The Political Economy of Financial Fragility

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Abstract

Financial liberalization under weak regulation is often followed by financial crises. We argue that this may be the deliberate outcome of lobbying interests capturing the reform process. Liberalization may be designed to provide fragile financial access to new entrants by limiting investor protection, resulting in financial deepening rather than broadening access to capital. Interestingly, lobbying may deliberately worsen financial fragility. Poor investor protection limits access to refinance after a shock, forces inefficient default and exit by more leveraged entrepreneurs, thus protecting more established producers. We provide supporting evidence that industry exit rates and profit margins are higher in more corrupt countries during banking crises.

1 Introduction

Financial development appears correlated with subsequent economic growth (Levine, 2004). Poor financial development undermines growth in sectors relying on external finance (Rajan and Zingales, 1998; Black and Strahan, 2002) and constrains new entry (Perotti and Volpin, 2004). While lack of funding is not the sole obstacle for potential entrepreneurs (Johnson et al, 2002), access to external financing provides resources to overcome generic entry barriers.[1] Policies promoting financial development, such as better investor protection and liberalization, appear therefore well justified. Better investor protection should increase the availability of external finance. Liberalization empowers

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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.

the private sector to allocate capital, which should in turn ensure access to external finance for all productive projects.

In fact, many financial liberalizations are successful.[2] There is no general increase in volatility in consumption following liberalizations, except for countries with poor investor protection or poor accountability (Bekaert, Harvey and Lundblad, 2004). Yet liberalization has had mixed success in developing countries. While it produces rapid expansion in credit (and often foreign investment) with a positive impact on short term economic growth, in many countries it has been followed by severe banking crises in response to external shocks. These crises, often coupled with sharp currency devaluations (as in Mexico, South East Asia, and Russia), inflicted massive losses to investors and taxpayers, and contributed to deep recessions. Yet financial development should have just strengthened the ability of firms to resist external shocks. What explains this variation in outcomes ? Specifically, when does liberalization lead to financial vulnerability ?

Sensible policies seem to fail in the presence of poor institutions (Acemoglu et al, 2003). Liberalization is more likely to be followed by banking crises in countries with poor institutions or low transparency (Demirguc-Kunt and Detragiache, 1998; Mehrez and Kaufmann, 1999; Keefer, 2001).

In this paper we argue that poor political institutions lead to capture of the design and implementation of liberalization in response to lobbying pressure. In principle, liberalization should free financial institutions from direct political control, and lead to greater access to finance for better firms. Yet market financing decisions are still influenced by the local legal environment, in particular on the enforcement of investor claims.

We model the choice of investor protection as a legislative or enforcement choice taken by politicians. Lobbying by established interests whose dominance is challenged by financial development will seek to capture the design of reforms.[3] Specifically, richer entrepreneurs lobby for lower investor protection to limit access to finance and thus entry by poorer entrepreneurs (Perotti and Volpin, 2004).[4] In our dynamic setting, investor protection affects not only ex ante access to finance, but also ex post refinancing after an external shock.Thus even when liberalization increases entry, investor protection may be distorted to ensure excessive exit after an external shock by weaker, more leveraged producers.

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

[3] As legislation is not decided directly by voters, median voter models are appropriate to model legislative choices only in highly accountable countries. See Pagano and Volpin, forthcoming; Perotti and von Thadden, 2004; Berglof and Bolton (2003).

[4] Poor investor rights creates incentives to default ex post and thus block financing of potentially profitable projects. Richer and thus less leveraged entrepreneurs may still be able to credibly promise to repay their loans, and will therefore enjoy access to finance.

We obtain three distinct policy outcomes, corresponding to different financial "regimes". They lead to different entry and exit rates, and different degrees of financial fragility. In countries with high democratic accountability[5], bribing politicians to block entry of poor entrepreneurs is too expensive for the rich. Thus investor protection will be set so as to ensure access for all to finance and refinance after a shock. At intermediate levels of accountability, lobbying to block ex ante access is still too costly, but investor protection may be set deliberately low so as to limit access to refinancing after a shock. This reduces competition for rich producers as the poorer, more leveraged producers are forced to exit. This form of involuntary default is a case of *deliberately induced fragility*. Finally, when democratic accountability is very weak, the rich find it attractive to lobby for very low investor protection so as to block any access by poor entrepreneurs. We term this case a "narrow" financial equilibrium.[6]

There is clear cross country evidence that entry rates are very sensitive to corruption. Perotti and Volpin (2004) show that a higher democracy score is associated with higher entry in sectors more dependent on external capital and those with greater growth opportunities. Also, higher accountability and lower income inequality are associated with more effective investor protection, complementing the role of legal origin.

We next present evidence from a broad panel of industries and countries, adopting Rajan and Zingales's (1998) methodology to control for endogeneity and missing variables at the level of industry and country. Consistent with the model, producer margins during banking crisis are higher for financially dependent firms in countries with worse institutions. Most notably, the effect is strongest when financial needs are interacted with measures of corruption. More poignantly, we are able to show that the effect is correlated with abnormally higher exit rates, precisely the prediction of the model. We are not aware of any study which could explain why there should be relatively more exit in crises in more corrupt countries.

Interestingly, other institutional variables such as the rule of law or other measures of political structure, per se highly correlated with corruption, do not seem to explain profit changes or exit rates significantly. This provides more support for corruption as the most important institutional channel, which is consistent with our explanation based on lobbying.

Two other testable implications we have not yet explored are that greater inequality and more volatile shocks should increase financial fragility. Interestingly, volatility leads to a fragile regime not because it implies larger losses, but because it reduces expected profitability. This increases the incentive by the rich elite to lobby harder for weaker investor protection to protect its rents.

We discuss next the related literature and some related empirical evidence. Section 3 presents

[5] We define political accountability as constraints on executive power.

[6] We rule out here the case when rich entrepreneurs lobby to be able to default strategically. In Feijen and Perotti (2005) we show that this occurs only under socialization of losses, and in less accountable political systems.

the basic model. Section 4 contains the comparative statics and offers an extension on the impact of domestic default. Section 5 presents the empirical evidence. Section 6 concludes.

2 Related Literature

The literature on financial crises initially considered crises as the outcome of fundamental macroeconomic unbalances. Second generation models show crises may arise under self-fulfilling expectations (e.g. Chang and Velasco, 1998, and Allen and Gale, 1998). In the so-called third generation class of financial crises models, unbalances arise because of poor incentives due to weak institutions or poor policies (e.g. Krugman (1998), Corsetti et al (1999)). Our approach is to endogenize the quality of regulatory and legal institutions as a political choice. In our model, poor regulation (and thus financial fragility) is deliberately created to capture benefits while socializing losses, which potentially can give rise to a liquidity crisis for firms of poorer entrepreneurs.

A growing body of empirical evidence shows that political and economical elites can manipulate institutions (Glaeser et al, 2003). Politically powerful interest lobbies influence the type of property rights protection which suits their interests best (He, Morck and Yeung, 2000). Effective investor protection appears associated with democratic accountability as well as legal origin, even after controlling for economic development (Perotti and Volpin, 2004). Poor countries, especially the more corrupt ones, tend to have inefficiently high entry barriers, with bureaucrats and politicians as principal beneficiaries (Djankov et al, 2002). Yet Johnson et al (2002) find evidence of high marginal returns at a low level of capital investment, as well as tight financial constraints for poor individuals.

Incumbents have an incentive to oppose financial development because it breeds competition, hence eroding their rents (Rajan and Zingales (2003)).[7] 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. Investor protection is arguably a simple and stealthy barrier to entry. Poor minority protection appears indeed to limit access to finance particularly for SMEs (Beck et al, 2004) and in financially dependent sectors, especially in countries with low accountability (Perotti and Volpin, 2004).

