

# Political Allocation of Finance

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## Abstract

Politicians influence the allocation of finance either directly via state banks, or indirectly via private banks using banking regulation or creditor rights. With state ownership of banks, entrepreneurs may form coalitions to bribe politicians to obtain scarce loans. With private ownership of banks, interest groups may lobby to influence creditor rights to limit access to less established firms. Bribing implies a legal risk, while lobbying is legal, which implies that political and legal institutions have differential effects.

When public accountability and judicial independence are low, politicians prefer state ownership of banks. This is because direct control grants more bargaining power to politicians to extract rents from competing coalitions relative to lobbying of established firms. Beyond a certain threshold, it becomes politically optimal to privatize banks as bribing penalties become too high, and to shift to lobbying on regulation. Access to finance and entry increase with public accountability and private ownership of banks. We also consider bribing to allow non-repayment of state bank loans, and discuss the intermediate case of private banks lending only to their owners.

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# 1 Introduction

Interest groups lobby politicians to advance their own special interests (Olsen 1965; Grossman and Helpman 1994). Firms may seek preferential access to finance to keep potential entrants at bay (Rajan and Zingales 2003; Kroszner and Strahan 1999). Political institutions which entrench the power of the elite tend to limit entry and competition (Engerman and Sokoloff 2002; Acemoglu, Johnson and Mitton 2007).

Politicians may use direct control over financial intermediaries to channel finance directly, or may indirectly influence the allocation of capital via banking regulation and investor protection rules. Allowing for direct control, state ownership of banks appears to lead to less efficient financial allocation (La Porta, Lopez-de-Silanes and Shleifer 2002), with lending favouring politically connected firms (Sapienza 2004; Khwaja and Mian 2005; Claessens, Feijen and Laeven 2007).

The ability of politicians to favour special interests is constrained by their public accountability, which reflects the ability of citizens to question and challenge government policies (Besley, Burgess and Prat 2006), as well as by judicial independence (LLS 2006). Greater public accountability reduces the willingness of politicians to narrow financial access and limit competition in exchange for political contributions, because the associated reduction in social welfare has a higher political cost (e.g. risk of not being reelected or to be ejected by riots). Indeed, the evidence points out that a stable democracy stimulates financial development (Bordo and Rousseau 2006) and that a free and widely accessible media improve investor protection (Perotti and Volpin 2007). Higher judicial independence, measured by the tenure and power of judges, is positively correlated with economic freedom and less state ownership of banks (La Porta, Lopez-de-Silanes, Pop-Eleches and Shleifer 2004).<sup>1</sup> Common law countries on average have better investor protection and more judicial independence (La

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<sup>1</sup>While judicial independence may restrain the executive from breaking the law, public accountability discourages the choice of distortionary regulations which harm the population at large.

Porta, Lopez-de-Silanes, Shleifer and Vishny, 1998; LLS, 2007). A better rule of law, less government repudiation of contracts and common law are associated with lower state ownership of banks (LLS, 2002).

Politicians affect capital allocation by choosing for state bank ownership, bank regulation and the degree of protection of creditor rights. We study how this choice shapes influence activities by special interests. Politicians trade off bribes and contributions against their political cost, measured by the loss in social welfare due to market capture. The higher is public accountability, the closer are politicians' preferences aligned with social welfare, which increases with entry and competition.

Politicians may either be bribed to allocate finance directly through state banks, or lobbied to shape bank regulation and investor protection. We find that politicians can extract greater bribes under direct control, as it induces more competition among lobbying groups and thus allows the political capture of more surplus.

However, bribing is illegal. As accountability and judicial independence become greater, the political and legal cost of bribes increase. The increasing risk of legal sanctions and their political consequences finally induces politicians to privatize banks. Once banks are private, the allocation is influenced by legal lobbying on regulation, so there is no legal deterrance to accepting contributions.

Under private ownership of banks, captured regulation favours entrepreneurs who need only little external funding. An interesting result is that under lobbying the rich entrepreneur face less competition from lobbies of less established firms. The reason is that if the poor lobby succeeds to obtain strong investor protection, then the rich have also access without lobbying for it, but not vice-versa. Under direct allocation of finance, the state bank funds the whole amount. As a result, anyone can form a lobby, so politicians have more bargaining power.

Regulating rather than directing the allocation of finance reduces the ability of the politician to extract rents as lobbying is easier for more established firms, but shields the politician from legal action. Hence politicians who are less constrained by public opinion and the judiciary choose state ownership of

banks.<sup>2</sup>

## 2 Related literature

The paper offers clear implications for state versus private ownership of banks in terms of legal and political institutions. State banks allow for greater extraction of rents by the politician and result in more constrained access to finance than private banks.<sup>3</sup>

The political cost of choosing state ownership is lower in countries with lower public accountability and a less independent judiciary. The role of legal institutions is particularly important as the decision to privatize the allocation of finance depends on the cost of legal sanctions for bribing. La Porta Lopez-de-Silanes and Shleifer (2002) show that government ownership of banks is lower in countries with a better rule of law and less government repudiation of contracts, and lower under common law.

There is suggestive evidence that politicians have more discretion in allocating finance in less accountable systems. Politically connected businesses represent a larger share of market capitalisation and a connection adds more to firm value in countries where weak limits on the executive and high discretion of state officials allows for high degrees of corruption (Faccio 2006). A large fraction of the market value of these businesses appears to derive from its political connections (Fisman 2001), and their access to finance (Khwaja and Mian 2005; Claessens, Feijen and Laeven 2006).

Firms with political connections clearly enjoy more favourable financial access with state banks. They receive larger loans, and while they pay on average similar interest rates than comparable unconnected firms, they are less likely to repay (Faccio, 2006; Khwaja and Mian 2005). In Pakistan, connected loans are larger and carry average interest rates, although they have 50 percent higher de-

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<sup>2</sup>To the extent that greater accountability supports capital accumulation, our analysis has similar empirical implications as in Harstad and Svensson (2006). In their analysis of bribing versus lobbying, they show that lobbying is preferred once enough capital has been invested.

<sup>3</sup>The results apply more generally to other financial forms to allocate funding across firms.

fault percentage. Moreover, only state-owned banks grant politically connected firms preferential treatment (Khwaja and Mian 2005). State ownership of banks is more likely in countries with weak political systems (LLS 2002, Bortolotti, Fantini and Siniscalco 2003).

Weaker investor protection and restrictive banking regulations are associated with less financial development (LLSV 1997, 1998; Barth, Caprio and Levine 2004). There is evidence that this undermines less established firms and potential entrants (Rajan and Zingales, 2003), leading to less competition (Beck, Demirgüç-Kunt, Laeven and Levine 2007; Perotti and Volpin 2007) and more instability (Barth, Caprio and Levine 2004). Even across the United States, historical financial regulation limiting entry has been associated with weaker political and suffrage rights (Benmelech and Moskowitz 2007) and concentrated land ownership (Rajan and Ramcharan, 2007). Equally, greater corporate stability, a measure correlated with more entrenched established business, appears to be associated with less financial development and slower growth (Morck, Wolfenzon and Yeung 2005).

Barriers to entry do not need to be financial access (although funding is fungible to overcome generic barriers). Politicians may limit entry directly by regulation and higher entry costs. This is consistent with the evidence that more corrupt countries have higher entry costs (Djankov et al. 2002) and less entry (Klapper, Laeven, and Rajan, 2004; Perotti and Volpin, 2007).

### **3 Model set-up**

Consider a closed economy with a population normalised to one. Its citizens spend their disposable income  $\omega$  to consume numeraire and final goods. Any citizen can start a firm that produces a single unit of final good by investing  $I$ , thus becoming entrepreneur. Every citizen  $i$  has a unique level of wealth  $w_i$ , which is continuously distributed along interval  $[0, I]$ .

As all citizens have wealth smaller than  $I$ , external finance is crucial to start a firm. For simplicity debt is the only source of external finance. Therefore,

the maximum number and size of bank loans determine the number of entrepreneurs. We denote the share of entrepreneurs (citizens that can raise  $I$ ) by  $n$ , the remaining  $1 - n$  citizens only consume.

To limit competition and sustain the price of the final good, entry  $n$  is reduced by restraining the availability of external finance. This stealthy way to reduce entry  $n$  is likely to be employed by entrepreneurs and politicians.

