Contractual unreliability and exit rates in crises

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Abstract

We study the determinants of exit following economic shocks. The ability of firms to refinance after a shock depends on reliable contractual enforcement, especially for poorer, more leveraged firms. Lobbying by established producers may weaken effective investor protection in order to limit access to refinance for their competitors. This produces inefficient default and exit, increasing margins for surviving producers. We provide evidence that exit rates after a shock are higher in more financially dependent sectors precisely in the countries with worse contractual enforcement. The result is robust to instrumenting contractual enforcement by legal and political factors, and is not driven by other agency costs or competition effects.

1 Introduction

Financial development, in particular the amount of credit to the private sector, is correlated with subsequent economic growth (Levine, 2004), especially in sectors relying on external finance (Black and Strahan, 2002) and for smaller firms (Becker et al, 2004); Rajan and Zingales, 1998). Access to finance is essential in particular for new entry by less wealthy entrepreneurs (Perotti and Volpin, 2004; Black and Cetorelli, 2006). While lack of funding is not the sole obstacle for entrepreneurs (McMillan and Woodruff, 2002), access to external resources helps to overcome entry barriers[1]. Such

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[1]Formal entry requirements are very onerous in developing countries (Djankov et al., 2002), and may be created just to extract bribes (Shleifer and Vishny, 1993). Klapper, Laeven, and Rajan (2003) show that entry barriers reduce growth and entry in naturally high entry sectors and do not seem justified on reasons of public welfare.

evidence supports reforms to encourage financial development, such as improved investor protection and deregulation which in principle increase the quantity and the allocation of external finance.

Financial reforms targeted at expanding capital markets indeed appear to promote investment (Henry, 2003).[2] Yet, financial reforms in many developing countries have had a mixed success: an expansion in credit and foreign investment has been followed in some countries by severe crises after external shocks, often coupled with sharp currency devaluations (as in Mexico, South East Asia, and Russia). Such crises were associated with corporate default, large losses to investors and taxpayers, and contributed to deep recessions and large scale exit.

What explains this variation in instability on the path to financial development ? Weak investor protection may leave firms exposed to external shocks, unable to raise any additional funding. Poor legal and political institutions are increasingly perceived to be at the root of policy failure. Specifically, a legal system or political structure which fails to constrain state interference and executive power tend to depress financial development and affect macroeconomic and financial volatility (LLSV, 1996, 1997; Acemoglu et al, 2003). Indeed, sharp banking crises are more likely in countries with worse institutions or poor transparency (Demirguc-Kunt and Detragiache, 1998; Mehrez and Kaufmann, 1999; Keefer, 2001).

In this paper we argue that in addition to structurally poor legal institutions which fail to suppress moral hazard, weak political institutions allow the capture of financial regulation and legal enforcement by incumbent interest groups. Effective investor protection depends on adequate laws as well as by political restrain allowing reliable enforcement, so both legal and political factors affect access to finance. A political conflict of interest on financial development between more established and emerging classes may hinder financial development (Rajan and Zingales, 2003, Perotti and Volpin, 2006). In addition, the state may interfere directly with financial allocation. The evidence points out that firms with political connections have more favorable financial access, even when they are less efficient or less likely to repay (e.g Faccio, 2006; Khwaja and Mian, 2004). Government ownership of banks is associated with lower growth and less financial development (LaPorta, Shleifer and Vishny, 2002).

Our goal is to show that lobbying may affect financial access even when financing is provided by private investors, rather than politically connected banks. For a given quality of legal rules, lobbying elected politicians or bribing burocrats to weaken the effective enforcement of investor protection[3] can be effective to limit access to finance for poorer, more leveraged producers. This may impede such firms to access refinancing after external shocks, leading to their exit and reduced competition

[2] Bertrand, Schoar and Thesmar, 2004.show how the French banking liberalization in the 1980s improved the allocation of capital while broadening access to finance.

[3] We do not distinguish between lobbying and bribing. In principle, reliable enforcement may be more affected by corruption while legislation may be more affected by lobbying.

for surviving firms.

Two distinct financial "regimes" may arise as a function of political and legal institutions. In countries with high political accountability, where bribing to limit competition is expensive, all firms in equilibrium can access refinancing after a shock. At lower levels of accountability, lobbying to limit competition is cheaper, so effective investor protection may be weakened to limit access to refinancing. This reduces competition after a shock, as the more leveraged producers are forced to exit. Such involuntary default is a case of *deliberately induced fragility.*[4] In addition, more volatile external shocks leads to more fragilility not because they cause larger losses, but because they reduce expected profitability, which increases the incentive to lobby to protect established rents.

Our main prediction is that the extent of exit after crises will be worse in an institutional environment which fails to produce reliable private contracting, in particular effective investor protection. More established producers (i.e. backed by wealthier entrepreneurs) have an incentive to lobby for higher exit as this cushions profitability after the shock. We present evidence from a broad panel of industries and countries. Consistent with the model, exit rates after major shocks are, ceteris paribus, higher for financially dependent firms in countries with worse contractual enforcement, as measured by indices of law and order.[5] The result is robust to controlling for GDP per capita, which proxies for the effect of other institutional feature. It persists once we instrument our measure of contractual enforcement, the law and order index, with its legal and political determinants. As instruments we use objective measures of legal structure, such as legal origin and constraints on the executive, both of which appear to be good instruments. This reinforces the notion that reliable contracting, a precondition for effective investor protection, has both legal and political roots.

We test our interpretation of this excess exit rates against alternative explanations which do not involve legal or political factors. A possibility is that poor contracting is spuriously correlated with other sources of agency costs, or the size of the external shock. The degree of exit may reflect industry specific or country specific competition. Our robustness checks do not find empirical support for any of these alternatives.

Feijen and Perotti (2005) report also a significant, *positive* effect of poor contracting on profit rates of surviving firms in financially dependent industries. The results are much stronger for exit rates, our more direct prediction. However, profits are likely to be a noisier measure than the number of establishments. Moreover, reported profits are likely to be downward biased in more corrupt countries, if tax evasion is easier and tends to worsen in a crisis.[6]

[4] There is clear cross country evidence that entry rates are very sensitive to poor legal and political institutions. Perotti and Volpin (2004) show that a higher democracy score is associated with higher entry in sectors more dependent on external capital.

[5] Technically, since we use a difference-in difference approach with country fixed effects, our results measure the marginal effect of contractual enforcement across sectors rather than its total impact on exit.

[6] Dyck and Zingales (forthcoming) show that monitoring by fiscal authorities limits profit diversion.The quality of

We discuss next some related literature. Section 3 presents the basic model. Section 4 contains the comparative statics and the extensions. Section 5 presents the empirical evidence. Section 6 concludes.

2 Related Literature

Financial constraints play a critical role in explainations of the severity of emerging market crises. In Caballero and Krishnamurty (2003), firms with valuable projects fail to refinance after a shock because of limited collateral, as in Holmstrom and Tirole (1998). In our approach, the limited ability to pledge collateral is an endogenous political choice, affecting access to finance across firms. This choice is naturally constrained by some upper bound on investor protection, defined by the quality of the underlying legal system.

A growing body of empirical evidence shows that political and economical elites can indeed manipulate institutions to their advance (Glaeser et al, 2003). Established producers have a specific interest in limiting competition (Morck, Yeung and Wolfenzon, forthcoming). Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2002) show that countries more corrupt tend to have higher entry barriers and larger unofficial economies. Fisman and Sarria-Allende (2004) and Klapper, Laeven, and Rajan (2004) show that onerous barriers reduce growth and entry in naturally high entry sectors and offer evidence against the notion that such barriers serve efficiency purposes. McMillan and Woodruff (2002) document the role played by new entrepreneurs in determining the relative economic success across transition countries.