Political institutions seem to have a first order effect on economic and financial stability, even after controlling for policy choices (Acemoglu et al (2003)). Poor transparency and corruption (Mehrez and Kaufman, 1999), and weak regulatory institutions (Demirguc-Kunt and Detragiache 1998), increases the probability of a banking crisis after liberalization. Rajan (2004) argues that limited credibility of institutions reduce foreign currency liquidity and leads to crises. Kaminsky

[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).

and Schmukler (2003) show evidence that financial liberalization often leads to intensified boom-bust cycles in the short term, especially in countries with poor law and order. Yet it would be incorrect to conclude that liberalization per se leads to crises. While there exists an unconditional correlation (Tornell et al, 2004), many liberalization reforms succeed. Bekaert, Harvey and Lundblad (2004) show that consumption volatility actually decreases with financial openness, even in the set of liberalizing developing countries. On the other hand, countries with poor political institutions exhibit increased volatility. [8]

However, even when liberalization leads to higher average GDP growth, the distribution of gains remains a relevant question to ensure its sustainability. Elites appear to do comparatively well in financial distress. In Latin-America, financial transfers following banking crises targeted privileged income classes (Halac and Schmukler, 2002). At the same time, default costs are usually socialized via regressive policies, such as inflationary bailouts and budget cuts which disproportionately hurt weaker social groups as well as median income households (Das and Mohapatra, 2003).[9] Banking crises have large fiscal costs because of government guarantees, liquidity injections, and regulatory forbearance (Claessens, Klingebiel, and Laeven, 2004).[10] 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 Economist, October 2003).

Perhaps financial liberalization tends to concentrate funding because it initially favors firms with established comparative advantages. However, much evidence indicates that concentration of funding does not produced better returns in weak institutional settings. Losses on larger loans have been much larger than for smaller loans, particularly for connected lending to powerful groups (on Mexico, see La Porta et al, 2002, and Haber, 2004; on Russia, see Laeven, 2001; on Pakistan, see Khwaja and Mian, 2004; on Thailand, see Wiwattanakantang et al, forthcoming).[11] Remarkably, few assets have been repossessed in these countries when connected firms default. There is evidence that incumbency undermines growth. Morck et al (2000) show that a higher concentration of inherited bilionaire wealth in a country has a depressing effect on economic growth. 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).

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[8] Bekaert et al (2004) also conclude that "political factors are more important than legal factors in driving consumption growth volatility".

[9] The worse impact is not on the poorest decile, who hardly participate in the formal economy and have little to lose (Maloney, Cunningham and Bosch, 2004).

[10] They also show that the size of transfers do not improve economic recovery, which is higher in countries with lower corruption, better measures of law and order, legal enforcement, and quality of the bureaucracy.

[11] Excessive concentration of lending can also take place under state influence, favoring mostly large state-owned enterprises, such as in Central Europe during the early transition period.

In a dynamic setting, encouraging access to capital for emerging producers is likely to be optimal. Entry is a critical determinant of economic renewal and enhanced competitiveness. Beck et al (2004) offer cross-country evidence on the importance of SME for growth. Johnson, McMillan and Woodruff (2002) document the role played by new entrepreneurs in determining the relative economic success across transition countries. Finally, greater financial broadening creates political support for market reforms, and makes them more sustainable (Biais and Perotti, 2002; Perotti and Von Thadden, 2004).

What institutions help avoiding the capture of the reform process? We argue that greater democratic accountability increases public scrutiny on the reform process and constraints opportunistic legislation. Keefer (2001) argues that a larger number of veto players reduces political incentives to cater to special interests, and shows that in such cases governments grant lower transfers to the financial sector and are less likely to exercise forbearance with insolvent institutions. Haber (1991) shows that while Brazilian textile industry in the 19th century became more competitive due to political changes which triggered liberalization and banking development, in Porfirio Diaz's Mexico the elite controlled access to finance, creating less efficient producers. Haber (2004) argues that increased political competition across states in the federal US system in the 1880s increased accountability and forced local financial intermediaries to face competition, in contrast to Mexico where banking remained extremely concentrated and politically connected to the autocracy under Diaz.

Our work is also related to Caballero and Krishnamurty (2000, 2003), who model an emerging market crisis where firms with good projects cannot borrow after a productivity shock because a collateral constraint is binding, leading to inefficient shutdown of production capacity. In Holmstrom and Tirole (1998), firms can overcome a productive shock to the extent that they can mortgage collateral. In our approach, the reliability of collateral is endogenously determined as a political choice.

Our theoretical approach is a lobbying model where consumers are too dispersed to organize themselves (Grossman and Helpmann, 1994).[12] Lobbying to block entry favors established interests even when competing producers can organize themselves, since policy choices restricting entry produce larger pure rents, and thus more resources for political bribes. The elite can thus lobby to set minority protection low enough such that while their projects are funded, poorer entrepreneurs are not (Perotti and Volpin, 2004).

In the paper we treat inequality and accountability as unrelated, yet there are many reasons to expect inequality to reduce accountability. For instance, in highly unequal countries, poorly paid public officials may be more vulnerable to bribes. Van Rijckeghem and Weder (1997) show that corruption is higher in countries where bureaucrats' income is low relative to manufacturing wages.

[12] Beneficiaries of U.S. bank branching regulation lobbied successfully for years for entry restrictions despite high costs to consumers (Stiroh and Strahan, 2003).

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 end good (apples pies). The representative consumer is endowed with $\omega_c > 0$ apples. For simplicity, entrepreneur j only values consumption of apples with utility

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

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 1 apple and produce 1 apple pie[13]. Hence to fund production, a poor entrepreneur needs to raise 1 apple externally whereas a rich one only needs $1-\omega_R$ apples. Alternatively, entrepreneurs can save their endowment in a riskless asset. Consumers can invest only in the riskless asset.

At an intermediate date the state of the economy Ω may suffer an external shock with probability $q \in (0, 1)$. In state $\Omega = s$, all projects are affected, and all require 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 a positive net present value even in case of full production (when the price of apple pies is lowest)

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

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

[13] Although this technology is discrete, making the production choice continuous does not change the results of the model qualitatively. The intuition is that in the lobby game this will be anticipated by adjusting δ accordingly.

For consumers and inactive entrepreneurs, their net income equals the return from riskless savings. For an active entrepreneur j her income is profits minus repayment. An entrepreneur who is not refinanced after the shock has zero income.

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

At date 1, entrepreneurs form an interest group to lobby politicians.

At date 2, the lobby groups lobby politicians on investor protection δ. We assume that once δ is set, it cannot be changed.

At date 3, entrepreneurs decide whether to invest in their project and seek external finance, banks choose which entrepreneurs to fund, and compete to offer debt.

At date 4, the interim stage, a liquidity shock may occur with probability q. In this case all entrepreneurs need some refinancing 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. Active entrepreneurs choose to default or repay their loans. The promised political contribution is paid.

[Insert Figure 1 here]

3.2 Financing

All entrepreneurs need some external finance to fund entry. In case of a shock, additional liquidity λ is needed to continue production. Entrepreneurs who are able to raise external finance to start a firm may or may not be able to obtain additional refinancing.

In our context, profits can take only two values, so there is no meaningful distinction between debt and equity for active firms. If a firm is denied refinancing, however, its profits are zero and there is a salvage value M, where $M < 1$, which external financiers are able to seize[14]. We accordingly refer to investors as banks contributing loans.[15] In the basic model, we initially assume that all projects are funded by foreign banks.[16]

[14] For simplicity, we simply assume that M is always entirely seizable by financiers.

[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 ensures that demand for apple pies is independent of default, since foreigners bear all ex post default costs. We analyze domestic funding in a later section.