In our model, a single politician can choose between two different financing mechanisms that are characterised by a different level of political control over the allocation of finance: state or private ownership of banks. Under state ownership of banks the politician directly controls lending and citizens bribe him to get access to external finance. Under private ownership of banks, loan decisions are made by profit-maximising banks given the regulatory environment. The politician thus influence the allocation of finance indirectly by making rules and citizens lobby him for a favourable set of such rules.

Formally, under state ownership of banks  $S$  the politician can handpick a group of citizens to fully fund, i.e. grant loans of size  $I$ . Under private ownership of banks  $P$  the politician sets the level of investor protection  $\delta \in [0, 1]$  which parametrises the ability of firms to credibly commit to repay a loan. By setting investor protection at  $\delta$ , loan size is limited at  $\delta I$ . As a result only citizens with wealth  $w_e \geq (1 - \delta)I$  can become entrepreneur. When  $\delta = 0$  entry is zero and when  $\delta = 1$ , entry is one. Because every value of  $\delta$  translates into a unique level of entry  $n$  the politician effectively sets entry when choosing  $\delta$ .

Under both mechanisms groups of citizens (or coalitions) to bribe or lobby the politician, each represented by their own representative. These special interest groups arise because they can allow citizens to overcome collective action problems.

In the remainder of this section we specify the players and their preferences, group formation and offers, bribing penalties, and finally the timeline.

### 3.1 Players and their preferences

The model contains citizens, being either entrepreneur or consumer, representatives and a single politician. We denote initial investment by  $I$ , disposable income for consumption by  $\omega$ , entry by  $n$ , the price of the final good by  $p(n)$ , social welfare by  $s(n)$  and political contributions through bribing or lobbying by  $r(n)$ .

Every entrepreneur  $e$  competes on the final goods market and makes profits of

$$\pi_e(n) = p(n) - I - \frac{r(n)}{n} \geq 0 \quad (1)$$

where  $\frac{r(n)}{n}$  are the political contributions paid per firm.<sup>4</sup> We will show that prices  $p(n)$ , contributions  $r(n)$  and profits  $\pi_e(n)$  are decreasing in  $n$ . Firm profits are used for further consumption by entrepreneurs.

An average citizen  $i$  receives utility from consumption

$$E[U_i] = k_i + ac_i - \frac{1}{2}c_i^2 \quad (2)$$

where  $k_i$  and  $c_i$  are the consumption of respectively the numeraire and final good while  $a$  is the strength of demand.<sup>5</sup> The average citizen's income is  $\omega + n\pi_e(n)$  such that the amount to be spent on the numeraire good is  $k_i = \omega + n\pi_e(n) - c_i p(n)$ , which is also its utility.

Every representative  $j$  forms a unique group (or set) of citizens  $Q_j$  and is spokesman for that group. Representatives maximise the expected sum of profits of their group's members<sup>6</sup>

$$\Pi_{Q_j} = \begin{cases} |Q_j|\pi_e(n_j) & \text{if the offer by group } j \text{ is accepted} \\ 0 & \text{otherwise} \end{cases} \quad (3)$$

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<sup>4</sup>We demonstrate that in equilibrium every entrepreneur will be part of the same lobby and thus pays part of the political contributions.

<sup>5</sup>Disposable income is high enough to pay for consumption expenditure, i.e.  $\omega \geq \frac{1}{4}a^2$ .

<sup>6</sup>Our model allows for competing interest groups whereas Perotti and Volpin (2007) have a single lobbyist representing all entrepreneurs.

by offering contributions  $r(n_j)$  in return for entry  $n_j$  under both  $S$  and  $P$ . The modulus of  $Q_j$ , or  $|Q_j|$ , denotes the number of elements (citizens) in  $Q_j$ .

We assume that representative  $j$  can commit to paying  $r(n_j)$  after the politician has set entry at  $n_j$ . Moreover we abstract from coordination problems within coalitions by assuming that each member pays an equal share of offered contributions.

Social welfare is utilitarian and is the utility from consumption from all citizens, including the politician

$$s(n) = U_i + r(n) \quad (4)$$

Define  $m$  as the entry level for which  $\pi_e(m) = 0$ , such that profits from (1) are zero. We will show that social welfare is increasing in  $n \in [0, m]$  and maximised when  $n = m$ .

The politician's utility is defined as

$$U_p(n) = \beta s(n) + (1 - \beta) r(n) - K_S \quad (5)$$

where  $\beta \in [0, 1]$  denotes the level of public accountability and parameter  $K_S$  represents the bribing penalties under  $S$ , which we explain in more detail later. Parameter  $\beta$  determines how much the politician cares about social welfare and political contributions.

Finally, the politician's utility from opportunism is

$$O_p = U_p - \beta s(m) \quad (6)$$

which measures how much utility the politician derives from being bribed or lobbied to serve special interests instead of implementing the social optimum.

### 3.2 Group formation and offers

Under mechanisms  $S$  and  $P$ , representatives  $j \in \{1, 2, \dots, J\}$  enter sequentially and form  $J$  different groups (or coalitions) containing a subset  $Q_j$  of potential

entrepreneurs. First representative  $j = 1$  requests a citizen to join his group after which this citizen accepts or rejects. Then this representative sequentially asks further citizens to join as long as  $\Pi_{Q_j \cup \{i\}} > \Pi_{Q_j}$  for any citizen  $i \notin Q_j$ . Sequentially, every representative forms a group in this way. New representatives form groups as long as this group has positive expected profits, i.e.  $\Pi_{Q_j} > 0$ . This results in an equilibrium coalition structure  $Q = (Q_1, Q_2, \dots, Q_J)$ .

Every group  $j$  offers political contributions  $r_j(n_j) \geq 0$  in exchange for entry  $n_j$  leading to the contingent entry structure  $N = (n_1, n_2, \dots, n_J)$  and contribution structure  $R = (r_1, r_2, \dots, r_J)$ .

The offer of group  $j$  is chosen by the politician if it is individually rational (is better than implementing social welfare)

$$U_p(n_j) \geq U_p(m) \Leftrightarrow \beta s(n_j) + (1 - \beta) r_j(n_j) \geq \beta s(m) \quad (7)$$

and incentive compatible (better than the offer of any other group  $k \neq j$ )<sup>7</sup>

$$U_p(n_j) > U_p(n_k) \Leftrightarrow \beta s(n_j) + (1 - \beta) r_j(n_j) > \beta s(n_k) + (1 - \beta) r_k(n_k) \quad (8)$$

An equilibrium group formation and accompanying political contributions  $(Q, R)$  must also be individually rational

$$\Pi_{Q_j} \geq 0 \quad (9)$$

and incentive compatible

$$n_j, r_j \text{ s.t. } \max_{n_j, r_j} \Pi_{Q_j} | n_k, r_k \forall k \neq j \quad (10)$$

Given  $Q$ , if (7), (8), (9) and (10) are satisfied we can deduce an equilibrium level of entry and political contributions of  $(n_S, r_S)$  or  $(n_P, r_P)$  for  $S$  and  $P$  respectively.

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<sup>7</sup>For simplicity, we assume that the politician prefers the offers with the largest political contributions in case two offers result in equal utility. If two offers are exactly equal the politician randomly picks one.

### 3.3 Bribing penalties

The politician at least receives the equivalent of  $U_p(m)$  to satisfy equation (7). From (9) it follows that citizens are maximally willing to spend  $n[p(n) - I]$  on political contributions  $r(n)$ . Therefore, the politician and representatives bargain over

$$\rho(n) = n[p(n) - I] - \frac{\beta}{1 - \beta} [s(m) - s(n)] \quad (11)$$

Suppose that  $q \in [0, 1]$  is the share of  $\rho(n)$  captured by the politician.

Given  $q$ , we define the expected bribing penalties as

$$K_S = \beta q [\phi q \rho(n)] \quad (12)$$

Judicial independence  $\phi \geq 0$  scales the expected punishment for illegal bribing.<sup>8</sup>  $K_S$  is increasing in  $\beta$ ,  $\phi$  and  $q$  such that bribing penalties are lower when public accountability and judicial independence are low and the bribes itself are small.

### 3.4 Timeline

At  $t = 0$  'nature' sets public accountability  $\beta$  and judicial independence  $\phi$ . Citizens are endowed their disposable income  $\omega$  and wealth  $w_i$ .

