreign bank lending and official flows)), scaled by GDP

Appendix E: Regression of Capital Issuance on Individual Sub Indexes of Public and Private Enforcement

The dependent variable is dummy variable for whether the firm issues capital in period t. Variable definitions are given in Appendix 3. Size is determined by Total Assets divided by GDP. Firms with Total Assets below(above) the median for each country are defined as small (large). Probit estimation is used and regressions are clustered by country. We estimate $\Pr ob(Y_{i,t} = 1) = \Pr ob(\alpha + \beta_1 F_{i,t-1} + \beta_2 Z_{k,t-1} + \beta_3 EFN_{i,t} + \beta_4 SECURITIES_k + \beta_5 I_j + \beta_6 T_t + \varepsilon_{i,t})$ A, where *SECURITIES* is either *supervisor, investig, orders*, *criminal, disclosure,* or *burden of proof*. Country-level control variables are averaged over the years t-1 through t-3. Only security law indexes are reported. Absolute value of z statistics are in parenthesis ** significant at 5%; *** significant at 1%.

	Supervisor	Investig	Orders	Criminal	Disclosure	Burden of Proof
Whole Sample						
All Firms	0.325***	0.091***	0.090	0.147***	0.80**	0.011
	(23.24)	(9.55)	(10.33)	(12.90)	(2.26)	(0.57)
Small	0.470***	0.259***	0.234***	0.332***	-0.040	-0.116***
	(24.76)	(21.27)	(19.87)	(25.61)	(0.89)	(5.55)
Large	0.120***	0.050***	-0.037***	-0.045***	0.198	0.096***
	(6.75)	(4.02)	(3.27)	(2.82)	(4.47)	(3.72)
G10 Firms						
Small	0.007	0.014***	0.012***	0.018**	0.225***	-0.041***
	(1.19)	(5.17)	(4.00)	(2.53)	(7.80)	(5.98)
Large	-0.315***	-0.247***	-0.251***	-0.685***	-0.087	-0.08*
	(6.05)	(11.26)	(9.76)	(13.95)	(0.42)	(1.96)
Emerging Markets						
Small	0.853***	0.242***	0.252***	0.066	-0.214***	-0.023
	(15.20)	(6.29)	(7.30)	(0.81)	(2.80)	(0.13)
Large	0.370***	0.184***	0.120***	0.088***	0.115***	0.076
	(8.01)	(6.61)	(5.00)	(2.88)	(3.08)	(1.62)

Bibliography

Abiad, Abdul and Ashoka, Mody. "Financial Reform: What Shakes It? What Shapes It?, IMF Working Paper , No. 03/70, (Apr. 2003).

Acemoglu, Daren, Johnson, Simon, and Robinson, James. "Instituions as the Fundemental Cause of Long Run Growth", NBER Working Paper 10481, (May, 2004).

Acemoglu, Daren, Johnson, Simon, Robinson, James, and Yared, Pierre. "Income and Democracy", Working Paper, (Feb., 2005)

Aghion, Phillippe, Alesina, Alberto, and Trebbi, Francesco. "Endogenous Political Institutions", NBER working Paper Series, No. 9006, (Jun., 2002).

Aivazlan, Varouj, Booth, Lawerence, Demirguc-Kent, Asli, and Maksimovic Vojislav. "Capital Structure in Developing Countries". *Journal of Finance*, Vol. LXI, No. 1, (Feb., 2001).

Andrews, Donald and Fair, Ray. "Inference in Nonlinear Econometric Models with Structural Change", *Review of Economic Studies*, Vol. 55, No.4, (Oct. 1998), pp. 615-639.

Andrews, Josephine and Montinola, Grabiella. "Veto Players and the Rule of Law in Emerging Democracies", *Comparative Political Studies*, Vol. 37, No.1, (Feb., 2004), pp.55-87.

Ayyagari, Meghana, Demirguc-Kunt, Asli, and Maksimovic, Vojislav. "How Well Do Institutional Theories Explain Firms' Perceptions of Property Rights" Working Paper (Feb., 2005).