Access to finance represents a stealthy barrier to competition. Incumbents have an incentive to oppose financial development because it breeds competition, hence eroding their rents (Rajan and Zingales (2003)).[7] Johnson et al. (2002) find evidence of tight financial constraints for poor individuals as well as high marginal returns at a low level of capital investment. Claessens and Perotti (2004) observe that most liberalization programs in emerging countries have focused on financial deepening rather than on financial broadening, e.g. emphasizing the size of capital inflows rather than their diffusion. Bekaert, Harvey and Lundblad (2004) show that consumption volatility decreases after financial liberalization only in countries with poor political institutions, and conclude that "political factors are more important than legal factors in driving consumption growth volatility". Frankel and Cavallo (2004) show that openness to trade, which in some extent reflects political support for competition, makes developing countries less financially vulnerable to external shocks. Poor minority protection appears indeed to limit access to finance particularly for SMEs

fiscal enforcement and corporate governance are likely to be posivitely correlated.

[7] Poor political accountability may be in itself the historical consequence of a narrow initial entry, which entrenches a political structure dominated by established interests (Engermann and Sokoloff, 1997, Acemoglu et al, 2003).

(Beck et al, 2004) and to undermine entry in financially dependent sectors in countries with weak accountability (Perotti and Volpin, 2004).

Perhaps at an early stage, financial development necessarily concentrates funding, because it favors firms with established comparative advantages. Large business groups may be more efficient at allocating financial resources across firms and markets, when connected lending is the sole form of enforceable credit (e.g. Khanna and Palepu, 2000). Yet recent evidence indicates that concentrated lending does not produce better returns in weak institutional settings. Losses on larger loans have been much larger than on smaller loans, particularly for connected lending to powerful groups (La Porta et al, 2002; Laeven, 2001; Khwaja and Mian, 2004; Wiwattanakantang et al, forthcoming). There is also evidence that greater stability of dominant firms is correlated with lower growth (He, Morck and Yeung, 2003).[8] Banking crises appear also to be associated with unchallenged incumbency: they are more common in countries with historically high barriers to entry in banking, even though actual banking sector concentration has a positive direct effect (Beck, Demirguc-Kunt and Levine, 2003). Government ownership of banks, formal prudential and regulatory restrictions are either ineffective or have a negative effect in promoting financial stability, efficiency or bank sector development, while policies aimed at promoting private monitoring do (LaPorta, Lopez de Silanes and Shleifer, 2002; Caprio, Klingebiel and Levine, 2006).[9]

In contrast, politically connected firms appear to have easier access to finance (Khwaja and Mian, 2004). They are particularly common in countries with higher levels of corruption and higher barriers to foreign investment (Faccio, 2006). Such firms are also significantly more likely to be bailed out than similar firms , even when they are less efficient (Faccio, Masulis and McConnell, 2006).

The consequences of biased access to finance may be substantial if they undermine the operation of markets. Even if financial liberalization were to lead to higher average growth, the distribution of gains and losses remains relevant to ensure its sustainability. Banking crises have large fiscal costs because of government guarantees, liquidity injections, and regulatory forbearance (Claessens, Klingebiel, and Laeven, 2004).[10] Elites appear to do comparatively well in financial crises (Halac and Schmukler, 2002), while fiscal costs are socialized via regressive policies, such as inflationary bailouts and budget cuts which hurt low and median income households (Das and Mohapatra, 2003). Clearly, when benefits are concentrated while losses are socialized, a political backlash will follow, as suggested by recent evidence on Latin American public opinion on liberalization (The

[8] Morck et al. (2000) show that a higher concentration of inherited billionaire wealth in a country has a depressing effect on economic growth.

[9] Excessive concentration of lending under state influence may favor large state-owned enterprises, such as in China and Central Europe during the early transition period.

[10] The size of such transfers is not correlated with better economic recovery, unlike lower corruption, better law and order, legal enforcement, and quality of the bureaucracy.

Economist, October 2003). In contrast, successful financial broadening creates political support for market reforms, and makes them politically sustainable (Biais and Perotti, 2002). Historical evidence suggests that large redistributive shocks which hurt the middle class reduces political support for markets (Perotti and Von Thadden, 2006).

In a related paper (Feijen and Perotti, 2006), we explore the effect of lobbying on the emergence of strategic default. When a large shock reduces profitability to the point when borrowers prefer to seize assets and run, they will lobby for a weakening of creditor rights to avoid enforcement of existing claims. We show that such strategic default will tend to occur in the countries with worse political institutions. Evidence of the difficulty in seizing collateral has been much cited after recent crisis in Asia, Mexico and Russia, where anedoctal evidence suggests that large firms were particularly successful at avoiding losing comtrol over assets.[11]

The next sections present and solve the basic model, discuss some extensions and offer brief conclusions.

3 The Model

3.1 Agents and Technology

Consider a small economy where the interest rate is zero. The population has a normalized size of 1 and consists of $m < \frac{1}{2}$ entrepreneurs and $1 - m$ consumers. Consumer i has quasi-linear utility

$$U_i^C = k_i + u(c_i) = k_i + ac_i - \frac{1}{2}(c_i)^2, \tag{1}$$

where k_i is consumption of the numeraire good (apples) and c_i is consumption of the final good (apples pies). The representative consumer is endowed with $\omega_c > 0$ apples. For simplicity, entrepreneurs only value consumption of apples

$$U_j^E = k_j. \tag{2}$$

There are two types of entrepreneurs: the rich with mass θ_R and the poor with mass θ_P, so that $m \equiv \theta_R + \theta_P$. The poor have zero endowment, hence $\omega_P = 0$. The rich are endowed with $0 < \omega_R < 1$. Both have identical projects which require an investment of I apples and produce I apple pie[12]. Hence to fund production, a poor entrepreneur needs to raise I apple externally

[11] Friedman et al (2003) review evidence that in these countries, most creditors could not "effectively take control of collateral" after a financial crisis. Bankrupty in Thailand typically takes up to 10 years and creditors ultimately receive very little (Foley, 1999). For evidence from the Asian crisis that tunnelling may be worse in recessions, see Johnson et al., 2000.

[12] Making the production choice continuous does not change the results of the model qualitatively.

whereas a rich one only needs $I - \omega_R$ apples. Note that a poor entrepreneur has utility of zero if inactive. we will assume that all entrepreneurs can raise finance to enter.[13]

At the intermediate date the economy Ω may suffer an external shock with probability $q \in (0, 1)$, which requires for all firms an immediate liquidity injection of $\lambda > 0$ to continue production. On the final date, the budget constraint of consumer i is for each state Ω

$$k_i^\Omega + pc_i^\Omega \leq y_i^\Omega, \tag{3}$$

where y_i is total income.

We assume that all projects have an ex ante net present value even in case of maximum production:

Condition 1 $p(m) > 1 + q\lambda$,

where $p(m)$ is the price of apple pies in case when m entrepreneurs produce.

For consumers and inactive entrepreneurs, their net income equals the return from riskless savings. For active entrepreneurs who invest all their wealth in the firm, income is profits minus repayment. An active entrepreneur who is not refinanced has no output and thus zero income.

The sequence of events, depicted in Figure 1, is as follows:

At date 1, entrepreneurs form interest groups to lobby politicians (or public officials).

At date 2, the lobby groups offers politicians bribes to influence investor protection. We assume that once investor protection is set, it cannot be changed.

At date 3, entrepreneurs decide whether to invest in their project and seek external finance banks from competitive banks.

At date 4, a liquidity shock occurs with probability q. In this case all entrepreneurs need some additional financing, equal to λ. If the bank denies the request, all production is lost and the entrepreneur defaults. The bank seizes the salvage value M.

At the final date 5, active entrepreneurs produce, the riskless asset is liquidated, the price p of apple pies is determined in the market, and consumption takes place. Loans are repaid to the extent allowed by investor protection. The promised political contribution is paid.

[Insert Figure 1 here]

[13] In Feijen and Perotti (2005) we also consider the issue of ex ante access to finance.

3.2 Financing

We assume a lower bound on investor protection, so that both rich and some poor entrepreneurs can receive ex ante finance to fund entry (we derive this condition later).[14] Rich entrepreneurs initially raise an amount $I - \omega_R$, poor entrepreneurs need to raise the entire investment cost of I. In case of a shock, additional liquidity λ is needed to continue production. Only entrepreneurs who are able to raise additional finance are able to produce.