At  $t = 1$  the politician publicly chooses the financing mechanism, that is private bank ownership  $P$  or state ownership of banks  $S$ .

At  $t = 2$  citizens decide whether or not to become active, that is to seek finance to start a firm.

At  $t = 3$  representatives sequentially form groups of citizens. In turn, every representative requests somebody to join his group after which this citizen can accept or decline.

At  $t = 4$  the groups of citizens seek to get exclusive access to finance. Under  $S$  citizens try to illegally bribe the politician in exchange for direct preferential access to finance while under  $P$  citizens seek to legally lobby for a favourable

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<sup>8</sup>One can see penalties  $K_S$  as a chance of revelation of bribes  $\beta q$  times damage  $\phi q \rho(n)$ . Alternatively,  $K_S$  can be viewed as the expenditure made to hide the bribe.

set of rules. Formally, group representatives try to convince the politician to set entry  $n_S$  or  $n_P$  in exchange for respectively  $r_S(n_S)$  or  $r_P(n_P)$ .

At  $t = 5$  the politician chooses the offer from  $t = 4$  that maximises his utility or implements the social optimum (by allowing free entry). Citizens receiving finance set up a firm and produce one unit of final good.

At  $t = 6$  the market for the final good is open and its price  $p(n)$  is determined. Consumers buy the final goods and political contributions are paid.

## 4 Solving the model

We next discuss the product market equilibrium, the outcome of the bargaining process under both private and state ownership of banks and the political choice for either.

### 4.1 Product market equilibrium

**Proposition 1** *Social welfare is maximised by allowing free entry while entrepreneurs' income is maximised by limiting entry.*

**Proof.** Taking the first order condition of the citizens utility from (2) to  $c_i$  yields individual consumption  $c_i = a - p(n)$ . By equating total demand  $a - p(n)$  to total supply  $n$  we find the price level

$$p(n) = a - n \tag{13}$$

Because  $m$  is the level of entry for which  $p(m) - I = 0 \Leftrightarrow m = a - I$ . Then one firm's operational income is  $p(n) - I = m - n$  and the income of all firms together is  $n(m - n)$ .

Using (2), (4) and (13) and  $c_i = a - p(n)$  social welfare becomes

$$s(n) = \omega + n(m - n) + \frac{1}{2}n^2 \tag{14}$$

which is increasing in entry  $n \in [0, m]$  and maximised at  $n = m$ . Profits  $n(m - n)$  decrease over  $n \in [\frac{1}{2}m, m]$  and are maximised at  $n = \frac{1}{2}m$ . ■

Higher production leads to higher per citizen consumption at a lower unit price. For citizens, this effect outweighs decreases in firm profits when production goes up. Therefore social welfare  $s(n)$  is maximised by allowing free entry, that is by setting  $n = m$ . On the other hand, total firm income is maximised by limiting entry to  $n = \frac{1}{2}m$ . The trade-off for politicians is clear: higher political contributions by reducing the availability of finance or higher social welfare by increasing it.

## 4.2 State ownership of banks

Under state ownership of banks, group representatives try to bribe the politician to gain direct access to finance for members of their group. When accepting a bribe, the politician incurs the expected bribing penalties  $K_S$ .

**Proposition 2** *Under state ownership of banks all groups of entrepreneurs have size  $n_S = \frac{m}{2-\beta}$ , which increases in public accountability  $\beta$ .*

**Corollary 3** *Representatives offer share  $q_S = \min\left\{\frac{1}{2\beta\phi}, 1\right\}$  of the surplus as bribes to the politician, where  $q = \frac{1}{2\beta\phi}$  is the share that maximises the politician's utility.  $q_S$  is nonincreasing in public accountability  $\beta$  and judicial independence  $\phi$ .*

**Corollary 4** *Citizens accept to join any group that requests them to join.*

**Corollary 5** *The politician's utility from opportunism  $O_S$ , is decreasing in public accountability  $\beta$  and judicial independence  $\phi$ .*

**Proof.** Loans of size  $I$  are granted under  $S$  such that all citizens are potential entrepreneurs.

We show in the appendix A that

- (i) the level of entry that maximises the politician's utility is  $n = \frac{m}{2-\beta}$ .
- (ii) the optimal group size is  $|Q_j| = n_j$ .

(iii) representatives need to make an offer  $(n_j, r_j)$  that maximises the utility of the politician to have a positive chance of winning, subject to their individual rationality constraint  $\Pi_{Q_j} \geq 0$ . This offer has  $q_j = \min \left\{ \frac{1}{2\beta\phi}, 1 \right\}$  and  $n_j = \frac{m}{2-\beta}$ .

(iv) citizens accept all requests to join a group, such that the representative is able to form an 'optimal group'.

(v) the utility from opportunism  $O_S$  is nonnegative.

Because (i)-(v) hold, the politician's and the representatives' individual rationality and incentive compatibility constraints are satisfied. Therefore the equilibrium level of entry is

$$n_S = n_j = \frac{m}{2-\beta} \quad (15)$$

The surplus  $\rho(n)$  from (11) is divided between entrepreneurs and the politician. The share appropriated by the politician is

$$q_S = q_j = \min \left\{ \frac{1}{2\beta\phi}, 1 \right\} \quad (16)$$

Given that all the groups' offers are exactly equal, the politician randomly picks one. Finally, we also show that  $\frac{\partial O_S}{\partial \beta} < 0$  and  $\frac{\partial O_S}{\partial \phi} < 0$ . ■

Under state ownership of banks the politician can channel finance to any group of his choice, independent of the wealth of the groups' members. To have a chance of winning each group maximises the politician's utility subject to (9) by offering a bribe of  $r_S$  in exchange for entry  $n_S$ . Because all groups have a positive probability of winning and joining an additional group does not affect a citizen's expected pay-off from another group, citizens join as many groups as possible.

We find that the higher public accountability  $\beta$ , the higher entry  $n_S$  (closer to the social optimum  $n_S = m$ ) and the lower the remaining surplus  $\rho(n_S)$ . The share of rents appropriated by the politician  $q_S$  is 1 for  $\beta \leq \frac{1}{2\phi}$ , but equal to  $\frac{1}{2\beta\phi}$  for  $\beta \geq \frac{1}{2\phi}$  to offset bribing penalties. Moreover, although surplus  $\rho(n_S)$  is independent of judicial independence  $\phi$ , share  $q_S$  is decreasing in  $\phi$ . In all, utility from opportunism  $O_S$  is decreasing in  $\beta$  and  $\phi$ .

### 4.3 Private ownership of banks

Under private ownership of banks groups of citizens influence the politician's decision on investor protection  $\delta$ . Given  $\delta$ , only citizens with wealth  $w_e \geq (1 - \delta)I$  can become entrepreneur, i.e. entry is  $\delta m$ .

**Proposition 6** *Under private ownership of banks only two groups are relevant, the first group always wins and entry is  $n_P = \frac{1+(2-\beta)(1-\beta)}{1+2(2-\beta)(1-\beta)}m$  which increases in  $\beta$ .*

**Corollary 7** *Citizens accept to join only one group which is newly formed or contains the next richer citizen. This way citizens with comparable wealth end up in the same group, which stops free-riding.*

**Corollary 8** *The politician's utility from opportunism  $O_P$ , is decreasing in  $\beta$ .*

**Proof.** In this proof we intuitively propose an outcome and show that it is an equilibrium.

Suppose that the first lobby, or rich lobby, contains the  $Q_1$  most wealthy entrepreneurs and offers  $(n_1, r_1)$ . The second lobby, or the counterlobby, contains an optimal share of the remaining  $m - Q_1$  citizens and offers  $(n_2, r_2)$  with  $n_2 = Q_1 + Q_2$ . From (8), the rich lobby needs to offer

$$r_1 \geq r_2 + \frac{\beta}{1-\beta} [s(n_2) - s(n_1)] \quad (17)$$

to outbid the counterlobby.

If equilibrium outcome  $n_P$  satisfies  $n_P = n_1$  or  $n_P = m$ , then  $\pi_{e \in Q_2} = 0$ . Therefore, citizens in  $Q_2$  offer all their potential profits to the politician, i.e.  $r_2 = (n_2 - n_1)(m - n_2)$  and maximise the RHS of (17). The optimal size of the counterlobby is then  $n_2 = \frac{m+n_1(1-\beta)}{2-\beta}$ . The rich lobby has to offer  $r_1 = r_2 + \frac{\beta}{1-\beta} [s(n_2) - s(n_1)]$  to ensure  $n_P = n_1$ . Given  $r_1$  and  $n_2$ ,  $\max_{n_1} \Pi_{Q_1}$  as in (3) yields entry of

$$n_1 = n_P = \frac{1 + (2 - \beta)(1 - \beta)}{1 + 2(2 - \beta)(1 - \beta)}m \quad (18)$$

with  $\frac{\partial n_P}{\partial \beta} > 0$ .