Bebchuk, Lucian and Roe, Mark. "A Theory of Path Dependence in Corporate Governance and Ownership". *Stanford Law Review*, (Nov 1999).

Beck, Thorsten, Demirguc-Kunt, Asli, and Levine, Ross. "Law and Firms' Access to Finance. World Bank Working Paper, (2002).

Beck, T., Demirguc-Kunt, A. and Maksimovic, V. "Financial and Legal constraints to Firm Growth: Does size matter?" The Journal of Finance, forthcoming.

Beck, Thorsten & Demirguc-Kunt, Asli and Levine, Ross. "Law, Endowments, and Finance," *Journal of Financial Economics*, Vol. 70, No. 2, (2003) pp. 137-181.

Beck, Thornsten, Clarke, George, Groff, Alberto, Keefer, Philip, and Walsh, Patrick, "New Tools in Comparative Political Economy: The Database of Political Institutions". *World Bank Economic Review*, Vol. 15 No.1. (September 2001), pp. 165-176.

Becker, Gary S. “A Theory of Competition Among Pressure Groups for Political Influence”. Quarterly Journal of Economics, Vol. 98 (Aug., 1983) pp. 371 -400.

Beim, David. O and Calomiris, Charles W. *Emerging Financial Markets*. McGraw-Hill: New York, (2001).

Bencivenga, Valerie R. and Smith, Bruce D. “Deficits, Inflation and the Banking System in Developing Countries: The Optimal Degree of Financial Repression”. *Oxford Economics Paper*. Vol. 44, Iss.4 (Oct., 1992), pp. 767-790.

Bernheim, B. Douglas and Whinston, Michael D. “Common Agency”, *Econometrica* Vol. 54, No. 4 (July 1986) pp. 923-942.

Biasis, Bruno and Mariotti, Thomas “Credit, Wages and Bankruptcy Laws”, Working Paper (Sep. 2003).

Blackburn, Keith and Hung, Victor. “A Theory of Growth, Financial Development, and Trade” *Economica*, New Series, Vol. 65, No. 257, (Feb. 1998), pp. 107-124.

Booth, L. Aivazian, V. Demirguc-Kunt, A. and Maksimovic, V. “Capital Structure in Developing Countries”, *Forthcoming, Journal of Finance*.

Buffie, Edward F. “Capital Rationing and Capital Accumulation”, *Economica*, New Series, Vol. 58, Iss. 231, (Aug. 1991) pp. 299-316.

Claessens, Stijin, Djankov, Simon, and Lang Larry H.P. “The Separation of Ownership and control in East Asian Corporations”, *Journal of Financial Economic*,(2002) Vol. 58 pp. 81-112.

Demirguc-Kunt, Asli, and Maksimovic, Vojislav. “Law, Finance, and Firm Growth”. *Journal of Finance,* vol. 63, No. 6, (Dec., 1998).

Demirguc-Kunt, Asli, and Maksimovic, Vojislav. “Stock Market Development and Firm Finance Choices”, World Bank Policy Research Working Paper 1461, (May 1995).

Desai, Mihir, Dyck, A., and Zingales, Luigi. “Theft and Taxes”, NBER Working Paper W10978 (Dec. 2004).

Djankov, Simon, La Porta, Raphael, and Shleifer, Andrei. “Regulation of Entry”, *Quarterly Journal of Economics*, (2002) Vol. 117 pp. 1 -37.

Djankov, Simeon, McLiesh, Caralee, and Shleifer Andrei. “Private Credit in 129 Countries”, NBER Working Paper No. W11078, (Jan 2005).

Djankov, Simon, and Murrell, Peter. "Enterprise Restructuring in Transition: A Quantitative Survey". *Journal of Economic Literature*, (2002).

Drazen, Alan. *Political Economy in Macroeconomics*, Princeton UP, (2000).

Dyck A. and Zingales L. "Private Benefits of Control: An International Comparison". The Journal of Finance, April 2004, vol. 59, no. 2, pp. 537-600.

Easterly, William and Levine, Ross. "Africa's Growth Tragedy: Policies and Ethnic Divisions", *The Quarterly Journal of Economics*, Vol. 1212, No.4, (Nov., 1997), pp. 1203-1250.