In our context, profits can take only two values, so there is no meaningful distinction at the final date between debt and equity. If a firm is denied refinancing, however, its profits are zero and there is a salvage value M, where $M < I$, which external financiers are able to seize. Notice that since collateral M is fully contractible, debt is here the optimal contract to maximize access to finance. We accordingly refer to investors as banks contributing loans.[15] We assume that all projects are funded by foreign banks, so that default does not affect welfare directly (except via lower output).[16]

We assume that the NPV of all projects is still positive after a shock , so that refinancing is always efficient, even at maximum production

Condition 2 $p(m) > M + \lambda$,

Finally, in order for investors to be willing to refinance at least some entrepreneurs after a shock , they must prefer to recoup the loan instead of seizing M directly. This requires that the size of the smallest possible loan (i.e. a riskless loan to rich entrepreneurs) is larger than M, namely

Condition 3 $M < I - \omega_R$.

The ability to raise financing depends on legal investor protection δ, which is here defined as the fraction of future revenue which can be reliably promised to investors. In other words, an entrepreneur can always appropriate a fraction $1 - \delta$ of profits with no penalty. Thus whenever the debt of an agent is higher than the "collateralizable" fraction δ of her profit p, the bank can expect to receive at most δp. The value of δ is a political choice, taken under the influence of lobbying, and is exogenous for any individual entrepreneur.

Thus actual repayment depends on whether δp is greater or smaller than the amount the entrepreneur has to pay to the bank. For all firms which are always refinance after a shock, banks would

[14] In the model we do not set an upper bound on investor protection as defined by the quality of the legal system, which may in reality be a binding constraint in many countries.

[15] Our results are not affected if we assume that assets under liquidation may also be partially appropriated. In fact, partial appropriation after early default would never emerge as a political demand by lobbysts, since liquidation is inefficient for every type of entrepreneur.

[16] This assumption also ensures that demand for apple pies is independent of default, since foreigners bear all ex post default costs. We analyzed domestic funding in Feijen and Perotti (2005).

be willing to lend entrepreneur j an amount A_j against a face value before the shock of D_j as long as

$$A_j \leq q \min[\delta p^S, D_j + \lambda] + (1 - q) \min[\delta p^N, D_j], \tag{4}$$

where p^N and p^S are the anticipated equilibrium prices in the normal and shock state, respectively.

In case of a shock , the bank chooses whether to refinance individual projects. Alternatively, the bank receives the salvage value M and output is zero. Banks will refinance a firm only if its leverage D_j satisfies

$$M + \lambda \leq \min[\delta p^S, D_j + \lambda]. \tag{5}$$

Thus if δ is low enough banks may prefer not to refinance, since by assumption $M < D_j$.

In fact, if δ is low enough, some entrepreneurs would not receive ex ante financing. We limit attention to the case where all entrepreneurs receive funding for entry which implies that δ has to be above a minimum bound.[17]

3.3 The Political System

We assume politicians make decisions weighting the relative importance of social welfare W versus political contributions L depending on the degree of accountability to which they are held. Specifically, the utility of politicians is

$$U^P = \beta W + (1 - \beta) L, \tag{6}$$

where β can be interpreted as political accountability, a measure of the cost to politicians to reduce welfare.

Social welfare is defined as the weighted sum of consumer and entrepreneur utility:

$$W \equiv (1 - m) \times (\text{indirect utility of consumers}) + (\text{profits of entrepreneurs}). \tag{7}$$

Rich and poor entrepreneurs are represented by two lobbyists who attempt to influence the decision on investor protection $\delta \in [0, 1]$. Once set, investor protection cannot be changed. Lobbyists commit to paying a political contribution, conditional on the choice of the politicians, and are able to extract a share of the rents obtained from the group of entrepreneurs they represent. However,

[17] For the general model of lobbying on entry and exit, see Feijen and Perotti, 2005.

they cannot commit to reallocate rents inside their lobby nor can they promise transfers to each other. We make the standard assumption that consumers are too dispersed to form a lobby.[18]

The sequence of the political game is as follows:

- Without loss of generality, the lobbyist for the rich makes its offer first.[19]
- Politicians choose between either offer or the first best (maximum welfare) policy.

3.4 Product and Financial Market Equilibrium

We solve backwards for a subgame-perfect equilibrium.

3.4.1 Product Market Equilibrium

At the final date, consumers maximize their utility given by (1), subject to their budget constraint (3). We assume their income ω_c is large enough such that each consumer demands some amount of pies. The rest of income is devoted to consumption of apples, so $k_i^\Omega = \omega_c - p^\Omega(a - p^\Omega)$.

The supply of pies is equal to the number of producing entrepreneurs n^Ω, therefore

Lemma 1 *In equilibrium, total demand for pies is* $(1-m)(a-p^\Omega)$ *and total supply is* n^Ω. *Hence* $p^\Omega(n^\Omega) = a - \frac{n^\Omega}{1-m}$. *The indirect utility of consumer* i *is given by* $V_i^\Omega = \omega_c + \frac{1}{2}(\frac{n^\Omega}{1-m})^2$.

We summarize the utility of individual entrepreneurs in Table 1. Total utility of refinanced entrepreneurs in the normal state is $\int_{j\in A}(p^n - D_j)\ dj$, and in the shock state is $\int_{j\in F}(p^s - D_j - \lambda)\ dj$. We summarize this in Table 1:

	Normal	shock
Financed and refinanced (Set F)	$V_j = p^n - D_{j\in F}$	$V_j = p^s - D_{j\in F} - \lambda$
Financed, but not refinanced (Set NF)	$V_j = p^n - D_{j\in NF}$	0

Table 1: Utility of entrepreneurs

Social welfare in the normal state is

$$W^n = (1-m)(\omega_c + \frac{1}{2}(\frac{n^n}{1-m})^2) + \int_{j\in A}(p^n - D_j)\ dj, \tag{8}$$

[18] This assumption excludes political coalitions, which would considerably complicate the analysis.

[19] The sequential setting allows to endogenize lobbying agendas and ensures uniqueness. Our results also obtain in a simultaneous lobbying game as in Grossman-Helpmann (1994), although it may have multiple equilibria.

and after the shock is

$$W^s = (1-m)(\omega_c + \frac{1}{2}(\frac{n^s}{1-m})^2) + \int_{j\in F}(p^s - D_j - \lambda)\, dj. \tag{9}$$

Social welfare is increasing in entry, as condition 1 ensures that demand for the final good is strong enough, .i.e. $a \geq I + \lambda + \frac{m}{1-m}$. Hence

Lemma 2 *Social welfare is increasing in the number of producing entrepreneurs n.*

Proof. We will show that W^s is strictly increasing in n^s, which immediately gives the result for W^n. As long as $NF \neq \varnothing$, welfare cannot be optimal, because entrepreneurs prefer refinance by assumption and consumer indirect utility is increasing in the number of apple pies in the market. When all entrepreneurs are included in F, $W^s = (1-m)(\omega_c + \frac{1}{2}(\frac{n^s}{1-m})^2) + n^s(a - \frac{n^s}{1-m} - \lambda - I)$. Now $\frac{\partial W^s}{\partial n^s} = a - \lambda - I - \frac{n^s}{1-m}$, which is nonnegative by Condition 1. ■

3.4.2 Financial Market Equilibrium

We assume that all loans are repaid in the normal state, even with full entry.[20]

Condition 4 *$D_j \leq \delta p(m)$ for any financed entrepreneur j.*

In the normal state, all active entrepreneurs produce an apple pie. With no loss of generality, entrepreneurs invest all their wealth in the project, so after a shock they all need refinancing to produce.[21]

Date 4: *Refinance Stage*

We first identify the critical values of minority protection which allow refinancing. It is easy to see that there are two values δ_P and δ_R, such that for $\delta < \delta_R$ no entrepreneur is refinanced, if $\delta_R \leq \delta < \delta_P$ only rich entrepreneurs will be refinanced, and if $\delta \geq \delta_P$ all entrepreneurs are refinanced. These thresholds for refinancing depend on leverage D_j before the shock. We first compute them as a function of the required repayment D_j, and then compute the equilibrium level of D_j set at the stage of initial financing for both types of entrepreneurs.