We assume that the NPV of all projects is still positive after a shock , so that refinancing is always efficient, even when there is full entry

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

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

Condition 3 $M < 1 - \omega_R$.

While rich entrepreneurs need to raise an amount $1 - \omega_R$, poor entrepreneurs need to raise the entire investment cost of 1. The ability to raise financing depends on legal investor protection δ, which is 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. If there was no need for refinancing, banks would be willing to lend entrepreneur j an amount A_j against a face value 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.

At the interim stage, in case of a shock , the bank chooses whether to refinance individual projects, or refuse in which case output is zero and the bank receives the salvage value M. Banks will refinance a project 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 $M < D_j$.

We denote by A the set of entrepreneurs who receive ex ante financing. Set A contains two subsets: Subset NF contains all entrepreneurs who will be refused additional funding in case of a shock . Subset F consists only of entrepreneurs who will receive refinancing. As we will see, the composition of the two sets are directly affected by the choice over investor protection δ.

3.3 The Political System

At date 2 we allow lobbying of politicians on investor protection δ. We assume politicians set δ and care about both social welfare W and political contributions L. Social welfare is defined as the weighted sum of consumer and entrepreneur utility:

$$W \equiv (1-m) \times (\text{indirect utility of consumers}) + (\text{profits of entrepreneurs}). \tag{6}$$

The utility of politicians is

$$U^P = \beta W + (1-\beta)L, \tag{7}$$

where β can be interpreted as political accountability or the sensitivity of politicians towards bribes.

Both rich and poor are represented by a lobbyist who attempts to influence the decision on investor protection $\delta \in [0,1]$. We make the standard assumption that consumers are too dispersed to form a lobby.

Once set, investor protection cannot be changed. Lobbyists can 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, they cannot commit to reallocate rents inside their their lobby nor can they promise transfers to each other. [17]

The sequence of the political game is as follows:

- Without loss of generality, the lobbyist for the rich makes its offer first, followed by the lobbyist for the poorer entrepreneurs.[18]
- 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

[17] This assumption excludes political coalitions, which would considerably complicate the analysis and are beyond the scope of this paper.

[18] 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.

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. The total utility of entrepreneurs in the normal state is $\int_{j\in A}(p^n - D_j)\ dj$, and in the shock state is $\int_{j\in F}(p^s - D_j - \lambda)\ dj$.

	Normal	shock
Not financed	ω_j	ω_j
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

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

and after the shock is

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

To ensure social welfare is increasing in entry, we need that demand for the final good is strong enough, .i.e. $a \geq 1 + \lambda + \frac{m}{1-m}$, which is just Condition 1. 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, $W^s = (1-m)(\omega_c + \frac{1}{2}(\frac{n^s}{1-m})^2) + n^s(a - \frac{n^s}{1-m} - \lambda - 1)$. Now $\frac{\partial W^s}{\partial n^s} = a - \lambda - 1 - \frac{n^s}{1-m}$, which is nonnegative by Condition 1. ■

3.4.2 Financial Market Equilibrium

We restrict attention to the case when a bank would not refinance an entrepreneur if the bank anticipates strategic default (as opposed to involuntary default)

Condition 4 $M + \lambda > Min[\delta p^S,\ D_j + \lambda]$ *for any financed entrepreneur* j*.*

This condition ensures that the bank prefers the salvage value M over the seizable value δp^S minus the opportunity cost λ if entrepreneur j has an incentive to default strategically.

Furthermore, we assume that all loans are repaid in the normal state, even with full entry[19]

Condition 5 *$D_j \leq \delta p(m)$ for any financed entrepreneur j.*

The ability to obtain finance depends on investor protection δ. All entrepreneurs need to raise some initial funding at date 3, and, contingent on a shock, for refinancing at date 4. In the normal state, all entrepreneurs who were able to start a firm, 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.[20]

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^* and δ^{**}, such that for $\delta > \delta^{**}$ no entrepreneur is refinanced, if $\delta^{**} \leq \delta < \delta^*$ only rich entrepreneurs will be refinanced, and if $\delta > \delta^*$ all entrepreneurs are refinanced. These thresholds for refinancing depend on interim leverage D_j. 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.

Consider the refinancing decision after a shock, and recall that all entrepreneurs prefer to refinance. [21] Entrepreneur j will not be refinanced when

$$\min\{\delta p^S, 1 - \omega_j + \lambda\} < M + \lambda. \tag{10}$$

The LHS is the amount entrepreneur j can credibly promise to repay. The RHS represents the payoff for the bank if it seizes the salvage value M.

If δ is sufficiently small such that 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 j, who is forced into liquidation. This occurs when

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

since by assumption $1 - \omega_j > M$ for all j. This leads to a first general result

[19] We solve explicitly below for these restrictions in the different equilibria.

[20] Rich entrepreneurs may choose to 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. The intuition is that the rich lobby would always seek refinancing for the rich. Even if investor protection is such that also poor entrepreneurs can be refinanced, then rich ones certainly can.

[21] This is always true under the assumption that welfare is increasing in entry.

Lemma 3 *Some entrepreneurs will be not refinanced if $\delta < \delta^*$ 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, and this undermines their ability to commit to a full repayment. If instead (10) is not satisfied for poor entrepreneurs, it will also not be satisfied by the rich, less leveraged firms, in which case, all entrepreneurs are refinanced, and equilibrium profits equal $p(m)$. In contrast, if only less leveraged entrepreneurs satisfy (10), then they are forced to exit and profits will be $p(\theta_R) = a - \frac{\theta_R}{1-m}$.

Since leverage is decreasing in the amount of own capital, there are values of δ such that poorer entrepreneurs are not refinanced, while richer entrepreneurs are. When $\delta < \delta^*$, the poor are not refinanced because they would default ex post. The rich, who are less leveraged, would not default after the exit of the poor, as long as $D_R + \lambda \leq \delta p(\theta_R)$. If this condition is satisfied, loans to rich entrepreneurs are riskless. As they borrow $D_R = 1 - \omega_R$, the sufficient condition for the rich not to have an incentive to default becomes

$$1 - \omega_R + \lambda \leq \delta p(\theta_R). \tag{12}$$

The greater ability by the rich to promise a return to lenders arise from two effects. First, there are two components to their lower leverage: they have more money of their own and they do not pay a default premium, since they can commit not to default. Second, they can fund themselves at a lower δ when profits are higher (since $p(m) < p(\theta_R)$), because highly leveraged firms exit.

The bank will refinance rich entrepreneurs when δ satisfies

$$\delta \geq \delta^{**} \equiv \begin{cases} \frac{1-\omega_R+\lambda}{p(m)} & \text{if } \delta \geq \delta^* \\ \frac{1-\omega_R+\lambda}{p(\theta_R)} & \text{if } \delta < \delta^* \end{cases}, \tag{13}$$

conditional on them receiving funding in the first place.

Date 3: *Funding of Initial Investment*

We first look at the case when all entrepreneurs are refinanced, i.e. $\delta \geq \delta^{**}$ and $\delta \geq \delta^*$. Since by assumption, there is no voluntary default, the condition for initial funding for entrepreneur j is

$$D_j \leq \delta p(m), \tag{14}$$

where $D_P = 1$ and $D_R = 1 - \omega_R$.

Now we shift attention to the case where some entrepreneurs are not refinanced. If an entrepreneur who will not be refinanced is able to raise the necessary amount $1 - \omega_j$ to start a firm, the face value of her loan is determined by competition to be $1 - \omega_j = qM + (1-q)D_j$, which implies

$$D_j^{NF} = \frac{1 - \omega_j - qM}{1 - q} \text{ for } j \in NF. \tag{15}$$

The banks will lend to entrepreneurs in set NF to start a firm only if

$$1 - \omega_j \leq qM + (1-q)\delta p(m). \tag{16}$$

The RHS represents the payoff to the bank if entrepreneur j would always default.