To show that this is the equilibrium we prove in the appendix B that:

(i) the counterlobby is the biggest threat for the rich lobby:

$$U_p(n_2) \geq U_p(m) \text{ and } U_p(n_2) \geq U_p(n_j) \forall j > 2$$

These conditions make sure that by beating the counterlobby the individual rationality constraint in (7) and the incentive compatibility constraint in (8) are satisfied. Moreover, lobby groups  $j > 2$  are 'irrelevant'.

(ii) the the rich lobby prefers to outbid the counterlobby instead of free-riding on the counterlobby's offer:

$$[\pi_{e \in Q_1} | n_P = n_1, r_1 > 0] > [\pi_{e \in Q_1} | n_P = n_2, r_1 = 0]$$

Given the approach to derive  $n_1$  and  $n_2$ , this condition makes the first two lobby groups' offers incentive compatible.

(iii) the individual rationality constraint of the coalitions, i.e. (9), is satisfied:

$$[\pi_e(n_P = n_1)] \geq 0$$

(iv) there exists a strategy from which citizens do not want to deviate that results in the the rich lobby and counterlobby described above.

(v) the utility from opportunism  $O_P$  is nonnegative, conform (7). We also show that  $\frac{\partial O_P}{\partial \beta} < 0$ . ■

Under private ownership of banks, the richest citizens join forces and lobby the politician for lower investor protection  $\delta$ . This way they block entry for their poorer counterparts and ensure themselves of positive profits. As this rich lobby can predict the counteroffer made by the remaining entrepreneurs, it just outbids that counteroffer and always wins. Secondly, the rich refuse to join the counterlobby as this increases the offer of the counterlobby, without increasing the rich' chance of winning. Because allocation of finance is wealth-based, citizens make sure that those richer than themselves have also joined their group. This way they block the existence of richer non-members, who would have exclusive access to finance without paying any political contributions, i.e. be able to free-ride.

As under state ownership of banks, higher accountability  $\beta$  aligns the politician's preferences closer to social welfare. As a result, entry  $n_P$  increases and the utility from political rents  $(1 - \beta) r_P$  decreases. Therefore, the politician's utility from opportunism  $O_P$  decreases in  $\beta$ .

#### 4.4 Concentrated private ownership of banks

Suppose that, in contrast to the competitive private banking sector analysed before, the politician can transfer bank control to the private sector in exchange for a bribe subject to bribing penalties as in (12). Given investor protection  $\delta$  the acquirer directly allocates finance, as the politician could under state ownership of banks  $S$ . If the politician sets investor protection high enough, citizens compete to maximise their chance of acquiring the bank sector by maximising the politician's utility. As a result the same outcome as under  $S$ , or  $(n_S, r_S)$ , is obtained.

Therefore both state and concentrated private ownership result in the same level of entry  $n_S$  and political rents  $r_S$ . Moreover, the bank owner's rents from banking are zero. In what follows we treat concentrated private ownership and state ownership the same and refer to it as state ownership  $S$ .

#### 4.5 Comparing private and state ownership of banks

In this section entry  $n$ , total revenues  $n(m - n)$ , total net profits  $\Pi_e$  and the politician's utility  $U_p$  are compared in the two governance systems  $S$  and  $P$ .

We find that entry, or the size of the winning group, is lower under state bank ownership  $S$  than under private bank ownership  $P$ .<sup>9</sup> As a result of lower entry, total revenues are higher under  $S$ . In principle the politician prefers  $S$  to  $P$ , because larger discretion in allocating finance under  $S$  allows extraction of larger political rents. However, higher judicial independence  $\phi$  increases bribing

<sup>9</sup>This holds for  $\beta \neq 1$ , because at  $\beta = 1$  social welfare is maximised under both  $P$  and  $G$ , implying  $n_P = n_S = m$ .

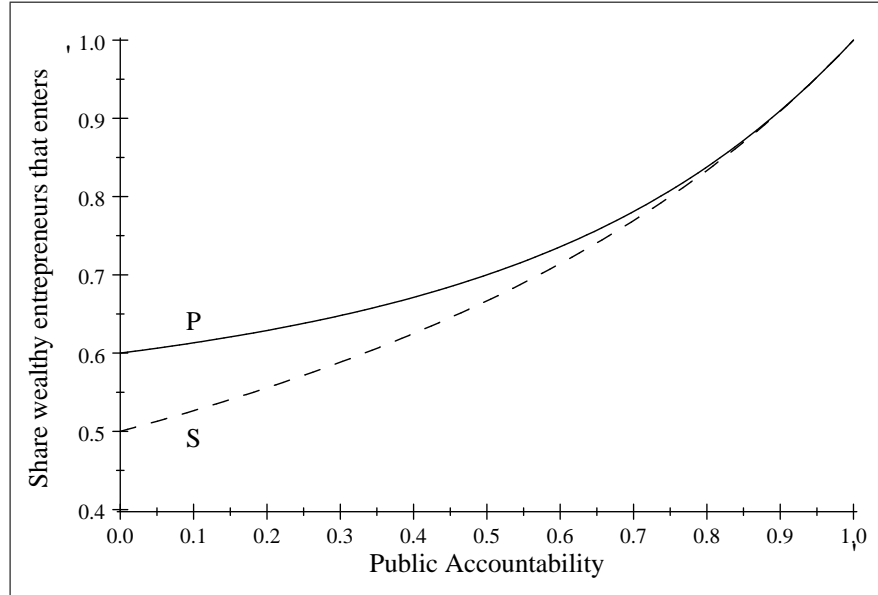
penalties and can therefore reverse this preference. In all graphs solid lines refer to  $P$  and dashed lines to  $S$ .

#### 4.5.1 Entry

**Proposition 9** *Entry is lower under state than under private ownership of banks for public accountability  $\beta \in [0, 1)$  and equal for  $\beta = 1$ .*

**Proof.**  $n_S \leq n_P \Leftrightarrow \beta(2 - \beta) \leq 1$  for  $\beta \in [0, 1]$ . ■

Depicting entry shares  $\frac{n_S}{m}$  and  $\frac{n_P}{m}$  as function of  $\beta$  results in



As shown before, entry  $n$  increases in  $\beta$  under both  $S$  and  $P$ . It lies between  $n_S = \frac{1}{2}m$  for  $\beta = 0$  where total firm income is maximised, and  $n_P = n_S = m$  for  $\beta = 1$  where the social optimum is implemented.

Under  $S$ , two competitive disjoint groups can be formed which set the size of their group  $Q_j$ , entry  $n_j$  and political contributions  $r_j$  to maximise  $O_p$ . This way they maximise their chance of winning. Under  $P$ , citizens can only exclude citizens poorer than themselves and join only a single group containing others

with comparable wealth to avoid free-riding. Because of this exclusive membership, the rich lobby weakens competition from other groups by increasing its size (thus decreasing the size of the conterlobby). As a result, groups are larger and entry is higher under  $P$  than under  $S$ .