[20] We solve explicitly below for the conditions under which this occurs. It turns out to require that $\frac{1-qM}{1-q} < \delta p(m)$, which ensures repayment for the maximum face value D (a loan of 1 apple), anticipated to be repaid only in the good state .

[21] Rich entrepreneurs may of course borrow more in order to retain sufficient capital λ to produce after a shock. In equilibrium, this is not necessary, since investor protection is always set such that rich entrepreneurs are refinanced. Note that if poor entrepreneurs can be refinanced, then rich ones certainly can.

Consider the refinancing decision after a shock, and recall that all entrepreneurs prefer to refinance. [22] Entrepreneur j will not be refinanced when

$$\min\{\delta p^S, I - \omega_j + \lambda\} < M + \lambda. \tag{10}$$

The LHS is the amount firm j can credibly promise to repay. The RHS represents the pay-off for the bank if it seizes the salvage value M. Since by assumption $I - \omega_j > M$ for all j, the conditions simplifies to

$\delta p^S < M + \lambda$

If δ is sufficiently small such that entrepreneur j has an incentive to default when all entrepreneurs would produce, i.e. $\delta p(m) = \delta(a - \frac{m}{1-m}) < D_j + \lambda$, *and* (10) is satisfied, the bank refuses to refinance it, so the firm is forced into liquidation. This occurs when

$$\delta < \delta_P \equiv \frac{M + \lambda}{p(m)}, \tag{11}$$

This leads to a first general result

Lemma 3 *Some firms will be not refinanced if $\delta < \delta_P$, and all will be otherwise.*

Thus in a shock state, full entry is not an equilibrium if the enforceable payment from refinancing is less than the salvage value, in which case only some entrepreneurs are active after a shock. Rich and poor entrepreneurs are equally efficient, but the poor have higher leverage which undermines their ability to commit to a full repayment. If poor entrepreneurs are refinanced, also the rich, less leveraged firms will, in which case equilibrium profits equal $p(m)$. In contrast, if only the less leveraged entrepreneurs satisfy (10), i.e. can commit to repay the additional funding λ, then the more leveraged firms are forced to exit and profits will be $p(\theta_R) = a - \frac{\theta_R}{1-m}$. Thus the key mechansim in the model is that leverage is decreasing in the amount of own capital. When $\delta < \delta_P$, the more leveraged firms are not refinanced because they would default ex post, while the rich entrepreneurs will not default. If this condition is satisfied, loans to rich entrepreneurs are riskless. As they borrow $D_R = I - \omega_R$, the sufficient condition for the rich not to have an incentive to default becomes

Condition 5 $I - \omega_R + \lambda \leq \delta p(\theta_R)$.

The greater ability by the rich to credibly promise not to default arise from two effects. First, they owe less money. There are two components to their lower leverage: they have more own capital and they do not pay a default premium, since they can commit not to default. Second, they refinance more easily (i.e. for a lower δ) when their highly leveraged competitors exit, since profits are higher.

[22] This is always true under the assumption that welfare is increasing in entry, namely Condition 1.

In conclusion, the bank will refinance rich entrepreneurs when δ satisfies

$$\delta \geq \delta_R \equiv \begin{array}{l} \frac{I-\omega_R+\lambda}{p(m)} \text{ if } \delta \geq \delta_P \\ \frac{I-\omega_R+\lambda}{p(\theta_R)} \text{ if } \delta < \delta_P \end{array}, \tag{12}$$

Date 3: *Funding of Initial Investment*

We now establish the conditions for initial financing. We first look at the case when all entrepreneurs are refinanced.[23] Since then there is no default, the condition for initial funding for entrepreneur j is simply

$$D_j \leq \delta p(m), \tag{13}$$

where $D_P = I$ and $D_R = I - \omega_R$. Thus the condition for full entry in this case is simply $I < \delta p(m)$.

When some entrepreneurs are not refinanced, the face value of their initial loan is determined by competition to be $I - \omega_j = qM + (1-q)D_j$, which implies

$$D_j^{NF} = \frac{I - \omega_j - qM}{1-q} \text{ for } j \in NF. \tag{14}$$

The condition for banks to lend to entrepreneurs in set NF to fund entry is then

$$I - \omega_j \leq qM + (1-q)\delta p(m), \tag{15}$$

where the RHS represents the pay-off to the bank if entrepreneur j would always default.

For poor entrepreneurs this implies that δ satisfies $\frac{I-qM}{(1-q)(a-\frac{m}{1-m})} \leq \delta$.

Proposition 1 *The rich are refinanced in all equilibria if* $\delta \geq \frac{I-\omega_R+\lambda}{p(\theta_R)}$.

Two different financial market outcomes may arise, depending on the scope of ex post access to finance. In a "fragile" financial allocation, both rich and poor raise finance to enter, but only the rich are able to get refinancing after a shock. In a "Stable" financial allocation, all entrepreneurs are able to raise finance and to be refinanced if necessary. Here we summarize the range of values of δ for which the different financial allocations emerge:

	Poor		Rich
	Default after shock	Refinance	No default after shock
Fragile	$\delta < \frac{I+\lambda}{p(m)}$ (Yes)	$\delta < \frac{M+\lambda}{p(m)}$ (No)	$\delta \geq \frac{1-\omega_R+\lambda}{p(\theta_R)}$
Stable	$\delta \geq \frac{I+\lambda}{p(m)}$ (No)	Always	$\delta \geq \frac{1-\omega_R+\lambda}{p(m)}$

[23] This requires that the lobbying outcome δ has to be bounded below, implying a minimum level of accountability; see Feijen and Perotti (2005).

Summarizing, in equilibrium

Proposition 2 *The Fragile financial allocation arises only if*

$$\max\{\frac{I-\omega_R+\lambda}{p(\theta_R)}, \frac{D_P^{Fragile}}{p(m)}\} \leq \delta < \frac{M+\lambda}{p(m)}, \tag{16}$$

and the Stable financial allocation arises only if

$$\frac{I+\lambda}{p(m)} \leq \delta < 1. \tag{17}$$

These parameter regions are not overlapping.

Intuitively, investor protection has to be high enough to allow access to refinancing. Thus δ is higher in the Stable financial allocation than in the Fragile. We now turn to the political choice over investor protection.[24]

3.5 Political Equilibrium

Lobbyists formulate their offer to maximize the net rent generated for their constituency, namely by seeking to ensure entry for all the members of their own lobby. Notice that ensuring access to funding for the poor also guarantees access for richer entrepreneurs, who need less finance. Thus the lobbyist for the poor entrepreneurs supports a welfare-maximizing full entry, or $\delta \geq \delta = \frac{I+\lambda}{p(m)}$, which ensures funding and refinancing for all entrepreneurs. Since in this case welfare is maximized, the rich lobby needs to make a better offer, else Stable access prevails.

The lobbyist for the rich prefers a fragile over a Stable allocation of funding (i.e., no refinancing for the poor after a shock). To this goal, the rich lobby would need to offer a political contribution such that the politicians are just indifferent to accept their preferred δ_L over the proposal of the poor lobbyist. The required contribution the rich have to pay, $E[L^R(\delta_L)]$, needs to compensate for the loss in welfare relative to the social optimum of full entry, when $n = m$ in all states, given by

$$\begin{aligned} & \beta E[W(\delta_L)] + (1-\beta)E[L^R(\delta_L)] = \beta E[W^{MAX}] \\ \Longrightarrow \quad & E[L^R(\delta_L)] \equiv \frac{\beta}{1-\beta}E[W^{MAX} - W(\delta_L)] = \frac{\beta}{1-\beta}E[\Delta W(\delta_L)], \end{aligned} \tag{18}$$

where $E[W^{MAX}] \equiv (1-m)(\omega_c + \frac{1}{2}(\frac{m}{1-m})^2) + m(p(m) - q\lambda - I)$. In addition they must pay the contribution that the lobby of poor entrepreneurs is willing to pay for access. They would at most contribute up to their entire surplus from production $\theta_P(p(m) - \lambda - I)$, since inactive poor entrepreneurs have zero income and thus zero utility.