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

In conclusion, poor entrepreneurs can obtain ex ante finance if δ satisfies

$$\delta \geq \delta^{***} \equiv \begin{cases} \frac{1-qM}{(1-q)p(m)} & \text{if } \delta < \delta^* \text{ (no refinance)} \\ \frac{1}{p(m)} & \text{if } \delta \geq \delta^* \text{ (refinance)} \end{cases}. \tag{17}$$

In this basic setting where entrepreneurs always repay if they are refinanced, rich entrepreneurs will be able to raise the amount they need to start a firm, $1-\omega_R$, as long as $\delta \geq \delta^{**}$ and $1-\omega_R \leq q(1-\omega_R) + (1-q)\delta p^S$, which is satisfied if $\delta p^S \geq 1-\omega_R$, implying δ needs to satisfy

$$\delta \geq \delta^{****} \equiv \begin{cases} \frac{1-\omega_R}{p(m)} & \text{if } \delta^* \geq \delta, \text{ given that } \delta \geq \delta^{**} \\ \frac{1-\omega_R}{p(\theta_R)} & \text{if } \delta^* < \delta, \text{ given that } \delta \geq \delta^{**} \end{cases}. \tag{18}$$

Thus there are three possible financial market allocations, which are shown in Table 2. [22]

	A	F	NF
Narrow	θ_R	θ_R	$\varnothing$
Fragile	$\{\theta_R, \theta_P\}$	θ_R	θ_P
Broad	$\{\theta_R, \theta_P\}$	$\{\theta_R, \theta_P\}$	$\varnothing$

Table 2: Possible financial market allocations

Table 3 gives an overview of the range of values of δ for which the different financial allocations emerge. Three different financial market outcomes may arise, depending on the scope of ex ante and ex post access to finance. In a "narrow" financial allocation, the poor cannot raise initial funding nor refinance, while the rich can. 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 "broad" financial allocation all entrepreneurs are able to raise finance and to be refinanced if necessary.

Notice that entry financing can be obtained in general at lower values of δ than refinancing, except in a fragile allocation, when exit by the poor ensures higher profits for the rich and thus may allow refinancing at a lower δ than the initial funding.

[22] We do not describe the case when the rich are denied funding either ex ante or ex post (such as when $\delta < \delta^{****}$), as they are strictly dominated equilibria which will be eliminated by the endogenous choice of δ. The intuition is that there are no values of δ such that they would be funded while the rich are not.

	Rich	
	Initial funding (δ^{****})	Default after shock (δ^{**})
Narrow	$\delta \geq \frac{1-\omega_R}{p(\theta_R)}$ (Y)	$\delta \geq \frac{1-\omega_R+\lambda}{p(\theta_R)}$ (N)
Fragile	$\delta \geq \frac{1-\omega_R}{p(m)}$ (Y)	$\delta \geq \frac{1-\omega_R+\lambda}{p(\theta_R)}$ (N)
Broad	$\delta \geq \frac{1-\omega_R}{p(m)}$ (Y)	$\delta \geq \frac{1-\omega_R+\lambda}{p(m)}$ (N)

	Poor		
	Initial funding (δ^{***})	Default after shock (δ^{+})	Refinance (δ^{*})
Narrow	$\delta < \frac{D_P^{\text{Fragile}}}{p(m)}$ (N)	$\delta < \frac{1+\lambda}{p(m)}$ (Y)	$\delta < \frac{M+\lambda}{p(m)}$ (N)
Fragile	$\delta \geq \frac{D_P^{\text{Fragile}}}{p(m)}$ (Y)	$\delta < \frac{1+\lambda}{p(m)}$ (Y)	$\delta < \frac{M+\lambda}{p(m)}$ (N)
Broad	$\delta \geq \frac{1}{p(m)}$ (Y)	$\delta \geq \frac{1+\lambda}{p(m)}$ (N)	Always

Table 2: Financial market allocation conditions for which there is no voluntary default

Note also that for the rich in a Narrow or Broad financial allocation, entry implies refinancing, so $\delta^{**} < \delta^{****}$. Moreover, for the poor refinancing requires them to have no incentive to default, so $\delta^{+} < \delta^{*}$.

Summarizing,

Proposition 1 *A Narrow financial market financial allocation arises only if* $\delta^{**} \leq \delta < \min\{\delta^{*}, \delta^{***}\}$ *or*

$$\frac{1-\omega_R+\lambda}{p(\theta_R)} \leq \delta < \min\{\frac{M+\lambda}{p(m)}, \frac{D_P^{Fragile}}{p(m)}\}, \tag{19}$$

the Fragile financial allocation arises only if $\max\{\delta^{**}, \delta^{***}, \delta^{****}\} \leq \delta < \delta^{*}$

$$\max\{\frac{1-\omega_R+\lambda}{p(\theta_R)}, \frac{D_P^{Fragile}}{p(m)}\} \leq \delta < \frac{M+\lambda}{p(m)}, \tag{20}$$

and the Broad financial allocation arises only if $\delta^{+} \leq \delta < 1$

$$\frac{1+\lambda}{p(m)} \leq \delta < 1. \tag{21}$$

These parameter regions are not overlapping.

Intuitively, δ has to be higher to allow broader ex ante access and lower to reduce access to refinancing. Thus δ is highest in the Broad financial allocation, intermediate in the Fragile, and lowest in the Narrow.

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 Narrow and Fragile allocations are both attainable by an appropriate choice of δ.

3.5 Lobby Equilibrium

The lobbyists formulate their offer to maximize the net rent generated for their constituency, namely by seeking to ensure entry for all its members. Ensuring access to funding for the poor also guarantees access for richer entrepreneurs, who need less. Thus the lobbyist for the poor entrepreneurs supports a welfare-maximizing full entry, or $\delta \geq \delta^+ = \frac{1+\lambda}{p(m)}$, which ensures funding and refinancing for all entrepreneurs. The rich lobby needs to make a better offer, else broad access prevails.

The lobbyist which maximizes the rents for the rich prefers narrow over broad entry, and in case of a shock , prefers a fragile over a broad allocation of funding (i.e., no refinancing for the poor who are then forced to exit). To these goals, the rich lobby offers a political contribution such that the politicians are just indifferent to accept their proposed δ_L over the proposal of the other 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

$$\begin{aligned} & \beta E[W(\delta_L)] + (1-\beta)E[L^R(\delta_L)] = \beta E[W^{MAX}] \\ \Longrightarrow \quad & E[L^R(\delta_L)] \equiv \frac{\beta}{1-\beta} E[W^{MAX} - W(\delta_L)] = \frac{\beta}{1-\beta} E[\Delta W(\delta_L)], \end{aligned} \tag{22}$$

where $E[W^{MAX}] \equiv (1-m)(\omega_c + \frac{1}{2}(\frac{m}{1-m})^2) + m(p(m) - q\lambda - 1)$. In addition they must pay the contribution that the lobby of poor entrepreneurs is willing to pay for access, which at most can amount to their entire surplus from production.

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. Hence limiting access requires higher bribes.

First consider the expected pay off of the rich in a Narrow financial allocation

$$E[\Pi^R_{\text{Narrow}}] = \theta_R(p(\theta_R) - q\lambda - 1) - \theta_P(p(m) - q\lambda - 1) - E[L^R(\delta_{\text{Narrow}})], \tag{23}$$

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

$= \frac{\beta}{1-\beta}[-\frac{m^2-\theta_R^2}{2(1-m)} + \theta_P(a - q\lambda - 1)]$.