Easterly, William Levine, Ross. "Tropics, Germs, and Crops: How Endowments Influence Economic Development. *Journal of Monetary Economics*, Vol. 50, Iss. 1, (Jan., 2003), pp. 3-39.

Engerman, Stanley, and Kenneth Sokoloff, 2002. "Factor Endowments, Inequality, and Paths of Development among New World Economies". NBER Working Paper,No. 9259.

Esfahani, Hadi Saleki. "Institutions and Government Controls". *Journal of Development Economics.* Vol. 63 (2000) pp. 197 -229.

Faccio, Mara. "Politically-Connected Firms: Can They Squeeze the State" Working Paper 2002.

Fisman, Raymond. "Estimating the Value of Political Connections", *American Economic Review,* Vol. 91, pp. 1095 -1102.

Frankel, Jeffery, and Romer, David. "Does Trade Cause Growth?", *The American Economic Review*, Vol. 89, No. 3, (Jun., 1999), pp. 379-399.

Glen, Jack, and Pinto, Brian. "Debt or Equity? How Firms in Developing Countries Choose". IFC Discussion Paper No. 22 (1994).

Gordan, Robert H., and Lei, Wei. "Government as a Discriminating Monopolist in the Financial Market: The Case of China". Working Paper (Jun., 2001).

Gradstein, Mark, 2004. "Inequality, Democracy and the Emergence of Institutions". CEPR Discussion Paper No. 4187.

Greene, William. *Econometric Analysis*, Prentice-Hall (1997), Saddle River, NJ.

Greif, Avner, Milgrom, Paul, & Weingast, Barry R. (1994). Coordination, Commitment, and Enforcement: The case of the merchant guild. *Journal of Political Economy*, *102*(4), 745-777.

Grossman, Gene M, and Helpman, Elhanan. *Special Interest Politics* MIT (2001), Cambridge, MA, pp. 225-279.

Harris, Milton, and Raviv, Artur. "The Theory of Capital Structure". *Journal of Finance*, Vol. 46, Iss. 1 (Mar., 1991), pp. 297-355.

Hellman, Joel. "Winners Take All: The Politics of Partial Reform in Postcommunist Transitions", *World Politic*s, 50, (1998) pp. 203-234.

Henisz, Witold. "The Institutional Environment for Economic Growth", *Economics and Politics*, Vol. 12, No. 1, (Jan., 2002), pp. 1-31.

Henry, Peter Blair. "Do Stock Market Liberalizations Cause Investment Booms". *Journal of Financial Economics,* 58, (2000) pp. 301-334.

Himmelburg, Charles, Hubbard, R. Glen, and Love, Inessa. "Investor Protection, Ownership and the Cost of Capital", World Bank Working Paper Series No. 2834.

Islam, Romeen and Montenegro, Claudio. "What Determines the Quality of Institutions", Background Paper for the *World Develepment Report, 2002: Building Institutions for Markets*, (Jan., 2002).

Jensen, Michael C., and Meckling, William H. "A Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure". *Journal of Financial Economics*. Vol. 3, No. 4 (Oct., 1976) pp. 305-360.

Johnson, Simon and Todd Mitton. "Cronyism and Capital Controls: Evidence from Malaysia". Journal of Finance, (Jan., 2002).

Kaufman, Daniel, Kraay, Aart, and Zoido-Labaton, Pablo, "Governance Matters", World Bank Policy Research Working Paper, (1999) No. 2196.

Keefer, Philip, "When Do Special Interests Run Rampant? Disentangling the Role in Banking Crises Elections, Incomplete Information, and Checks and Balances," World Bank Research Working Paper 2543.

Keefer, Philip and Stasavage, David. "The Limits of Delegation: Veto Players, Central Bank Independence and the Credibility of Monetary Policy." *American Political Science Review* (August 2003)

Keefer, Philip and Stasavage, David. "Bureaucratic Delegation and Political Institions: When Are Independent Central Banks Irrelevant?" (June 2001) World Bank Policy Working Paper 2356.