[24] Parameter regions for the Broad allocation always exist under the assumption that projects have positive NPV, i.e. $p(m) > 1 + \lambda$. Henceforth we assume that parameters are such that the Fragile allocation is attainable by an appropriate choice of δ.

Note that $E[L^R(\delta_L)]$ is decreasing in δ_L, because welfare is increasing in n, which in turn is increasing in δ. Intuitively, limiting access requires higher bribes.

The expected profit of the rich in case of a Fragile financial allocation is

$$\begin{aligned} E[\Pi^R_{\text{Fragile}}] &= (1-q)\theta_R(p(m)-I) + q\theta_R(p(\theta_R)-\lambda-I) \\ &\quad -q[\theta_P(p(m)-\lambda-I) + L^R(\delta_{\text{Fragile}})], \end{aligned} \tag{19}$$

where $L^R(\delta_{\text{Fragile}}) = \frac{\beta}{1-\beta}[\frac{m^2-\theta_R^2}{2(1-m)} + m(p(m)-\lambda-I) - \theta_R(p(\theta_R)-\lambda-I)]$

$= \frac{\beta}{1-\beta}[-\frac{m^2-\theta_R^2}{2(1-m)} + \theta_P(a-\lambda-I)]$ is the lobby contribution in the shock state. The first two terms are the expected rents in a fragile allocation, the third term is the required lobby compensation for the amount the poor are willing to offer, and $L^R(\delta_{\text{Fragile}})$ is the contribution needed to compensate for the reduced welfare caused by exit.

The expected profit of the rich in case of a Stable financial allocation is

$$E[\Pi^R_{\text{Stable}}] = \theta_R(p(m) - q\lambda - I). \tag{20}$$

The rich lobbyist needs to compare these two payoffs. The key determinants of the cost of lobbying are political accountability, β, and the mass of the rich, θ_R. Therefore we rewrite the inequalities such that $\frac{\beta}{1-\beta}$ is a function of θ_R. The following inequality compares the pay-off to the rich in both equilibria.

$$\begin{aligned} & E[\Pi_{\text{Stable}}] \leq E[\Pi^R_{\text{Fragile}}] \\ \Longrightarrow \quad & \frac{\beta}{1-\beta} \leq \frac{\frac{\theta_R}{1-m} - (p(m) - I - \lambda)}{-\frac{m+\theta_R}{2(1-m)} + a - \lambda - I} \equiv \beta^{BF}. \end{aligned} \tag{21}$$

The net gain from fragility is the difference in profit between the two equilibria in case of a shock[25], minus the compensation necessary to match the expected contribution by the poor lobby, minus the amount to compensate for the welfare loss due to exit. The numerator represents the profit difference, $\frac{\theta_R}{1-m}$, minus the amount for the poor *per poor individual*, $(p(m) - I - \lambda)$, while the denominator is the political contribution *per poor individual*. Notice that the former is increasing in θ_R, the latter is decreasing in θ_R. Thus when the number of rich individuals is greater, the fragile entry outcome is less expensive to achieve. In contrast, the inequality is invariant with respect to q. Note that $\frac{\beta}{1-\beta}$ is strictly increasing in β. Thus fragility will arise only when political accountability is low, and so bribing is cheap.

These three inequalities define three parameter regions for β and θ_R, depicted in Figure 2.This

[25] Note this difference is not dependent on the state of the world.

leads to our main result[26].

Proposition 3 *When* $\frac{\beta}{1-\beta} \geq \beta^{BF}$, *the political equilibrium leads to a Stable financial regime. When* $\frac{\beta}{1-\beta} < \beta^{BF}$, *the political equilibrium is a Fragile financial regime.*

The proof is immediate from evaluating the net gain for the rich lobby to pursue their preferred financial allocation. In conclusion, accountability determines what the rich may need to pay to obtain their preferred level of investor protection, and thus the financial regime.

[Insert Figure 2 here]

Our main empirical prediction after a shock follows immediately. Exit will occur when political accountability is low, and will result in higher margins for surviving producers. Fragility is therefore in the interest of the elite only if bribing is relatively inexpensive.

4 Comparative Statics and Extensions

The previous section established that accountability is the critical factor in determining financial access and financial stability. A higher political accountability increases the lobbying contribution needed to limit entry or force exit. Beyond a certain threshold given by β^{BF}, lobbying to force exit becomes too expensive. This results in an efficient financial market which is both stable and grants stable financial access, supporting firms also after economic shocks.

We examine here the effect of various variables on fragility, and specifically their effect on the threshold β^{BF}.

First consider the impact of inequality.We assume, most realistically, that there are more poor than rich, so that $\theta_R < \theta_P$.The standard measure of wealth inequality, the Gini coefficient, in our setup is the difference between average wealth and median wealth. If we limit attention to inequality among entrepreneurs, which is where it plays a direct role, the Gini coefficient equals $m\theta_R\omega_R$ [27]. Thus inequality increases either as the mass of rich agents θ_R increases (as long as it remains smaller than θ_P), or as ω_R increases.

Lemma 4 *Ceteris paribus, a Fragile equilibrium is more likely when the number of rich entrepreneurs is greater.*

[26] Note we assume that accountability is high enough to satisfy $\frac{\beta}{1-\beta} > \frac{\frac{\theta_R}{1-m} - (p(m)-1)}{-\frac{m+\theta_R}{2(1-m)} + a - 1}$. Under this condition, we can exclude the equilibrium where the rich are only always present. See Feijen and Perotti (2005) for a proof.

[27] If we include consumers, the Gini coefficient equals $m\theta_R\omega_R - (1-m)\omega_C$, which is monotonous in the measure we use, provided that $\omega_R > \omega_C$.

Proof. *By differentiating* β^{BF}. ■

The intuition is that survival of only a small elite from the shock are associated with high welfare losses. The other component of inequality, namely the wealth of the rich ω_R, affects the need for external finance and thus the differential in leverage between rich and poor increases. From our earlier results (Feijen and Perotti, 2005), a higher ω_R makes it easier to block entry by the poor, while ensuring refinancing by rich entrepreneurs [28]

We now turn to the impact of higher demand and shock volatility, which yields some surprising results. Their comparative statics on the parameter space supporting the two equilibria are as follows.

	Fragile	Stable
a (NPV)	$\downarrow$	$\uparrow$
q (prob. of shock)	0	0
λ (size of shock)	$\uparrow$	$\downarrow$

Lemma 5 *Higher demand reduces fragility, as it leads to a downward shift of* β^{BF}*, reducing the area of the Fragile financial system in favor of the Stable one.*

Proof. $\frac{\partial \beta^{BF}}{\partial a} < 0$. ■

An increase in a, i.e. an increase in demand for the final good, increases, *ceteris paribus*, the NPV of production. At the same time, since consumers value the good more highly, their welfare is reduced more by lower entry. As a result, the cost to lobby for limited access is increasing in a.[29]

We turn next to the second moment of profitability. The volatility of external shocks can be decomposed in the probability of a shock and its size. We obtain the intuitive result that larger shocks are associated with greater financial fragility. However that this arises for greater volatility, does not imply larger losses. Since refinancing all projects remains efficient, appropriate investor protection would still ensure refinancing and thus rule out default. Rather, larger shocks create fragility because they reduce the value of production but, unlike lower demand, do not affect welfare. As a result, shocks affects rents but do not affect lobbying costs, nor the political demand for bribes. Therefore

Lemma 6 *Larger shocks induce larger lobbying contributions to force exit .*

[28] These results are consistent with the findings in Perotti and Volpin (2004), who show that in a large cross-section of countries, both higher accountability and lower income inequality are associated with better effective investor protection, even after controlling for legal origin and per-capita income.

[29] Thus greater profitability may be associated with more entry, but for not for the most obvious reason.