The first term are rents under narrow entry, the second term is the lobby compensation for the amount the poor are willing to offer, and the third term is the expected political contribution needed to compensate for the welfare loss from reduced entry.

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

$$\begin{aligned} E[\Pi^R_{\text{Fragile}}] \quad = \quad & (1-q)\theta_R(p(m) - 1) + q\theta_R(p(\theta_R) - \lambda - 1) \\ & -q[\theta_P(p(m) - \lambda - 1) + L^R(\delta_{\text{Fragile}})], \end{aligned} \tag{24}$$

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

$= \frac{\beta}{1-\beta}[-\frac{m^2-\theta_R^2}{2(1-m)} + \theta_P(a - \lambda - 1)]$ is the lobby contribution in the shock state.

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

$$E[\Pi^R_{\text{Broad}}] = \theta_R(p(m) - q\lambda - 1). \tag{25}$$

The rich lobbyist chooses its offer to induce the preferred δ which maximizes its expected rents. Hence we need to pairwise compare these three expressions. The key determinants 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. Note that $\frac{\beta}{1-\beta}$ is strictly increasing in β. Comparing the payoffs of the Broad and the Narrow financial allocation gives

$$\begin{aligned} & E[\Pi^R_{\text{Broad}}] \leq E[\Pi^R_{\text{Narrow}}] \qquad (26) \\ \implies & (p^{\text{Narrow}} - p^{\text{Broad}}) - E[\text{Poor}] - E[\text{Contribution Welfare Loss}] \geq 0 \\ \implies & \frac{\beta}{1-\beta} \leq \frac{\frac{\theta_R}{1-m} - (p(m) - 1 - q\lambda)}{-\frac{m+\theta_R}{2(1-m)} + a - q\lambda - 1} \equiv \beta^{BN}. \end{aligned}$$

This inequality compares the two polar allocations, where access to finance is either complete or most restrictive. Here $(p^{\text{Narrow}} - p^{\text{Broad}})$ is the difference in profit between the two equilibria[23], $E[\text{Poor}] = \theta_P(p(m) - q\lambda - 1)$ is the compensentation necessary to match the expected amount the poor are willing to offer to obtain full access to finance, and $E[\text{Contribution Welfare Loss}] = E[L^R(\delta_{\text{Narrow}})]$ is the expected amount to compensate for the welfare loss due to narrow entry. Notice that the numerator represents the profit difference minus the amount for the poor *per poor individual*. The denominator is the political contribution *per poor individual*. Note that the former is increasing in θ_R, the latter is decreasing in θ_R.

Comparing the rich lobby's payoff in the Fragile and Narrow equilibria yields

$$\begin{aligned} & E[\Pi^R_{\text{Fragile}}] \leq E[\Pi^R_{\text{Narrow}}] \qquad (27) \\ \implies & (1-q)(p^{\text{Narrow}} - p^{\text{Broad}}) - (1-q)(\text{Poor})^N - (1-q)(\text{Contribution Welfare Loss})^N \geq 0 \\ \implies & \frac{\beta}{1-\beta} \leq \frac{\frac{\theta_R}{1-m} - (p(m) - 1)}{-\frac{m+\theta_R}{2(1-m)} + a - 1} \equiv \beta^{FN}. \end{aligned}$$

Here $(p^{\text{Narrow}} - p^{\text{Broad}})$ is the profit difference in the Narrow and the Broad allocation, which the rich enjoy with probability $1 - q$.

$(\text{Poor})^N = \theta_P(p(m) - 1)$ is the amount the poor are willing to pay the politicians in the normal state.

$(\text{Contribution Welfare Loss})^N = \frac{\beta}{1-\beta}[\frac{m^2-\theta_R^2}{2(1-m)} + m(p(m) - 1) - \theta_R(p(\theta_R) - 1)]$

$= \frac{\beta}{1-\beta}[-\frac{m^2-\theta_R^2}{2(1-m)} + \theta_P(a-1)]$ is the amount the rich have to pay in the normal state to compensate for the welfare loss of limited entry. Note the interpretation of the numerator and denominator is

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

analogous to (26). Because pay offs in these two equilibria only differ in the normal state, the inequality is invariant to λ.

The following inequality compares the pay off to the rich across equilibria whose access to finance for the poor is limited only after a shock . Hence this inequality is invariant to q.

$$\begin{aligned} & E[\Pi_{\text{Broad}}] \leq E[\Pi^R_{\text{Fragile}}] \qquad (28) \\ \implies & q(p^{\text{Narrow}} - p^{\text{Broad}}) - q(\text{Poor})^S - q(\text{Contribution Welfare Loss})^S \geq 0 \\ \implies & \frac{\beta}{1-\beta} \leq \frac{\frac{\theta_R}{1-m} - (p(m) - 1 - \lambda)}{-\frac{m+\theta_R}{2(1-m)} + a - \lambda - 1} \equiv \beta^{BF}. \end{aligned}$$

The interpretation of terms is similar to the previous equation, while now the contribution offered by the poor lobby is $\theta_P(p(m) - \lambda - 1)$. Note that this inequality is invariant with respect to q.

These three inequalities define three parameter regions for β and θ_R, depicted in Figure 2.This leads to our main result.

Proposition 2 *When $\beta \geq \beta^{BF}$, the political equilibrium leads to a broad financial regime. When $\beta^{FN} < \beta < \beta^{BF}$, the political equilibrium is a fragile financial regime. When $\beta^{FN} \geq \beta$, the political equilibrium is a narrow financial regime.*

The proof is immediate from evaluating the net gain for the rich lobby to pursue their preferred financial allocation. From our analysis in this section, it is evident that $\beta^{FN} < \beta^{BN} < \beta^{BF}$ Moreover, note that for $\frac{\beta}{1-\beta}$ around β^{BN}, the rich strictly prefer the Fragile allocation. Therefore β^{FN} and β^{BF} are the two relevant thresholds which determine the lobbying outcome.

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]

4 Comparative Statics and Extensions

The previous section established that accountability is the critical factor in determining financial access and the degree of financial stability. A higher political accountability increases the lobbying contribution needed to limit entry or force exit. Beyond some threshold, it discourages lobbying altogether, resulting in an efficient financial market which is both stable and grants broad financial access, leading to maximum entry.

A direct empirical implication is that the least accountable countries will have very low investor protection, and thus less financial development. This result is derived and confirmed empirically

in Perotti and Volpin (2004). Our contribution is to extend the result to financial stability (or equivalently, to include both entry and exit). A reliable financial system, defined as a system which limits inefficient default after external shocks, will arise only when political accountability is sufficiently large to discourage lobbying for financial fragility in order to force exit.

We consider next the effect of the other major variables, namely wealth inequality, demand and volatility of shocks.

To consider the impact of inequality we assume, very 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 role, the Gini coefficient equals $m\theta_R\omega_R$ [24]. 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. Examining β^{FN} and β^{BF}, we find that

Lemma 4 *Ceteris paribus, a Narrow entry equilibrium requires that the rich be sufficiently numerous. The minimum size of the rich block to sustain a Narrow equilibrium is increasing in accountability.*

The intuition is that limiting entry to a small elite imposes high welfare losses. A similar result may be stated concerning the ability of the rich lobby to create fragility in a financial system which allows broad entry.

We consider now the other component of inequality, namely the wealth of the rich. A first effect of a larger ω_R is that the differential in leverage between rich and poor increases. From our earlier results, this implies that it is easier to exclude the poor from financial access via a lower degree of protection (e.g., it makes it easier to achieve a narrow equilibrium, as the higher investor protection required to ensure refinancing of rich entrepreneurs does not imply entry by poor entrepreneurs). A second effect, described in the previous lemma, is that a larger θ_R reduces the cost of blocking further entry as output by rich entrepreneurs is larger.[25] Therefore, we obtain

Proposition 3 *For a given level of accountability, the larger is wealth inequality, the easier it is for the rich to block access to finance for other groups, as long as the poor are more numerous than the rich.*

The proof is by inspection of the conditions β^{FN} and β^{BF}.