Korajczyk, R. and Levy, A. "Capital Structure Choice: Macroeconomic Conditions and financial constraints", *Journal of Financial Economics Vol.* 68, Iss. 1, (2003) pp. 75-109.

Kroszner, Randall, "On the Political Economy of Banking and Financial Regulatory Reform in Emerging Markets". Working Paper, (Apr., 1998).

Krishnan, Sharma. "The Underlying Constraints of Corporate Bond Market Development in South East Asia". DESA Discussion Paper, No.14.

Laeven, L. and Woodruff, C. "The Quality of the Legal System, Firm Ownership, and Firm Size", World Bank Working Paper.

La Porta, Raphael, Lopez-de-Silanes, Florencio, Pop_ELeches, Cristian, and Shleifer, Andrei. "The Guarantees if Freedom", NBER Working Paper 8157, (Feb. 2002).

La Porta, Raphael, Lopez-de-Silanes, Florencio, Shleifer, Andrei, and Vishny, Robert W. "Law and Finance". *The Journal of Political Economy*, Vol. 106, No. 6. (Dec., 1998), pp. 1113-1155.

La Porta, Raphael, Lopez-de-Silanes, Florencio, Shleifer, Andrei, "Corporate Governance Around the World". Journal of Finance, Vol. 54, No.2 April (1999) pp.471-518.

La Porta, Raphael, Lopez-de-Silanes, Florencio, and Shleifer, Andrei "Government Ownership of Banks". *Journal of Finance*. Vol 57, Issue 1 (Jan. 2002).

La Porta, Raphael, Lopez-de-Silanes, Florencio, Shleifer, Andrei, and Vishny, Robert W. "Investor Protection and Corporate Valuation, *Journal of Finance*, Vol. 57, No. 3, June (2002), pp. 1147-1170.

La Porta, Raphael, Lopez-de-Silanes, Florencio, Shleifer, Andrei, and Vishny, Robert W. "Investor Protection and Corporate Valuation". *Journal of Finance*. Vol. LVII, No. 3 (Jun., 2002).

La Porta, Rafael, Lopez-de-Silanes, Florencio, Shleifer, Andrei, & Vishny, Robert. (1999). The Quality of Government. *Journal of Law, Economics, & Organization*, *15*, 222-279.

Lau, Laurence J., Qian, Yingyi, Gerard Roland. "Reform Without Losers: An Interpretation of China's Dual Track Approach to Transition", *Journal of Political Economy.*

Levine, Ross. "Financial Development and Economic Growth: Views and Agenda". *Journal of Economic Literature*, Vol. 35, No. 2. (Jun., 1997), pp. 688-726.

Lederman, Daniel, Loayza, Norman, and Soares, Rodrigo. "Accountability and Corruption: Political Institutions Matter". *Economics and Politics*, Vol. 7, Iss.1, (March, 2005), pp. 1-35.

Levine, Ross. "The Legal Environment, Banks, and Long Run Growth", *Journal of Money, Credit, and Banking*, Vol. 30, No.3, Part 2: Comparative Financial Systems (Aug. 1998), pp. 596-613.

Levine Ross, and Zervos, Sara. "Stock Markets, Banks, and Economic Growth", *American Economic Review*, Vol. 88, Iss. 3, (Jun., 1998), pp. 537-558.

Levine, Ross and Demiriguc-Kunt, Asli. Financial Structure and Economic Growth: Across Country Comparison of Banks, Markets and Development. MIT, Cambridge (2001).

Lukauskas, Arvid J. "The Political economy of Financial Restriction: The Case of Spain". *Comparative Politics*. Vol. 27, Iss. 1 (Oct 194), pp. 67-89.

Matsuyama, Kiminori. "Endogeneous Inequality". *Review of Economic Studies*, Vol. 67, pp. 743-759 (2000).

Meyer, Stuart C. "The Capital Structure Puzzle". *The Journal of Finance*, Vol. 39, Iss. 3, (Jul. 1984), pp. 575-592.