Proof. By inspection. ■

Finally, consider the effect of a mean-preserving spread in external shocks, by increasing λ while keeping $q\lambda$ constant. The result is consistent with the previous lemma: a mean-preserving increase in volatility affects only β^{BF}, and so enlarges the region of financial fragility. Once again, this increase in fragility does not result from the inability of firms to compensate for the shock, but from the increased willingness of the rich lobby to expend resources to force exit to protect the lower expected rents.

Finally, we study the effect of a larger investment cost I, which may vary across sectors. The higher is I, the more entrepreneurs will be dependent on external finance.

Consider the condition under which the Stable or the Fragile equilibrium emerges, Equation (21). We can easily see that

Lemma 7 *Ceteris paribus, higher financial dependence, as measured by a higher I, leads to a upward shift of β^{BF}, increasing the area of the Fragile financial system in favor of the Stable one.*

Proof. $\frac{\partial \beta^{BF}}{\partial I} < 0$. ■

In other words, as accountability decreases, firms in sectors with greater financing needs are more likely to be denied financing. This corresponds to a leftward shift of the curve β^{BF} in Figure 2.

5 Empirical Evidence

This section offers empirical evidence on exit rates after major shocks.[30] Our model implies that institutions which support investor rights should support firm survival in times of economic adversity. If poor legal rulers or poor enforcement due to lobbying leads to limited financial access for some firms after external shocks, we should then observe abnormal exit in industries heavily dependent on external finance in countries with poor legal systems and low accountability (i.e. low β). Moreover, excess exit should lead to higher profit margins in the same industries. Thus we predict a significant, positive coefficient of the interaction term of sectorial financial dependence with measure of contractual reliability. We specifically test whether this effect of contractual reliability runs through access to finance, by examining whether exit rates are larger in industries which are inherently more dependent on external finance.

The ideal measure of contractual reliability would combine a country index of legal efficiency with measures of political accountability, to achieve a measurement of the overall quality of legal

[30] For details and more extensive empirical results, see Feijen, 2005.

enforcement. The proxy which by its definition best defines reliable contracting is given by the Law and Order index, which is defined as "the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime" (Kaufmann, Kraay, and Mastruzzi 2005). Another variable which is correlated with our notion of political accountability is corruption, although it measures more closely the outcome of lobbying rather than its structural determinants.

Unfortunately, two issues interfere with estimating a causal effect of these measures of unreliable financial contracting on exit rates. First of all, both law and order as well as corruption are very correlated with general economic development (e.g. Svensson, 2005). GDP per capita per se may be more an outcome rather than an independent institutional determinant, but it may summarize well the effect of any omitted institutional factors on economic growth. To address this issue, we will test the effect of including GDP per capita. Second, measures of institutional quality which rely on subjective assessment may be in part endogenous to outcomes (Glaeser et al. 2004): in our context, a high exit rate may feed a diffuse perception of an unfair legal system. It is therefore necessary to comtrol for their endogeneity.

We study exit rates following large banking crises since the early 1980s (Caprio and Klingebiel, 2003). These crises tended to follow external shocks, usually on international interest rates, which may be considered exogenous relative to the political institutions. Our sample of banking crises include both developed and developing countries, enabling us to exploit substantial cross-country variation in contracting institutions.

Table I describes all variables. The dependent variable measuring exit is the average change in the number of establishments in industry i of country c during a crisis at time t. Following Laeven, Klingebiel, and Krozner (forthcoming, LKK), the pre-crisis period is taken to be $(t-8, t-3)$ and the crisis period as $(t-1, t+1)$. To control for the effect of the size of any particular industry, the number of establishments before the crisis is always included as an independent variable. These two variables are calculated using three-digit sectoral level data, drawn from the UNIDO database of the United Nations Statistical Division.

[Insert Table I here]

Table II displays the summary statistics of our sample, which consists of about 400 observations of on average 25 industries in 19 developed and developing countries, a sample comparable in size and composition to LKK. Panel A shows that on average, the number of firms declined by 4 percent during crises, but there is substantial variation across countries. Our primary measure of contracting quality is Law and Order, taken from Kaufmann, Kraay, and Mastruzzi (2005, KKM). This index takes on a value on the scale of 0-5 and measures the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence in 1996. Panel B shows there is considerable cross-country variation in GDP per capita, Law and Order and Private credit to GDP. The correlation table is in Table III. Panel A shows that country-level institutional variables are highly correlated. Panel B shows the correlation between industry measures, such as financial

dependence (drawn from Rajan and Zingales, 1998, RZ), asset intangibility (Braun and Larrain, forthcoming) and use of trade credit (Fisman and Love, 2003). Only the correlation between trade credit and asset intangibility is relatively high, consistent with a substitution of scarse external finance with trade credit.

[Insert Table II and III here]

We adopt a difference in difference methodology using industry- and country-dummies to mitigate any omitted variable problem. This allow us to focus on the effect of interaction between country- and industry-specific variables to explain the variation in exit rates. Consistently with our conjecture that the firms most likely to exit are those financially more vulnerable, we use financial dependence of young firms in the US. As RZ we assume that the US economy is most representative for the "natural" external financial dependence of firms. Our basic specification is:

$$\begin{aligned} \Delta EST_{i,c} \quad = \quad & \text{Constant} + \Gamma_1 \cdot \text{Industry dummies}_i \\ & + \Gamma_2 \cdot \text{Country dummies}_c \\ & + \gamma_1 \cdot \text{Initial number of establishments}_{i,c} \\ & + \gamma_2 \cdot \text{External financial dependence}_i \cdot \text{Financial development}_c \\ & + \gamma_3 \cdot \text{External financial dependence}_i \cdot \text{Contractual enforcement}_c \\ & + \varepsilon_{i,c}, \end{aligned} \tag{22}$$

where $\Delta EST_{i,c}$ is the change after a financial crisis in the number of productive establishments in industry i of country c. Following the literature, in all regressions we control for their number before the crisis. The level of financial development is here measured by domestic bank credit as a percentage of GDP. Note that the fixed effects in principle absorb important industry and country characteristics such as the timing and nature of the crisis, as well as any unrelated causes of systemic vulnerability.

The specification includes an interaction term of financial dependence and financial development, as measured by private credit over GDP. Its sign is not ex ante obvious; while the results in Rajan-Zingales (1998) indicate that more private credit may support externally dependent industries, in a context of a financial crisis these sectors may be particularly hard hit (Kroszner and Laeven, 2006). It appears that the coefficient is either negative or insignificant.

The coefficient of interest related to the interaction between the degree of industry financial dependence and the country's measure of Law and Order. When we substitute for Law and Order the Corruption index by KKM, most regressions produce similar results (not reported). Because of the country fixed effects we do not include financial dependence nor bank credit nor Law and Order on their own. Our hypothesis predicts that the interaction term is positive and economically significant. In other words, we expect that more financially dependent industries in countries with

lower levels of Law and order experience a disproportionate rate of exit after an external shock.

Table IV presents our main results on the predicted effect, by itself and after controlling for a set of residual institutional causes as proxied by GDP per capita. We allow some flexibility as to the functional form of the effect of Law and Order on exit rates. Using the simple index produces consistently significant results, but its coefficient loses significance once we control for GDP per capita, to which it is highly correlated. Accordingly, we use in all regressions a simple Law and order dummy, which takes on the value 1 for countries whose index is above the sample median provided by KKM, and 0 otherwise. Finally, we instrument Law and Order to control for endogeneity, by using objective measures of legal and political structure. Errors are adjusted for heteroskedasticity.

Regression (1) shows a significant (at the one percent level) and positive coefficient (0.162) of our Law and order dummy variable, while the interaction with bank credit is not significant. This is consistent with a favorable effect on exit of high standards of contractual enforcement. Its effect is economically significant: the regression predicts an extra 8.2 percent decrease in the number of establishments when moving from a financially dependent industry on the 25th (Wood) to the 75th (Petroleum refineries) percentile when simultaneously moving from a high to a low Law and Order country. This effect is substantial relative to a sample average of a 4 percent average exit rate (unweighted).