This coincides with the findings in Perotti and Volpin (2004). They show that in a cross-section

[24] 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 $\omega_R > \omega_C$.

[25] In Perotti-Volpin (2004), the endogenous size of the elite increases with accountability.

of 38 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.

The comparative statics for the impact of the level of demand and volatility of shocks on the size of the parameter space of the three equilibria are summarized in Table 3.

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

Table 3: Comparative statics for volatility and demand

In the first place, 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. Thus

Proposition 4 *Higher demand leads to a downward shift of β^{BF} and β^{NF}, reducing the area of the fragile equilibrium.*

Formally, β^{BF} and β^{NF} both decrease in a, but β^{BF} decreases faster in a than β^{NF}.

The volatility of external shocks in our setting can be decomposed in the probability of a shock and its size. An intuitive result, which however arises for surprising reasons, is that larger shocks are associated with greater financial fragility. The reason is not that they 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

Proposition 5 *Larger shocks induce stronger lobbying contributions to limit entry and, when entry cannot be blocked, to force exit via greater financial fragility.*

Finally, we 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 . Rather, it arises from the increased willingness of the rich lobby to expend resources to block entry to compensate for the lower expected rents.

4.1 Domestic Funding and Welfare Costs of Default

In this section we relax the assumption that default losses do not affect welfare because they are solely born by foreign capital.

We extend the basic model to the case where endowments of domestic investors are used to fund projects. We simplify by assuming that default costs are born fully by some domestic investors in which case the entire endowment of these affected agents is used to partially compensate investors) or a equal distribution of default losses, which have the same effect on aggregate welfare. Formally, concentrated losses have a smoother impact on demand for the final good, while an equal distribution of losses affects demand only when losses are large enough, and thus creates a discontinuity. Since the results are qualitatively similar, we focus here on the technically simpler concentrated case.

The main effect is that it becomes more expensive to lobby for the Fragile equilibrium, hence the Broad and Narrow equilibria become more attractive relative to the Fragile equilibrium. The introduction of welfare losses caused by demand drops does not change the relative attractiveness of the Broad versus the Narrow equilibrium, because demand is not affected in both equilibria. Hence the curves shift as depicted in Figure 3.

[Insert Figure 3 here]

Formally, assume that idle domestic agents (consumers and inactive entrepreneurs) can only deposit their endowment in the bank[26]. In case of a shock we assume a randomly chosen fraction

$$\rho \leq \rho^{MAX} \equiv \min\{\frac{\int_{j\in NF}(1-\omega_j)\ dj}{(1-m)\omega_c + \int_{j\notin A}\omega_j\ dj}, 1\},$$

of these domestic agents lose their total endowment and have zero income. The fraction in the equation represents the ratio of the size of the initial loans to the entrepreneurs who will not be financed over total endowments of idle agents. In this case, total demand for apple pies shrinks.

Total default costs born by the affected consumers equal $\rho^C \equiv \frac{(1-m)}{(1-m)+\int_{j\notin A}\ dj}\rho$. Therefore after a shock, demand drops to

$$(1 - m - \frac{\rho^C \int_{j\in NF}(1-\omega_j)\ dj}{\omega_c})(a - p^{\Omega}), \tag{29}$$

where $c \equiv \frac{\rho^C \int_{j\in NF}(1-\omega_j)\ dj}{\omega_c}$ represents the mass of consumers who bear the default costs and hence have zero demand for apple pies. So in equilibrium, the price in the shock state is

$$p^D = a - \frac{n^S}{1-m-c}. \tag{30}$$

[26] Note this implies that these consumers are not able to demand a default premium to compensate them for utility loss of the shock state in the normal state. Hence the equilibria curves in Figure 2 will not change. The only effect is that consumers will demand a higher default premium than foreigners.

Comparing $E[\Pi^R_{\text{Broad}}] \leq E[\Pi^R_{\text{Fragile}}]$ now yields

$$\frac{\beta}{1-\beta} \leq \frac{\theta_R(\frac{m}{1-m} - \frac{\theta_R}{1-m-c}) - \theta_P(p(m) - 1 - \lambda)}{c\omega_c + \frac{\theta_R^2}{1-m-c} - \frac{m^2}{1-m} + \theta_P(a - \lambda - 1)} < \beta^{BF}. \tag{31}$$

Notice this inequality coincides with its counterpart in the basic model when $c = 0$.

There are two effects at work. Demand drops, so the profit difference between the two equilibria is reduced. This reduces the incentive to lobby for fragility. Furthermore, the political contribution required to restrict refinance increases because welfare is also reduced by the default costs.[27]

Hence, the larger is the domestically funded share of investment costs, the less likely is a Fragile financial allocation relative to the Broad allocation.

$E[\Pi^R_{\text{Fragile}}] \leq E[\Pi^R_{\text{Narrow}}]$ also changes. In the shock state, the difference between the Fragile and Narrow equilibria is

$$\frac{\theta_R}{1-m} - \frac{\theta_R}{1-m-c} - \frac{\beta}{1-\beta}(c\omega_c + \frac{\theta_R}{1-m-c} - \frac{\theta_R}{1-m}) < 0, \tag{32}$$

which represents the differences in profit and the political contribution. Thus the Fragile equilibrium becomes less attractive. In the normal state, this difference is as in the basic model, so we get

$$\frac{\beta}{1-\beta} \leq \frac{q\theta_R(\frac{m}{1-m} - \frac{\theta_R}{1-m-c}) + (1-q)[\theta_R\frac{m-\theta_R}{1-m} - \theta_P(p(m) - 1 - \lambda)]}{q(c\omega_c + \frac{\theta_R}{1-m-c} - \frac{\theta_R}{1-m}) + (1-q)(-\frac{m^2-\theta_R^2}{2(1-m)} + \theta_P(a-1))} > \beta^{FN}. \tag{33}$$

Note that this inequality collapses to its counterpart in the basic model for $c = 0$.Notice that defaults occur only in the fragile financial allocation. Hence there is now a welfare loss through demand in a fragile equilibrium, while the other equilibria are unaffected.

Proposition 6 *Welfare losses associated with default reduces the parameter space for which a fragile financial equilibrium emerges.*

Intuitively, welfare suffers from default in a fragile equilibrium, so it is more expensive to lobby for fragility.

The proof is that profits after a shock are now lower, as demand drops by $c = \frac{\rho^C\theta_P}{\omega_c}$, the mass of consumers who bear the default cost. Thus the introduction of domestic funding of losses affects the relative payoff for the rich lobby between stable and fragile financial allocations.

5 Empirical Evidence

This section briefly explores the empirical evidence of the theory put forth in this paper. It presents the basic results of the empirical work in Feijen (2005). If financial access is used as an opportunistic

[27] This can be seen in the denominator of (31). The first term reflects the loss in consumer welfare. The second and third terms represent the contribution needed to lobby for an equilibrium with default.

barrier to refinance during crises, our theory implies relatively larger exit in industries which are heavily dependent on external finance in countries with a high level of corruption (i.e. low β). More generally, as a consequence of exit and curtailed access to finance for young firms, we expect that price-cost margins during banking crises are relatively higher in industries which are heavily dependent on external finance in countries with a high level of corruption.