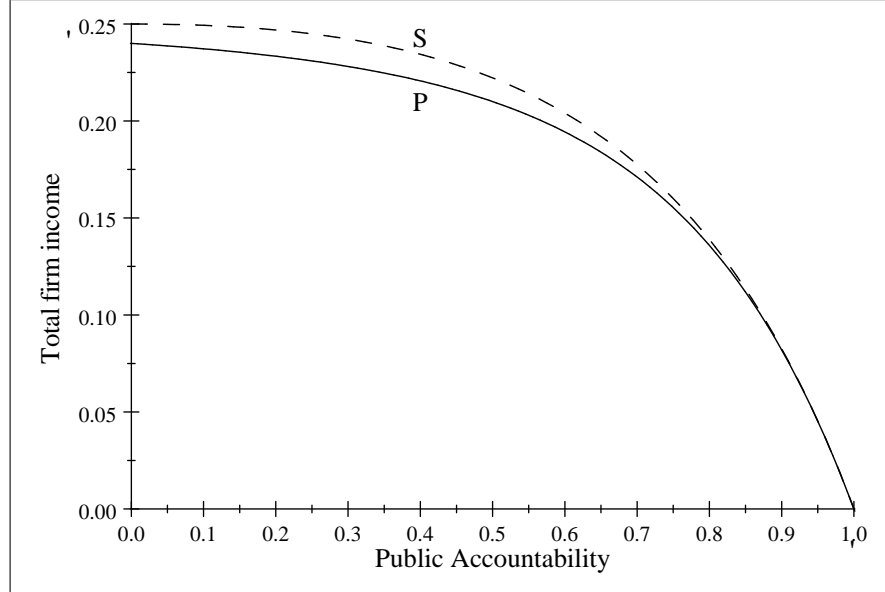
#### 4.5.2 Firms' total income

**Proposition 10** For  $\beta \in [0, 1)$ , firms' total income is higher under state than private ownership of banks and decreases in  $\beta$ .

**Proof.**  $n_S(m - n_S) = \frac{1-\beta}{(2-\beta)^2}m^2 \wedge n_P(m - n_P) = \frac{(1-\beta)(6-9\beta+5\beta^2-\beta^3)}{[1+2(2-\beta)(1-\beta)]^2}m^2 \Leftrightarrow n_S(m - n_S) > n_P(m - n_P)$  for  $\beta \in [0, 1)$ .

$$\frac{\partial[n_S(m-n_S)]}{\partial\beta} = -\frac{\beta m^2}{(2-\beta)^3} < 0 \wedge \frac{\partial[n_P(m-n_P)]}{\partial\beta} = -\frac{(3-2\beta)m^2}{[1+2(2-\beta)(1-\beta)]^3} < 0. \blacksquare$$

Total income is depicted below after division by constant  $m^2$ .



Total income decreases in entry  $n$ . Therefore it decreases in public accountability  $\beta$  and is lower under private ownership of banks.

### 4.5.3 Entrepreneurs' total net profits

**Proposition 11** For  $\beta \neq 1$ , profits are lower under state than private ownership of banks if judicial independence  $\phi < \frac{1+2(2-\beta)(1-\beta)}{2\beta(1-\beta)^2}$ .

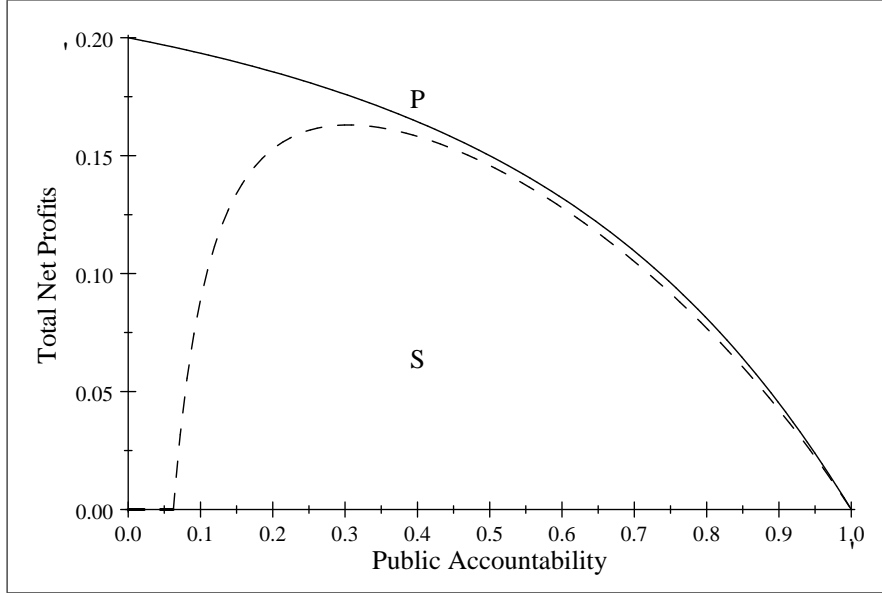
**Corollary 12** Profits  $\Pi_e$  are decreasing in  $\phi$  under  $S$  and constant in  $\phi$  under  $P$ .

**Proof.** Total net profits are given by  $\Pi_S = n_S \pi_e(n_S) = \frac{m^2}{2} \frac{(1-\beta)(2\beta\phi-1)}{2\beta\phi(2-\beta)}$  under  $S$  and are  $\Pi_P = n_P \pi_e(n_P) = \frac{m^2}{2} \frac{(1-\beta)(2-\beta)}{1+2(2-\beta)(1-\beta)}$  under  $P$ .

$$\Pi_S < \Pi_P \Leftrightarrow \frac{(1-\beta)(2\beta\phi-1)}{2\beta\phi(2-\beta)} < \frac{(1-\beta)(2-\beta)}{1+2(2-\beta)(1-\beta)} \Leftrightarrow \phi < \frac{1+2(2-\beta)(1-\beta)}{2\beta(1-\beta)^2}.^{10}$$

$$\frac{\partial \Pi_S}{\partial \phi} = \frac{1-\beta}{2\beta\phi^2(2-\beta)} > 0 \wedge \frac{\partial \Pi_P}{\partial \phi} = 0. \blacksquare$$

Increasing judicial independence  $\phi$  leads to lower bribes  $r^S$ . Therefore, profits  $\Pi_S$  are increasing in  $\phi$  such that  $\Pi_S < \Pi_P$  for low  $\phi$  and  $\Pi_S > \Pi_P$  for high  $\phi$ . Depicted are  $\Pi_S$  and  $\Pi_P$  for  $\phi = 8$ , divided by  $m^2$ .



Under  $S$ , firm income is fully appropriated by the politician for a level of public accountability  $\beta < \frac{1}{2\beta\phi}$  leading to  $\Pi_S = 0$ . For  $\beta > \frac{1}{2\beta\phi}$  optimal bribes are reduced to lower the expected bribing penalties  $K_S$  resulting in  $\Pi_S > 0$ .

<sup>10</sup>It can be shown that  $\Pi_e^G < \Pi_e^P$  as long as  $\phi < 9.92$ .

Under  $P$ , the higher  $\beta$ , the lower income, political contributions  $r_P$  and profits  $\Pi_P$ .

#### 4.5.4 Politician's utility

The politician chooses the governance system that results in the highest utility. To focus on lobbying and bribing we use the gains from opportunism  $O_p$ , which constitute an affine transformation of  $U_p$ .

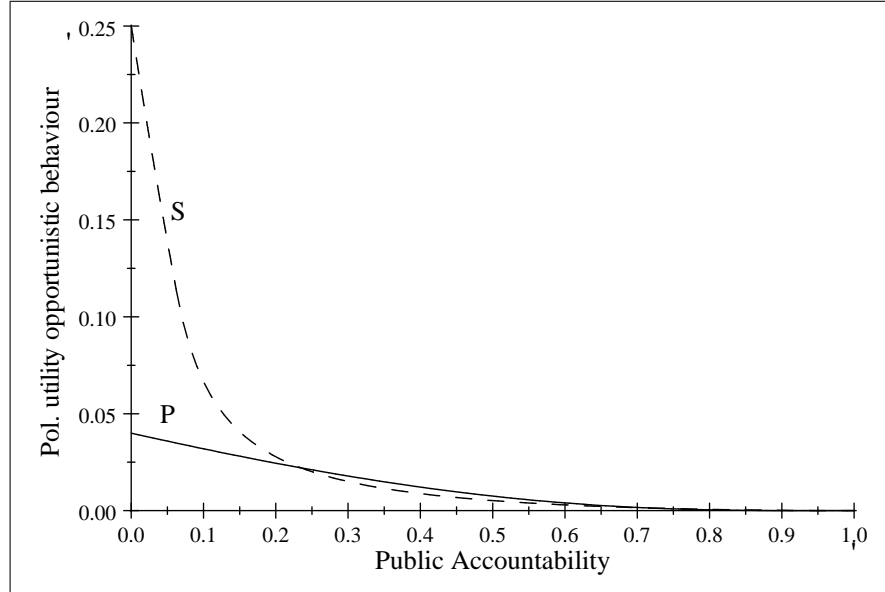
**Proposition 13** *The politician's utility is higher under state than private ownership of banks as long as  $\phi < \frac{[1+2(1-\beta)(2-\beta)]^2}{4\beta(1-\beta)^2(2-\beta)^2}$ .*

**Corollary 14** *Private ownership becomes more likely the higher  $\phi$ .*

**Proof.**  $O_S > O_P \Leftrightarrow \frac{1-\beta}{4\beta\phi} \frac{1-\beta}{2-\beta} > \frac{(1-\beta)^4(2-\beta)}{[1+2(1-\beta)(2-\beta)]^2} \Leftrightarrow \phi < \frac{[1+2(1-\beta)(2-\beta)]^2}{4\beta(1-\beta)^2(2-\beta)^2}$ .<sup>11</sup>  
 $\frac{\partial O_S}{\partial \phi} = \frac{\partial}{\partial \phi} \left( \frac{m^2}{2} \frac{1-\beta}{4\beta\phi} \frac{1-\beta}{2-\beta} \right) = -\frac{m^2}{2} \frac{(1-\beta)^2}{4\beta\phi^2(2-\beta)} < 0 \wedge \frac{\partial O_P}{\partial \phi} = 0$ .