As this result may be due to other factors of institutional development besides our contractual enforcement channel, Regression (2) includes an interaction term of financial dependence and log GDP per capita. Its positive coefficient indicates that exit rates in more dependent industries are lower in higher income countries. Importantly, our main result is not affected and still significant at the 5 percent level. Even though the correlation of GDP per capita and Law and Order is rather high, the coefficient on the interaction term barely changes. Regression (3) repeats the analysis using the raw Law and order index. When we conduct the same thought experiment, but now simultaneously going from a country on the 75th to the 25th percentile of Law and order, the coefficient of 0.073 implies an additional decrease in the number of establishments of 11.8 percent, which has the same order of magnitude as the prediction from Regression (1).

Of course, this correlation does not imply causation, since Law and Order contains subjective measures and high exit rates during a crises may strongly shape perceptions of unfair contractual enforcement. Regressions (4) and (5) address this issue by instrumenting Law and Order with objective measures of legal and political institutions. We use Legal origin (from La Porta et al., 1999) and two objective measures of the number of constraints on the executive, Polcon 1 and Polcon 2 (Henisz, 2000). Statistical tests indicate that these instruments are valid. Again, we find significant results for our coefficients of interest at the one percent level.

A last concern may be that multicollinearity with the industry- and country-dummies may imply that our interaction term lacks enough variation for a proper estimate. Hence, Regression

(6) excludes the dummies and controls explicitly for country- and industry-specific characteristics. Again, the basic result is not affected.

[Insert Table IV here]

While these results are consistent with our model, they could also arise from industry-specific characteristics such as differential agency costs, or reflect differential trade and competition conditions. If financial frictions independent from legislation or its enforcement were spuriously correlation with contractual reliability, excess exit may occur in industries which are objectively harder for investors to monitor, for instance, because they have less tangible assets or less visible operations. To test for this possibility, we need to control for some exogenous measure of agency costs at the sectoral level. Table V uses industry-level asset intangibility in place of RZ's financial dependence measure, interacted with the Law and order dummy (Braun and Larrain, forthcoming).

[Insert Table V here]

Regression (1) shows that the interaction term of interest is not affected and remains significant at the one percent level. The interaction term with asset intangibility has a negative sign, according to intuition. We expect lower exit rates in countries which have a better contracting framework in industries with more tangible assets, since they would be able to raise external finance more easily. However, the coefficient is not significant. Regression (2) shows robustness to inclusion of an interaction term with financial dependence and log GDP per capita, which is slightly significant with the expected sign. Regression (3) repeats Regression (1) using the raw Law and order index. The main result remains, and again the coefficients hardly change relative to the results in Table IV.

Table VI controls for trade and competition effects. The industry level of competition, the general availability of trade credit and trade openness potentially affect exit rates. Regression (1) includes pre-crisis price cost margins to control for monopoly power in each specific industry. Regression (2) adds an interaction term of the industry propensity to rely on trade credit. Fisman and Love (2003) find that industries which rely more on trade credit grow faster in countries with are less financially developed, suggesting a substitution effect from general financial channels to trade credit. None of these interaction effects change our main result, which remains significant on the one percent level. The sign of the trade credit interaction term is negative which is consistent with the interpretation of Fisman and Love (2003); industries which are more reliant on trade credit have lower exit rates in countries with worse contractual institutions and thus less diffused access to finance. Regression (3) includes an interaction term of financial dependence and log GDP per capita. Again, our main result is not affected.

Finally, trade openness affects competition at the country level and potentially affects exit rates. We include the sum of imports plus exports to industry added value of each industry to proxy

for such foreign competition effects. Our main result is not affected and more than doubles in magnitude, although it is now only significant on the five percent level.

[Insert Table VI here]

.

6 Conclusions

We show evidence of excess exit in financially dependent sectors in countries with poor contractual enforcement. We argue that reliable contractual enforcement is a precondition for effective investor protection, defined as good legal rules supported by the political will to enforce them. When the political regime is poorly accountable, enforcement may be captured by special interests. This leads to excessive exit and unnecessary default for financially weaker firms after external shocks, leading to increases in market concentration and less competition.

We model how lobbying may weaken the enforcement of investor protection laws so that poorer entrepreneurs fail to obtain access to finance, since their firms are more leveraged. The cross country evidence stands up to controlling for general institutional quality as proxied by GDP per capita, possible alternative hypothesis of agency conflicts not determined by contractual inefficiency, and to endogeneity concerns.

In countries with weak contractual enforcement external shocks offer an opportunity to distort competition. This will be the case especially when excessive exit may be blamed upon external factors, such as trade shocks or IMF intervention. Interestingly, there is anecdotal evidence that only larger, exporting firms in countries which experience large devaluations seem to be able to take advantage of the improved terms of trade. There is also evidence of an increase in market concentration of producers after a crisis in emerging markets such as Russia and Southeast Asia.

In related work (Feijen and Perotti, 2005), we study a separate form of politically induced financial vulnerability. This arises when government guarantees to investors create an incentive for entrepreneurs to default strategically.[31] We show that such strategic default is likely to emerge in equilibria with blocked or fragile entry, which are associated with less politically accountable systems.

In conclusion, financial development is at serious risk of capture in countries with weak legal regimes and unaccountable political regimes. In such contexts, policies aimed at financial broadening are more justified than market deepening measures. In particular, special attention should be given to refinancing opportunities, especially for smaller firms. The ultimate goal should be to improve investor protection so as to provide a level playing field and equalize opportunities for less rich but

[31] See Krugman (1998) for a similar argument to explain the Asian crisis.

(at least) equally talented individuals. Of course, the quality of legal institutions may provide a lower limit on the politically desirable level of investor protection. Perhaps improvements in legal institutions occur only once this political constrain is reached, a notion we intend to research further.

The literature is moving from aggregate measures of financial development to study closer measures of financial access, with emphasis on the distribution of access to finance. We expect much interesting work to emerge in this area.

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Table I: Definition and Source of Variables

This table describes the variables. The first column lists the names of the variable. The second column describes the variable and provides the source from which it was collected. The variables are grouped on the industry-country level, the industry-level and the country-level, respectively.

Variable	Description
INDUSTRY-COUNTRY SPECIFIC VARIABLES	
Change in number of establishments	The relative change of the average industry-level number of establishments in the systemic banking crisis period relative to the pre-crisis period (definition in text). Source: UNIDO IndStat ISIC level 3 1963-2003; own calculations.
Openness	Trade openness defined as (import + export)/(value added). Source: Trade and Production Database from the World Bank.
EST before the crisis	The average industry level number of establishments in the pre-crisis period. Source: UNIDO IndStat ISIC level 3 1963-2003; own calculations.
PCM before crisis	The average industry level price cost margin in the pre-crisis period. Source: UNIDO IndStat ISIC level 3 1963-2003; own calculations.
INDUSTRY-SPECIFIC VARIABLES (using the U.S. as a benchmark)	
External dependence	Median external financial dependence of *young* U.S. firms by ISIC sector averaged over the period 1980-1989. Source: Rajan and Zingales (1998).
Asset tangibility	Industry median of the ratio of net property, plant and equipment to total assets by U.S.-publicly listed firms during the 1986-1995 period. Source: Braun and Larrain, forthcoming.
Trade credit	Stock measure of dependence on trade credit, equal to accounts payable over total assets, industry medians of ratios over all firm-years in the relevant time period. Source: Fisman and Love (2003).
COUNTRY-SPECIFIC VARIABLES	
Law and order	Measures the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence in 1996. Source: Kaufmann, Kraay, and Mastruzzi (2005).
Law and order dummy	Takes on a value of 1 if country has an above median value of the sample provided by KKM of law and order and 0 otherwise. Source: Kaufmann, Kraay, and Mastruzzi (2005).
Polcon 1 and 2	Polcon 1: The average of a measure of political constraints in the pre-crisis period. It estimates the feasibility of policy change, i.e. the extent to which a change in the preferences of any one actor may lead to a change in government policy. It incorporates information on the number of independent branches of government with veto power and the distribution of preferences across these branches. Polcon 2: This variable follows the same logic as Henisz but also includes two additional veto points (the judiciary and sub-federal entities). Source: Henisz (2000).
Legal Origin	Dummies for English, French, German or Scandinavian origin of the legal system. Source: La Porta, et al. (1999).
Private credit	Average domestic Private credit via banks provided by banking sector (% of GDP) in the pre-crisis period. Source: World Development Indicators of the World Bank, January 2005.
GDP per capita	Average log GDP per capita in 1995 US $ in the pre-crisis period. Source: World Development Indicators.