Feijen (2005) employs a methodology similar to Rajan and Zingales (1998) on three digit manufacturing industry-level data provided by the United Nations Statistics Division. The analyses represent the effects of the first systemic banking crisis in the period of 1988-1997 of about 20 industries in about 15 countries (both developed and developing). Institutional indices used are corruption, and law and order from the International Country Risk Guide. All indices are on a scale of 0-6. Both corruption and law and order indices are increasing. The external dependence measure for young firms on the industry level is drawn from Rajan and Zingales (1998). The timing of systemic banking crises is from Caprio and Klingebiel (2003). The basic OLS regression model[28] is

$$\begin{aligned} \Delta Y_{i,c} &= Constant + \Gamma_1 \times I_c + \Gamma_2 \times I_i + \gamma_3 \times START\ Y_{i,c} \\ &\quad + \gamma_3 \times ED_i \times INSTITUTION_c + \gamma_4 \times ED_i \times FD_c \\ &\quad + \varepsilon_{i,c}, \end{aligned} \tag{34}$$

where $\Delta Y_{i,c}$ is the relative change during a systemic banking crises in industry i of country c of the dependent variable of interest (the number of establishments (EST) or the price-cost margin in (PCM) sector i of country c), I_c and I_i are country- and industry-specific effects, $START.Y_{i,c}$ is the average value of the dependent variable before the crisis and $ED_i \times INSTITUTION_c$ is an interaction term of external dependence and the average value of a specific index of ICRG before the crisis. $ED_i \times FD_c$ is an interaction term with the average financial development of a country before the crisis, measured by the domestic private credit via banks to GDP, taken from the World Development Indicators. Note that the country-fixed effects absorb the effects of the date and depth of the crisis.

The coefficient of interest is γ_3. Since $INSTITUTION_c$ is increasing in the quality of the institutions, we would expect significant coefficients with signs $\gamma_3 > 0$ and $\gamma_3 < 0$ if the relative changes in the price-cost margin and in the number of producers are the dependent variables, respectively. The basic regressions are reproduced in Tables I (for margins) and II (on number of producers).

[Insert Table I and Table II here]

[28] This methodology is similar to Laeven et al (2002).

In Table I, the interaction term with corruption is negative and significant at the 1% level, implying that margins are relatively higher in dependent industries of corrupt countries. Also the interaction with the average institutional index is significant. Note $START.Y_{i,c}$ is also highly significant, suggesting that the margin drops deeper when margins were already high.

Similarly, in Table II, only the interaction term with corruption is positive and significant at the 5% level, implying that there is relatively more exit in dependent industries of corrupt countries. Interestingly, interactions with other institutional variables -although correlated with corruption - in both Table I and II do not enter significantly. This provides more support for corruption as the most important institutional channel,which is consistent with our theory of lobbying.

Next, we document that the effect in Table I is non-linear and more important for highly corrupt countries. Table III presents the results.

[Insert Table III here]

Model (1) and (2) run the basic regression for the most and least corrupt countries, respectively. The interaction term is only significant for the most corrupt countries. Model (3) adds an interaction term with a squared corruption index. Both interaction terms are significant and suggest the effect flattens for a low level of the corruption index. Models (4)-(6) show the results of quantile regressions for the 10, 50, and, 90 percent quantiles of the dependent variable, respectively.[29] Note that indeed the coefficient of the interaction term almost doubles for the countries with the highest PCMs.

Finally, we test an alternative measure of financial constraints than external dependence using industry-level opaqueness measures computed from US data. This measure is based on the methodology of Durnev, Morck, and Yeung (2004), which exploits the notion that a higher ratio of industry-level stock price comovement to idiosyncratic volatility of individual shares indicates a lower capacity by investors to perceive fiorm specific information. Durnev et al. (2004) argue that more opaque industries are more vulnerable to agency costs. Lower values of the information index imply less informative stock prices. Therefore, we expect the interaction term to be positive for the change in PCM, but negative for the change in EST. Table IV indeed provide support for this hypothesis.

[Insert Table IV here]

The coefficients imply that less informative industries in more corrupt countries experience relatively higher profit margins and higher exit rates during crises.

[29] Ordinary least squares regression generates the conditional mean of the dependent variable. Quantile regression estimates conditional quantile functions for the distribution of the dependent variable. The 0.5 quantile is a special case and gives an estimation for the conditional median.

6 Conclusions

We have offered a political economy theory on financial fragility, in which vulnerability to shocks may be a deliberate choice when policy is captured by special interests under an unequal wealth distribution.

A politically induced vulnerability arises because lobbying by powerful groups, particularly strong in a context of poor accountability and large inequality, will be directed to limit access to finance by competing producers. Even when the broadening of financial access cannot be blocked by the powerful, they may still lobby to induce a suboptimal level of investor protection to reduce access after a shock, and forcing exit. Even in a market based financial allocation, it is possible to force exit by poorer entrepreneurs after a crisis, since their firms are more leveraged. and access to finance is therefore more vulnerable in a climate of poor investor protection. This leads to inefficient, avoidable default.

In related work (Feijen and Perotti, 2005), we study a distinct form of politically induced financial vulnerability. This arises when government guarantees to investors create an incentive for entrepreneurs to default strategically.[30] Since strategic default may be feasible only in equilibria with blocked or fragile entry, it is more likely to emerge in less politically accountable systems.[31]

We show that economies which are subject to more volatile shocks (such as commodity economies) are more likely to end up in a fragile equilibrium, because volatility reduces rents and thus induces stronger lobbying for fragility. Hence volatile commodity prices may induce financial crises not just directly, but also via an endogenous political vulnerability.

The paper has implications for economic policy. Financial development is at serious risk of capture in unequal countries with unaccountable political regimes. In such contexts, policies aimed at financial broadening are more justified than market deepening measures. In addition, 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 (at least) equally talented individuals.

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

[31] Although strategic default leads to a redistribution and hence does not affect welfare directly, larger inequality could have indirect adverse effects.

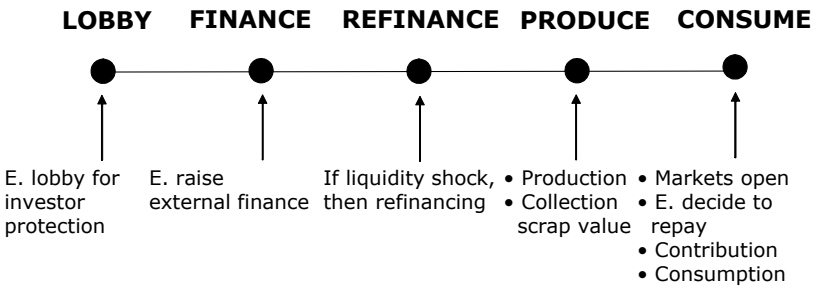

Figure 1: Timeline

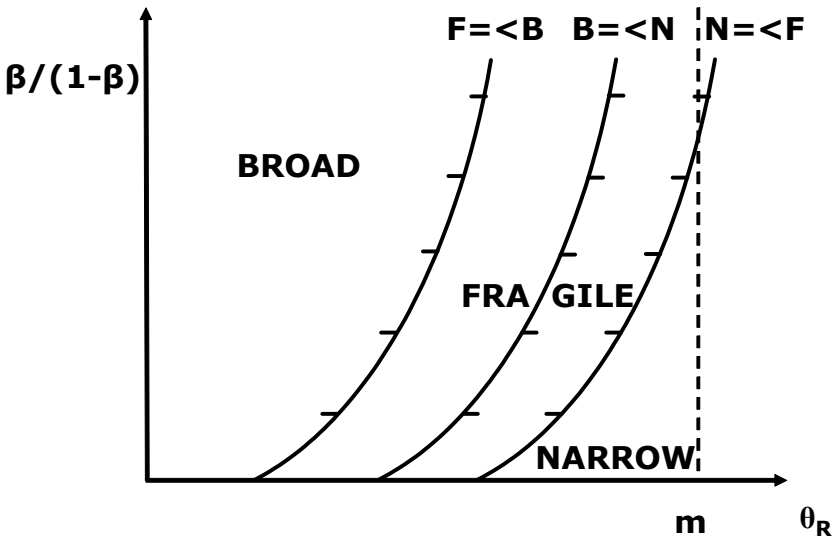

Figure 2: Equilibrium selection.