■

Graphing  $O_S$  and  $O_P$  divided by constant  $m^2$  for  $\phi = 8$  yields



<sup>11</sup>  $O_p^G > O_p^P$  for  $\beta \in [0, 1]$  as long as  $\phi < 5.55$ .

Under  $S$ , greater public accountability and judicial independence  $\phi$  raise bribing penalties  $K_S$  such that the optimal bribe is reduced. Because representatives offer the optimal bribe,  $S$  becomes less appealing. Beyond a certain threshold, politicians prefer to be legally lobbied and choose for private ownership of banks.

#### 4.6 Non-repayment of loans under state ownership

In the baseline model state bank loans were always repaid in full. This need not be the case. Politicians and entrepreneurs could strike a deal in which the entrepreneur does not repay part of the loan in exchange for an additional bribe.

Under state ownership of banks with potential non-repayment  $S'$  total firm debt is  $nI$ . To find an equilibrium we need to know (i) what share  $v \in [0, 1]$  of debt  $nI$  is not repaid and (ii) what share  $x \in [0, 1]$  of unrepaid loans  $vnI$  goes to the politician. The bribing penalties are analogous to (12), or  $\beta x (\phi v x n I)$ . As a result of non-repayment, state banks will run a deficit  $vnI$ .

Suppose that state banks raise the amount required to finance free entry,  $mI$ , by taking on matching liabilities. Suppose that a given percentage  $\lambda$  of these liabilities is guaranteed by the government through taxation of citizens. We assume that  $\lambda \in [0, \frac{1}{2})$  such that state banks fail when nothing is repaid, even when entry is minimal at  $n = \frac{1}{2}m$  and total debt is  $\frac{1}{2}mI$ . Deficit  $vnI$  is covered by the government whenever possible, but if more than  $\lambda mI$  is not repaid state banks fail. Then the politician suffers an additional damage of  $\beta f(\phi, \lambda, I) \geq 0$ .<sup>12</sup>

**Proposition 15** *When negotiated non-repayment is possible, state loans are not fully repaid and rents are divided between entrepreneurs and the politician.*

**Corollary 16** *If  $v > \frac{\lambda m}{n}$  state banks fail as a result of negotiated non-repayment of loans, if  $v \leq \frac{\lambda m}{n}$  they do not.*

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<sup>12</sup>For example, the penalty may positively depend on judicial accountability  $\phi$  or bank capital  $(1 + \lambda)mI$ .

**Corollary 17** *A single critical level of public accountability  $\beta$  exists for which the share of non-repayment  $v \in [0, 1]$  is one for  $\beta < \beta^*$  and  $\frac{\lambda m}{n} < 1$  for  $\beta > \beta^*$ , provided that  $f(\phi, \lambda, I)$  is not very large or very close to zero. As a result,  $v$  is nonincreasing in  $\beta$  and bank failures are more likely for low  $\beta$ .*

**Corollary 18** *The share of non-repaid loans appropriated by the politician (as opposed to entrepreneurs) is nonincreasing in public accountability  $\beta$  and judicial independence  $\phi$ .*

**Corollary 19** *The possibility of negotiated non-repayment of state loans makes state bank ownership more likely.*

**Proof.** The utilitarian social welfare remains unchanged while the additional rents from non-repayment of loans are  $(1 - \beta x \phi) v x n I$ . In case of bank failure the politician suffers an additional loss of  $f(\phi, \lambda, I)$ . To derive the equilibrium we determine (i) share  $x \in [0, 1]$  given  $v \in [0, 1]$ , (ii) share  $v \in [0, 1]$  given bank failure (iii) equilibrium entry  $n_{S'}$  given  $v \in [0, 1]$  and (iv) bank failure given  $f(\phi, \lambda, I)$ .<sup>13</sup> Then we conclude that (v) the possibility of non-repayment of rents makes state ownership of banks more likely.

(i) Given  $v$ , it is optimal for interest groups to offer  $x_{S'} = \min \left\{ 1, \frac{1}{2\beta\phi} \right\}$ , which is equal to  $q_S = q_{S'}$ .

(ii) Banks fail when  $vnI > \lambda m I \Leftrightarrow v > \frac{\lambda m}{n}$ . It is optimal for the politician to set  $v = \frac{\lambda m}{n} < 1$  to extract maximum rents without triggering a bank failure or to set  $v = 1$  and let banks collapse.

(iii) When  $v = \frac{\lambda m}{n}$  rents of non-repayment are  $(1 - \beta x \phi) x \lambda m I$ , penalty  $f(\phi, \lambda, I)$  is not incurred and optimal entry does not change from the baseline model and remains  $n_{S'} = n_S = \frac{m}{2-\beta}$ . When  $v = 1$ , rents of nonrepayment are  $(1 - \beta x \phi) x n I$  and penalty  $f(\phi, \lambda, I)$  is incurred by the politician. It is shown in appendix C that entry then increases to  $n_{S'} = \min \left\{ m, \frac{m+(1-\beta)I}{2-\beta} \right\} > n_S$  by maximising the politician's utility. The reason is that more entry allows the politician to extract more non-repayment rents.

<sup>13</sup>Groups of citizens maximise the politician's utility to maximise their chance of winning. Moreover, the value for  $q_{S'} = q_S = \min \left\{ 1, \frac{1}{2\beta\phi} \right\}$  and the proof for  $|Q_j| = n_j$  remain the same.

(iv) The politician prefers to let banks fail by setting  $v = 1$  if  $(U_{S'}|v = 1) > (U_{S'}|v = \frac{\lambda m}{n})$ . In appendix C we show that there is a critical value  $f^*(\phi, \lambda, I)$  for which  $(U_{S'}|v = 1) > (U_{S'}|v = \frac{\lambda m}{n}) \Leftrightarrow f(\phi, \lambda, I) < f^*(\phi, \lambda, I)$ . This critical value  $f^*(\phi, \lambda, I)$  is continuous and decreasing in  $\beta$  such that a single  $\beta^*$  can exist for which  $(U_{S'}|v = 1) > (U_{S'}|v = \frac{\lambda m}{n}) \Leftrightarrow \beta < \beta^*$ . As a result  $v$  is nonincreasing in  $\beta$ .

(v) As politicians are free to choose the value of  $v \in [0, 1]$  optimally and never set  $v = 0$ , it must be the case that  $O_{S'} > O_S$ . ■

When the politician and entrepreneurs can negotiate (partial) non-repayment of state bank loans a share of loans will not be repaid. This share is nonincreasing over public accountability and is divided between the politician and entrepreneurs. The latter are able to capture a larger percentage of the non-repaid amount when public accountability and judicial independence are high. Moreover, the likelihood that too little is repaid for banks to remain solvent depends on the damage of bank failures to politicians and is decreasing in public accountability. Finally, given that the politician negotiates at least a partial non-repayment when he can, the possibility to do so under state ownership of banks makes private ownership less likely.

## 5 Conclusion

This paper investigates a politician's choice for either state or private ownership of banks in terms of public accountability and judicial independence. Politicians extract rents from entrepreneurs in exchange for exclusive access to finance. In state banks, loan decisions are directly influenced by politicians, while those in private banks can only be indirectly altered by modifying the bank's regulatory environment. Under state ownership of banks politicians receive illegal bribes while under private ownership interest groups lobby legally for favourable regulatory rules.