Table II. Summary Statistics

This table provides summary statistics. Panel A displays the unweighted average industry change in the number of establishments of the countries in our sample. It also tabulates the number of establishments before the crisis, the number of industries per country in the sample, the value of Law and order (0-5), and the year in which the occurred (Klingebiel and Caprio, 2003). Panel B shows sample averages, standard deviations, minima and maxima of the change in the unweighted industry average change in the number of establishments and number of establishments before the crisis, GDP per capita in the pre-crisis period (see text for definition), Law and order, and Private credit to GDP in the pre-crisis period.

Panel A:

Country	Change in number of establishments	Number of establishments before crisis	Number of industries	Law and order	Year of crisis
Armenia	0.13	24.30	26	2.04	1994
Bangladesh	0.16	134.75	24	1.82	1986
Bolivia	-0.59	47.92	26	1.84	1986
Brazil	-0.59	6979.31	13	2.24	1990
Finland	-0.06	252.18	28	4.58	1991
Indonesia	0.37	641.64	23	2.14	1997
Japan	-0.02	15508.45	28	4.1	1991
Kenya	0.14	19.77	22	1.73	1985
Korea	0.12	2741.99	27	3.31	1997
Nicaragua	-0.21	14.17	27	1.82	1986
Norway	-0.11	271.92	28	4.6	1987
Panama	0.01	33.03	24	2.76	1988
Poland	0.19	183.03	28	2.96	1990
Sri Lanka	-0.53	345.91	26	2.79	1989
Sweden	0.04	325.64	28	4.53	1991
Venezuela	-0.11	360.44	28	1.84	1994
Zambia	0.19	18.80	25	2.15	1995
Zimbabwe	-0.10	41.77	25	2.26	1995
Total	-0.04	1469.30	25.82	2.81	1990.71

Panel B:

Statistics	Change in number of establishments	No. establish. before crisis	GDP per capita	Law and order	Private credit to GDP
Mean	-0.04	1469.30	8193.85	0.31	63.08
Standard deviation	0.37	5717.28	10972.05	1.04	48.26
Min.	-1.00	0.50	248.81	-0.77	5.36
Max.	1.00	50689.60	32053.45	2.10	223.71

Table III. Correlations of Country- and Industry-Level Measures

This table presents correlations and their p-values. Panel A displays correlations between variables on the country level, Panel B between variables on the industry-level.

Panel A:

	Law and order	Law and order dummy	GDP per capita	Private credit via banks
Law and order	1.00			
Law and order dummy	0.85	1.00		
	0.00			
GDP per capita	0.92	0.71	1.00	
	0.00	0.00		
Private credit via banks	0.55	0.41	0.77	1.00
	0.02	0.10	0.00	

Panel B:

	Financial dependence	Asset tangibility	Trade credit
Financial dependence	1.00		
Asset tangibility	0.32	1.00	
	0.20		
Trade credit	0.10	0.81	1.00
	0.71	0.00	

Table IV. The Effect of Contractual Enforcement on Exit

This table reports OLS and IV regressions. The dependent variable is the relative change in industry-level number of establishments. Independent variables are the average number of establishments before the crisis, and interaction terms of external dependence of young firms (ED, from Rajan and Zingales, 1998) with country-level measures of 1) Private credit via banks to GDP (WDI), 2) a Law and order dummy (KKM), 3) the raw Law and order index and 4) pre-crisis log GDP per capita (WDI). Regressions (4) and (5) are estimated using instrumental variables, where the Law and order dummy and the Law and order index are instrumented with Legal Origin (La Porta, et al., 1999) and constraints on the executive, Polcon1 and 2 (Henisz, 2000). The IV regressions survive the standard first stage F-test and the overidentifying restrictions test. Regression (6) does not include dummies. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively. Heteroskedasticity robust standard errors are reported in parentheses.

	(1)	(2)	(3)	(4) IV	(5) IV	(6)
No. establishments before crisis	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)**
ED * private credit	-0.000 (0.000)	-0.001 (0.000)***	-0.001 (0.000)**	-0.000 (0.000)	-0.000 (0.000)	-0.001 (0.000)**
ED * high law dummy	0.162 (0.038)***	0.156 (0.051)***		0.125 (0.033)***		0.176 (0.087)**
ED * law & order			0.073 (0.018)***		0.059 (0.016)***	
ED * log(GDP/cap.)		0.062 (0.035)*				0.032 (0.056)
log(GDP/cap.)						-0.023 (0.054)
ED						-0.100 (0.155)
High law dummy						-0.158 (0.079)**
Private credit to GDP						0.002 (0.000)***
Fixed Effects	Y	Y	Y	Y	Y	N
Observations	398	373	398	373	373	373
(Pseudo) R^2	0.58	0.59	0.58	0.61	0.61	0.04

Table V. Controlling for Other Sources of Agency Costs

This table reports OLS regressions. The dependent variable is the relative change in industry-level number of establishments. Independent variables are the average number of establishments before the crisis, and interaction terms of external dependence of young firms (ED, from Rajan and Zingales, 1998) with country-level measures of 1) Private credit via banks to GDP (WDI), 2) a high Law and order dummy (KKM)), 3) the raw Law and order index 4) Asset tangibility, and 5) pre-crisis log GDP per capita (WDI). *, **, *** indicate significance at 10%, 5%, and 1% level, respectively. Heteroskedasticity robust standard errors are reported in parentheses.

	(1)	(2)	(3)
	Change in number of establishments		
No. establishments before crisis	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
ED * private credit	-0.000 (0.000)	-0.001 (0.000)***	-0.001 (0.000)**
ED* high law dummy	0.168 (0.039)***	0.160 (0.051)***	
ED * law			0.074 (0.017)***
Asset tangibility * high law dummy	-0.196 (0.257)	-0.167 (0.264)	
Asset tangibility * law			-0.032 (0.124)
ED * log(GDP/cap.)		0.063 (0.034)*	
Country and industry dummies?	Y	Y	Y
Observations	398	373	398
R-squared	0.59	0.59	0.58

Table VI. Controlling for Trade and Competition

This table reports OLS regressions. The dependent variable is the relative change in industry-level number of establishments. Independent variables are the average number of establishments, the price cost margin before the crisis, and the level of trade openness (Trade and Production Database, 2005), and interaction terms of external dependence of young firms (ED, from Rajan and Zingales, 1998) with country-level measures of 1) Private credit via banks to GDP (WDI), 2) a Law and order dummy (Kaufmann, Kraay, and Mastruzzi (2005, KKM)), and 3) pre-crisis log GDP per capita (WDI). In Regression (2)-(4) we control for an interaction term of the propensity of an industry to use trade credit (Fisman and Love, 2003) and the Law and order dummy. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively. Heteroskedasticity robust standard errors are reported in parentheses.

	(1)	(2)	(3)	(4)
	Change in number of establishments			
Price cost margin before crisis	-0.039 (0.214)	-0.042 (0.212)	0.047 (0.243)	0.374 (0.411)
No. establishments before crisis	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
ED *bank credit	-0.000 (0.000)	-0.000 (0.000)	-0.001 (0.000)***	-0.001 (0.000)**
ED * high law dummy	0.162 (0.038)***	0.162 (0.040)***	0.168 (0.054)***	0.434 (0.214)**
Trade credit * high law dummy		-0.001 (0.013)	0.004 (0.013)	0.031 (0.021)
Ext dep* log(GDP/cap.)			0.049 (0.035)	-0.275 (0.174)
Trade openness				-7.629 (5.349)
Observations	390	390	365	150
R-squared	0.62	0.62	0.63	0.57