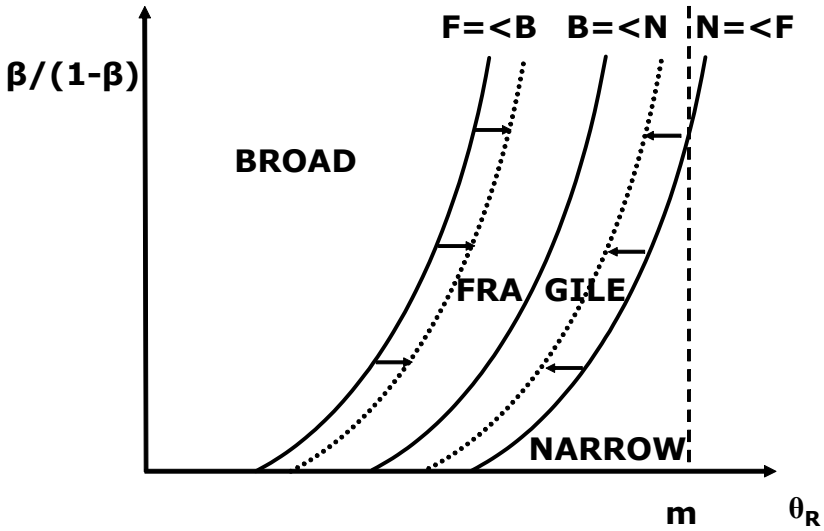

Figure 3: Equilibrium selection in case of domestic funding of banks. The dashed line shifts to the middle for larger ρ.

Table I: Change in Industry-level Price-Cost Margins in a Systemic Banking Crisis

This table reports OLS regressions. The dependent variable is the relative change in industry-level price cost margins (PCM) in a banking crisis. Independent variables are the average PCM before the crisis, and interaction terms of external dependence of young firms (from Rajan and Zingales, 1998) with pre-crisis country-level measures of 1) private credit via banks to GDP (WDI), 2) corruption (higher value means higher corruption, ICRG), 3) law and order (higher value means better law and order, ICRG), and 4) an simple average of these indices (where a higher value means better institutions). *, **, *** indicate significance at 10%, 5%, and 1% level, respectively. Heteroskedasticity robust standard errors are reported in parentheses.

	Relative change of industry-level Price Cost Margins in crisis		
	(1)	(2)	(3)
PCM before crisis	-2.453	-2.479	-2.466
	(0.433)***	(0.434)***	(0.433)***
Ext. dep.*Bank credit	0.001	0.001	0.001
	(0.000)*	(0.000)	(0.000)*
Ext. dep.*Corruption	0.052		
	(0.017)***		
Ext. dep.*Law and Order		-0.022	
		(0.021)	
Ext. dep.*Institutional index			-0.041
			(0.019)**
Country-specific effects?	Y	Y	Y
Industry-specific effects?	Y	Y	Y
Observations	316	316	316
R-squared	0.42	0.41	0.41

Table II: Change in Industry-level Number of Establishments in a Systemic Banking Crisis

This table reports OLS regressions. The dependent variable is the relative change in the industry-level number of establishments (EST) in a banking crisis. Independent variables are the average number of establishments before the crisis, and interaction terms of external dependence of young .firms (from Rajan and Zingales, 1998) with country-level measures of 1) private credit via banks to GDP (WDI), 2) corruption (higher value means higher corruption, ICRG), 3) law and order (higher value means better law and order, ICRG), and 4) an simple average of these indices (where a higher value means better institutions). *, **. *** indicate significance at 10%, 5%, and 1% level, respectively. Heteroskedasticity robuststandard errors are reported in parentheses.

	Relative change of industry-level number of establishments in crisis		
	(1)	(2)	(3)
EST before crisis	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Ext. dep.* Bank credit	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Ext. dep.*Corruption	-0.037		
	(0.017)**		
Ext. dep.*Law and Order		0.005	
		(0.019)	
Ext. dep.*Institutional index			0.022
			(0.018)
Country-specific effects?	Y	Y	Y
Industry-specific effects?	Y	Y	Y
Observations	260	260	260
R-squared	0.51	0.50	0.51

Table III: Non-linear Effect of Corruption

This table reports OLS and quantile regressions. The dependent variable is the percentage change in industry-level price-cost margins (PCM) in a banking crisis . Independent variables are the average PCM before the crisis, and interaction terms of external dependence of young firms with country-level measures of 1) corruption (higher value means higher corruption, ICRG) and 2) corruption squared. In Panel A the one percent tails of the dependent variable have been dropped to reduce the effect of outliers. Model (1) and (2) use above and below median corrupt countries, respectively. Panel B include the results of the 10, 50, and 90 percent quantile regressions. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively. Heteroskedasticity robust standard errors are reported in parentheses.

Panel A:

	Relative change of industry-level number of price-cost margins in crisis		
	OLS		
	(1) High corruption	(2) Low corruption	(3) Full sample
PCM before crisis	-1.798	-1.777	-2.141
	(0.381)***	(0.430)***	(0.355)***
Ext. dep.*Corruption	-0.119	0.050	0.248
	(0.057)**	(0.036)	(0.110)**
Ext. dep.*Corruption^2			0.027
			(0.013)**
Country-specific effects?	Y	Y	Y
Industry-specific effects?	Y	Y	Y
Observations	155	154	309
(Pseudo) R-squared	0.59	0.61	0.53

Panel B:

	Relative change of industry-level number of price-cost margins in crisis		
	Quantile regressions		
	(1) Q(0.1)	(2) Q(0.5)	(3) Q(0.9)
PCM before crisis	-0.473	-1.552	-3.169
	(0.000)***	(0.000)***	(0.092)***
Ext. dep.*Corruption	0.031	0.035	0.063
	(0.000)***	(0.000)***	(0.004)***
Country-specific effects?	Y	Y	Y
Industry-specific effects?	Y	Y	Y
Observations	316	316	316
(Pseudo) R-squared	0.42	0.33	0.46

Table IV: Industry Opaqueness rather than External Dependence

This table reports OLS regressions. The dependent variable is the industry-level change in price-cost margins (PCM) or number of establishments (EST) during a banking crisis. Independent variables are the average price cost margin (number of establishments) before the crisis and interaction terms of industry opaqueness with corruption, as well as external dependence of young .firms with bank credit. The industry opaqueness measure is taken from Huang (2005), who uses idiosyncratic risk in stock prices. One percent tails of the basic sample of the change in establishments have been dropped from the analysis to reduce the effect of outliers. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively. Heteroskedasticity robust standard errors are reported in parentheses.

	Relative change of industry-level Price Cost Margins in crisis		Relative change of industry-level number of establishments in crisis	
	(1)	(2)	(3)	(4)
PCM before crisis	-3.503	-2.640		
	(1.178)***	(0.442)***		
Establishments before crisis			-0.000	-0.000
			(0.000)	(0.000)
Ext. dep.*Domestic credit		0.001		-0.000
		(0.000)*		(0.000)
Opaqueness*Corruption	0.047	0.056	-0.016	-0.024
	(0.017)***	(0.016)***	(0.014)	(0.014)*
Country-specific effects?	Y	Y	Y	Y
Industry-specific effects?	Y	Y	Y	Y
Observations	328	316	269	257
R-squared	0.41	0.43	0.44	0.54

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