Morck, Randall, Yeung, Bernard, and Yu, Wayne. "The Information Content of Stock Markets: Why do Emerging Markets Have Synchronous Stock Price Movement". *Journal of Financial Economics*, 58, (2000), pp. 215 -260.

Moser, Peter. "Checks and Balances, and the Supply of Central Bank Independence", *European Economic Review*, *43*,(1999), 1569-1593.

Nejadmalayeri, A. "Interest Rates, Taxes, Bankruptcy and Financing Decisions", Working Paper, University of Nevada.

Olson, Mancur, 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Harvard University Press: Cambridge, MA.

Pagano, Marco and Volpin, Paolo F. "The Political Economy of Finance". CEPR Discussion Paper, No. 3231 (Feb., 2002).

Perotti, Enrico and Volpin, Paolo. "Lobbying on Entry". Working Paper, (May 2004).

Persson, Torsten. "Do Political Insitutions Shape Economic Policy?", Econometrica, Vol. 70, No. 3 (May 2002), pp. 883-905.

Rajan, Raghuran G. , and Zingales, Luigi. ,Financial Dependence and Growth". *American Economic Review*, Vol. 88, Iss. 3, (Jun., 1998), pp. 559-586.

Rajan, Raghuran G. , and Zingales, Luigi. "The Great Reversals: The Political Economy of Financial Development in the 20th Century". (Jul. 2002) *Journal of Financial Economics, forthcoming*.

Rojas_Suarez, Liliana and Wiesbrod, Steven. "Building Stability in Latin American Financial Markets", IADB Workin Paper Series 320, (1996).

Roderick, Dani. "Understanding Economic Policy Reform". *Journal of Economic Literature*.Vol. 34, Iss. 1, (Mar., 1996), pp. 9-41.

Rodrik, Dani, Subramanian, Arvind, and Trebbi, Francesco. "Institutions Rule, The Primacy of Institutions Over Geography and Integration in Economic Development", *Journal of Economic Growth*, Vol. 9, No. 2 (Jun. 2004).

Shleifer, Andrei, and Vishny, Robert W. "A Survey of Corporate Governance". *The Journal of Finance*, Vol. 52, No. 2. (Jun., 1997), pp. 737-783.

Shleifer, Andrei, and Vishny, Robert W. "Large Shareholders and Corporate Control". *Journal of Political Economy*, Vol. 93, Iss. 3. Part 1, (Jun., 1986) pp. 462-488.

Shleifer, A.; Wolfenzon, D. "Investor Protection and Equity Markets". *Journal of Financial Economics* (2002), vol. 66, no. 1, pp. 3-27.

Singh, Ajit. "Corporate Financial Patterns in Industrializing Countries: A Comparative International Study", IFC Technical Paper No. 2 (Apr., 1995).

Stultz, Rene and Williamson, Rohan. "Culture, Openness, and Finance" NBER Working Paper No. 8222, (April 2001)

Tsebelis, George. "Decision Making in Political Systems: Veto Players in Presidentialism, Parliametarism, Multicameralism and Multipartyism, *British Journal of Political Science*, Vol. 25, No. 3. (Jul., 1995), pp. 289-325.

Tsebelis, George. (1999). Veto players and law production in parliamentary democracies: An Empirical analysis. *American Political Science Review*, *93*(3), 591-608.

Tsebelis, George. (2002).*Veto Players: How Political Institutions Work*. Princeton, NJ: Princeton University Press.

Tirole, Jean. "Corporate Governance", *Econometrica,* Vol. 60, Iss. 1 (2001), pp. 1-35.

Titman, Sheridan and Roberto Wessels. "The Determinants of Capital Structure Choice". *Journal of Finance,* Vol. 43, Iss. 1 (Mar., 1998) pp. 1-19.

Tybout, James R. “Manufacturing Firms in Developing Countries: How Well Do They Do and Why?”. *Journal of Economic Literature*. Vol. XXXVIII, (Mar., 2000), pp. 11–44.

Wurgler, Jeffrey. “Financial Markets and the Allocation of Capital”. *Journal of Financial Economics*, Vol. 58, (2000), pp.1