Abuse of political power is constrained by the ability of consumers to question and challenge state action, i.e. public accountability. Under state ownership of banks, this abuse is further reduced by higher judicial independence. We find that state ownership of banks is less likely in countries with higher public accountability and judicial independence. The risk of legal enforcement is essential to induce politicians to privatize banks.

The paper presumes that political decisions on control over the financial system shape influence seeking by private parties. The approach suggests some novel empirical implications. Since legal independence and accountability are positively correlated, the empirical effect of judicial independence on state ownership of banks should be higher at low levels of political accountability. Secondly, independently of bank ownership, financial access should be broader in countries with stronger democratic rights and a more free and more diffused press.

A novel political economy result is that direct control over the allocation of finance allows for greater extraction of rents by politicians than being lobbied to set weak investor protection rules. The reason is that financial rules regulating access create a free riding advantage for richer lobbies, reducing competition among interest groups relative to the case of direct political control. This broad proposition is in principle testable, although precise empirical measurement of political rents is objectively difficult.

The approach may be completed and extended in various directions. A question we do not address directly is what is the impact of political and legal institutions to the stock of funding available. Since North and Weingast (1986) and LLSV (1998), we know that financial market development depends on minimum political and legal guarantees for investors. The approach also applies naturally to study politically induced financial instability (for a first approach, see Feijen and Perotti, 2006) and the effect of concentrated approach to funding on innovation.

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## Appendices

### A. Equilibrium under state ownership of banks

(i) *Maximising the politician's utility*

Maximising  $U_p$  from (5) given (11) and (12) over  $n$  and  $q$  yields:

$$\max_{n,q} U_p \text{ s.t. } \pi_e \geq 0 \quad (19)$$

resulting in

$$n^* = \frac{m}{2 - \beta} \quad (20)$$

with  $\frac{\partial n_S}{\partial \beta} = \frac{m}{(2-\beta)^2} > 0$  and

$$q^* = \begin{cases} 1 & \text{if } \beta \leq \frac{1}{2\phi} \\ \frac{1}{2\beta\phi} & \text{if } \beta \geq \frac{1}{2\phi} \end{cases} \quad (21)$$

with  $\frac{\partial q^*}{\partial \beta} \leq 0$  and  $\frac{\partial q^*}{\partial \phi} \leq 0$ .

(ii) *the optimal group size is  $|Q_j| = n_j$*

If  $|Q_j| < n_j$ ,  $n_j - |Q_j|$  entrepreneurs free-ride on the offer of representative  $j$ . Group profits are  $\Pi_{Q_j} = |Q_j|(m - n_j) - r_j$  with  $\frac{\partial \Pi_{Q_j}}{\partial |Q_j|} > 0$ . Representative  $j$  wants to enlarge  $Q_j$  and even the  $i \in n_j - Q_j$  free-riders join, because there exists a group of citizens  $i' \notin n_j - Q_j$  who will otherwise.

If  $|Q_j| > n_j$ ,  $\Pi_{Q_j} = n_j(m - n_j) - r_j$ , such that the representative has no incentive to enlarge his group beyond  $n_j$ .

(iii) *representatives maximise the politician's utility to have a positive chance of winning, subject to  $\Pi_{Q_j} \geq 0$*

Because  $m < \frac{1}{2}$  :  $\exists Q_j, Q_h \in Q : Q_j \cap Q_h = \emptyset$ . For these disjoint groups  $j$  and  $h$  it holds that if  $n_S = Q_j \rightarrow \pi_{e \in Q_h} = 0$ . As a result, representative  $h$  is willing to spend any potential profits on bribes to convince the politician. The reverse holds for representative  $j$  if  $n_S = Q_h$ . Thus, any group  $k = j, h$  tries to outbid the other by maximising (5) subject to (9).

Each offer made to politicians has  $n_j = n_S$  and  $r_j = r_S = \frac{\beta}{1-\beta} [s(m) - s(n_S)] + q_S \rho(n_S)$ , such that expected profits are as in (3) with

$$|Q_k| \pi_{e \in Q_k} = \begin{cases} 0 & \text{if } \beta \leq \frac{1}{2\phi} \\ \frac{m^2}{2} \frac{(1-\beta)(2\beta\phi-1)}{2\beta\phi(2-\beta)} & \text{if } \beta \geq \frac{1}{2\phi} \end{cases} \quad (22)$$

and are thus nonnegative. As a result, the representatives set up the groups and the citizens accept to be member as  $\pi_{e \in Q_k} > 0$ .

If  $n_j \neq n_S$  or  $r_j \neq r_S$  group  $j$  either does not win such that  $E[\pi_e(n_j)] = 0$  or wins and has  $E[\pi_e(n_j)] < 0$  (when  $\beta < \frac{1}{2\phi}$  and  $q > 1$ ).

(iv) *citizens accept all requests to join a group.*

All groups are of equal size and have equal profits if chosen, independent of whether its members join competing groups. Therefore, joining an additional group simply increases the probability of winning.

(v) *the utility from opportunism  $O_S$  is nonnegative.*

The political rents from opportunism are found by substituting (5), (11), (12) and (14) in (6) yielding

$$\begin{aligned} O_S &= (1-\beta)(1-\beta q\phi) q_S \rho(n_S) \\ &= \begin{cases} (1-\beta)(1-\beta\phi) \rho(n_S) & \text{if } \beta \leq \frac{1}{2\phi} \\ \frac{1-\beta}{4\beta\phi} \rho(n_S) & \text{if } \beta \geq \frac{1}{2\phi} \end{cases} \geq 0 \end{aligned} \quad (23)$$

with  $\rho(n_S) = \frac{m^2}{2} \frac{1-\beta}{2-\beta}$ . Moreover, taking derivatives yields  $\frac{\partial O_S}{\partial \beta} = -\frac{m^2}{2} \frac{(1-\beta)[3-\beta+2\phi(1-3\beta+\beta)]}{(2-\beta)^2} < 0$  for  $\beta \leq \frac{1}{2\phi}$  and  $\frac{\partial O_S}{\partial \beta} = -\frac{m^2}{2} \frac{1-\beta}{2\beta^2\phi(2-\beta)^2} < 0$  for  $\beta \geq \frac{1}{2\phi}$ . Finally, it is easy to see that  $\frac{\partial O_S}{\partial \phi} < 0$ .

## B. Equilibrium under private ownership of banks

(i) *the counterlobby is the biggest threat for the rich lobby*

For the politician,  $U_p(n_2) > U_p(m)$  if

$$\begin{aligned} \beta s(n_2) + (1-\beta)r_2 &\geq \beta s(m) \\ \Leftrightarrow 1 + \frac{(1-\beta)^4(2-\beta)}{\beta(1+2(1-\beta)(2-\beta))^2} &\geq 1 \text{ for all } \beta \in [0, 1] \end{aligned} \quad (24)$$

The counterlobby thus makes an offer superior to the social optimum.

The politician's utility from offer  $(n_j, r_j)$  with  $r_j = n_j(m - n_j)$  is

$$U_p(n_j) = \beta s(n_j) + (1 - \beta) n_j (m - n_j) \quad (25)$$

Taking a derivative yields  $\frac{\partial U_p(n_j)}{\partial n_j} = m - (2 - \beta) n_j \leq 0 \Leftrightarrow n_j \geq \frac{m}{2 - \beta}$ . This condition is satisfied for  $n_j \geq n_1 \geq \frac{m}{2 - \beta}$ . Therefore,  $U_p(n_2) \geq U_p(n_j) \forall j > 2$ , i.e. representatives  $j > 2$  never win.

*(ii) the the rich lobby prefers to outbid the counterlobby instead of free-riding on its offer*

We substitute  $n_1$  in  $r_1$  and get  $r_1 = \frac{m^2}{2} \frac{(2 - \beta)(1 - \beta)}{[1 + 2(2 - \beta)(1 - \beta)]^2} \Leftrightarrow [\pi_{e \in Q_1} | n_P = n_1, r_1 > 0] = m - n_1 - \frac{r_1}{n_1} = \frac{1}{2} \frac{(1 - \beta)(2 - \beta)}{1 + (1 - \beta)(2 - \beta)} m$ . The other option is  $[\pi_{e \in Q_1} | n_P = n_2, r_1 = 0] = m - n_2 = \frac{(1 - \beta)^2}{1 + 2(1 - \beta)(2 - \beta)} m$ . As  $[\pi_{e \in Q_1} | n_P = n_1, r_1 > 0] > [\pi_{e \in Q_1} | n_P = n_2, r_1 = 0]$ , the rich prefer outbidding the poor to letting the counterlobby win and free-ride.

*(iii) the individual rationality constraint of the members of both lobbies are satisfied*

From point (ii) and knowing that  $[\pi_{e \notin Q_1} | n_P = n_1] = 0$  we conclude that  $\pi_e(n_P = n_1) \geq 0$ .

*(iv) the citizens' strategy*

Group formation resulting in the rich lobby and the counterlobby is achieved by the strategy: citizen  $i \in Q_j$  if (a) group  $j$  is new and  $w_i > w_{f \neq i} \forall f \notin Q_{j' \neq j}$  **or** (a') group  $j$  already exists and  $w_{i-1} \in Q_j$ ,<sup>14</sup> **and** if (b)  $i \notin Q_{j' \neq j}$ . The first representative starts by requesting the richest citizen  $i = 1$  to join his group, who accepts as (a) and (b) are satisfied. Then the first representative expands his group by sequentially adding poorer citizens until it has size  $|Q_1|$ . These poorer citizens accept to join as (a') and (b) are satisfied. Then, the second representative forms the counterlobby in the same way, starting with the richest remaining citizen  $i = |Q_1| + 1$ .

<sup>14</sup>We order citizens such that  $w_{i-1} < w_i < w_{i+1}$ .

By maximising (3) we found  $Q_1$  and  $Q_2$  which are thus optimal for the representatives. We now show that citizens have no incentive to deviate from the strategy given above.

(a) If citizen 1  $\notin Q_1$ , the group formation collapses and  $n_P = m \Leftrightarrow \pi_{1 \notin Q_1} = 0$ . Given that,  $\pi_{1 \in Q_1} = \frac{1}{2} \frac{(1-\beta)(2-\beta)}{1+(1-\beta)(2-\beta)} m \geq 0 \rightarrow 1 \in Q_1$ .

If citizen  $|Q_1| + 1 \notin Q_2$ , the formation of the counterlobby collapses and the rich lobby decreases its offer to  $n_1$  and  $r_1 = \frac{\beta}{1-\beta} [s(m) - s(n_1)]$  as in (7). In this case  $\exists n_2, r_2, \varepsilon \rightarrow U_P(n_2) > U_P(n_1)$  for which  $\pi_{Q_1+1 \in Q_2} = \frac{1}{2} \frac{(1-\beta)^2 [2+3(1-\beta)(2-\beta)]}{(2-\beta)^2 [1+2(1-\beta)(2-\beta)]} m - \varepsilon > \pi_{Q_1+1 \notin Q_2} = 0 \rightarrow |Q_1| + 1 \in Q_2$ .

(a') A rich citizen  $i$  can potentially free-ride by not joining the rich lobby and waiting for it to win. This way she can potentially become entrepreneur without paying  $\frac{r_1}{n_1}$ . However, by refusing to join a group the expansion of that group is halted as for any next citizen  $i' > i : w_{i'-1} \notin Q_j$ . This implies that either the politician sets  $n_P = n_1 = |Q_1|$  with  $i \notin Q_1$  or  $n_P = m$  such that  $\pi_{i \in Q_1} > \pi_{i \notin Q_1} = 0$ .

Another option is for citizen  $i \in Q_j$  when  $w_i < w_{f \neq i} \forall f \notin Q_{j' \neq j}$ . This is suboptimal as it allows free-riding by citizens  $f$ . In that case entry and income remain  $n_j$  and  $m - n_j$  respectively while  $\frac{r_j}{|Q_j|}$  increases.

(b) Joining a second lobby increases the strength of competition.<sup>15</sup> Take an enterprise's relative size to the total market as  $\varepsilon > 0$ . For groups  $j \geq 2$  rent payments are  $r_j = (n_j - n_1 + \varepsilon)(m - n_j)$  and size is  $|Q_j| = n_j + \varepsilon = \frac{(1-\beta)n_1 + m + \varepsilon}{2-\beta}$ . As a result of joining  $r_{j \geq 2}$  has increased.

(v) the utility from opportunism  $O_P$  is nonnegative, conform (7).

The utility from opportunism is found by substituting (18) in (6) such that

$$\begin{aligned} O_P &= \beta s(n_P) + (1-\beta)r_P - \beta s(m) \\ &= \frac{m^2}{2} \frac{(1-\beta)^4 (2-\beta)}{[1+2(1-\beta)(2-\beta)]^2} \end{aligned} \quad (26)$$

Taking a derivative yields  $\frac{\partial O_P}{\partial \beta} = -\frac{(1-\beta)^3 (21-27\beta+12\beta^2-2\beta^3)}{[1+2(1-\beta)(2-\beta)]^3} < 0$ .

<sup>15</sup>There is only downward mobility in joining an additional lobby.

### C. Non-repayment of state bank loans

The politician's utility from setting  $v = \frac{\lambda m}{n}$  and not letting banks fail is

$$U_p = \beta s(m) + (1 - \beta) \left[ (1 - \beta \phi q) q \left( n(m - n) - \frac{\beta}{1 - \beta} [s(m) - s(n)] \right) + (1 - \beta \phi x) x \lambda I m \right]$$

Maximising this to  $q$ ,  $x$  and  $n$  subject to (9) yields  $q = x = \min \left\{ 1, \frac{1}{2\beta\phi} \right\}$  and  $n = \frac{m}{2 - \beta}$ .

This results in

$$\left( O_p | v = \frac{\lambda m}{n} \right) = \begin{cases} \frac{m}{2} \frac{(1 - \beta)(1 - \beta\phi)[m(1 - \beta) + 2(2 - \beta)\lambda I]}{2 - \beta} & \text{when } \beta \leq \frac{1}{2\phi} \\ \frac{m}{2} \frac{m(1 - \beta) + 2(2 - \beta)\lambda I}{4\beta\phi(2 - \beta)} & \text{when } \beta \geq \frac{1}{2\phi} \end{cases}$$

The politician's utility from setting  $v = 1$  and letting banks fail is

$$U_p = \beta s(m) + (1 - \beta) \left[ (1 - \beta \phi q) q \left( n(m - n) - \frac{\beta}{1 - \beta} [s(m) - s(n)] \right) + (1 - \beta \phi x) x I n - \beta f \right]$$

Maximising this to  $q$ ,  $x$  and  $n$  subject to (9) yields  $q = x = \min \left\{ 1, \frac{1}{2\beta\phi} \right\}$  and  $n = \left\{ m, \frac{m + (1 - \beta)I}{2 - \beta} \right\}$ .

This results in

$$\left( O_p | v = 1 \right) = \begin{cases} \frac{(1 - \beta\phi)(2mI + I^2 - m^2\beta - \beta I^2 + m^2) - 2\beta(2 - \beta)f(\cdot)}{2(2 - \beta)} & \text{when } \beta \leq \frac{1}{2\phi} \\ \frac{2mI + I^2 - m^2\beta - \beta I^2 + m^2 - 8\beta^2(2 - \beta)f(\cdot)}{8\beta^2\phi(2 - \beta)} & \text{when } \beta \geq \frac{1}{2\phi} \end{cases}$$

Comparing  $(O_p | v = \frac{\lambda m}{n})$  to  $(O_p | v = 1)$  leads to a critical value for  $f(\cdot)$  for which  $(O_p | v = \frac{\lambda m}{n}) > (O_p | v = 1)$  iff  $f(\cdot) > f^*(\cdot)$ . This critical value is

$$f^*(\cdot) = \begin{cases} \frac{(2m + I - \beta I - \beta\phi I + \beta^2\phi I - m\beta\phi)I + 2(\beta + 2.0\beta\phi + \beta^2\phi - 2.0)\lambda m I}{2\beta(2 - \beta)} & \text{when } \beta \leq \frac{1}{2\phi} \\ \frac{[2.0m + (1 - \beta)I]I - (2 - \beta)\lambda m I}{8\beta^2\phi(2 - \beta)} & \text{when } \beta \geq \frac{1}{2\phi} \end{cases}$$

and is positive, continuous and decreasing over  $\beta$ . Therefore there is a level  $\beta^*$  below which politicians set  $v = 1$  and let banks fail and above which  $v = \frac{\lambda m}{n}$  and banks survive.