Political Allocation of Finance

Enrico Perotti
University of Amsterdam and CEPR
Marcel Vorage
University of Amsterdam and IDEI Toulouse

January 2008

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.

When public accountability and judicial independence are low, politicians prefer state ownership of banks. Politicians can extract more rents from competing coalitions when having direct control. The reason is that regulation only allows politicians to target certain types of entrepreneurs while direct control enables them to separate individual entrepreneurs. Beyond a certain threshold of public accountability and judicial independence legal risks from bribing become too high and it becomes politically optimal to to shift to lobbying on regulation by privatising banks. Access to finance and entry increase with public accountability and tends to be greater under 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.

Contacting Author:
Marcel Vorage
University of Amsterdam, Roetersstraat 11, 1018 WB Amsterdam, The Netherlands
tel.: +31 (0)20 525 5107
fax.: +31 (0)20 525 5285
e-mail: m.w.vorage@uva.nl

[Acknowledgements] We would like to thank Ana Babus, Mario Bersem, Bruno Biais, Andrei Dubovik, Razvan Vlahu and seminar participants at the University of Amsterdam for useful suggestions.

1 Introduction

In this paper we study politicians who affect the allocation of finance by choosing between state and private bank ownership, and by setting the level of investor protection. We investigate how these choices shape influence activities by special interests. Special interests are groups of citizens wanting to become entrepreneur and limit potential competition by seeking preferential access to finance. To achieve this goal, politicians may either be bribed to allocate finance directly through state banks, or lobbied for a level of investor protection that indirectly alters lending by private banks. Politicians trade off these bribes and lobbying contributions against their political cost, which depends on public accountability and judicial independence.[1] Concretely, we set up the model such that the higher public accountability, the closer politicians' preferences are aligned with social welfare, which increases in entry and competition. Moreover, as public accountability and judicial independence become greater, the political and legal cost of bribes increase.

Interest groups are formed sequentially until no citizen gains by accepting to join or by leaving a group and no group can increase its profits by changing its composition. Then each group makes an offer to the politician by asking for preferential access to finance in exchange for bribes or lobbying contributions.

We find that politicians can extract greater private benefits under state ownership of banks, as direct control over finance induces more competition among interest groups. Under private ownership of banks rich citizens, who need less external finance, face less competition from lobbies of poorer couterparts. The reason is that if the poor succeed in obtaining strong investor protection, the rich also have access to finance without lobbying for it, but not viceversa. In contrast to private banks, state banks can fully fund any citizen, independent of wealth. Therefore, anyone can form a competitive interest group and politicians have more bargaining power.

Access to finance and entry tend to be greater under private ownership of

[1] 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.

banks. When lobbying on investor protection citizens are only able to exclude poorer counterparts. Therefore, groups contain comparably wealthy citizens as to minimise free-riding, that is citizens having preferential access to finance without having to lobby. It turns out that the rich lobby always wins and that it recruits additional (somewhat poorer) members to weaken competing interest groups. This effect is absent under state ownership of banks.

Directing the allocation of finance rather than regulating not only increases the ability of the politician to extract private benefits, but also exposes him to legal action. Consequently, increasing risk of legal and political sanctions finally induces politicians to privatize banks despite a reduction in rents. Once banks are private, the allocation is influenced by legal lobbying on regulation, so there is no legal deterrance to accepting contributions. Hence, only politicians who are not too constrained by public opinion and the judiciary choose state ownership of banks, others prefer private ownership.[2]

To justify our approach we refer to proof of interest groups influencing politicians to get preferential access to finance. Moreover we cite work which shows that politicians are constrained by public accountability and judicial independence.

Evidence shows that interest groups lobby politicians to advance their own special interests (Olsen, 1965; Grossman and Helpman, 1994) and that firms may seek preferential access to finance to keep potential entrants at bay (Kroszner and Strahan, 1999; Rajan and Zingales, 2003). In line with these observations, political institutions which entrench the power of the elite tend to limit entry and competition (Engerman and Sokoloff, 2002; Acemoglu, Johnson and Mitton, 2007).

The ability of politicians to favour special interests is constrained by their public accountability (Besley, Burgess and Prat, 2006), as well as by judicial independence (La Porta, Lopez-de-Silanes and Shleifer, 2006). Greater public accountability, which reflects the ability of citizens to question and challenge

[2] 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.

government policies, reduces the willingness of politicians to narrow financial access and limit competition in exchange for political contributions. The reason is that the associated reduction in social welfare has a higher political cost (e.g. risk of not being reelected or to be ejected by riots). Higher judicial independence makes politicians more reluctant to engage in illegal activities, such as taking bribes.

The paper offers clear implications for state versus private ownership of banks in terms of legal and political institutions. State banks are more likely when public accountability and judicial independence are low, allow for greater extraction of rents by the politician and result in more constrained access to finance. We provide support for these findings one by one.[3]

Firstly, state ownership of banks is lower in countries with strong political systems, a better rule of law, less government repudiation of contracts and under common law (LLS, 2002; Bortolotti, Fantini and Siniscalco, 2003). Interestingly, common law countries on average have better investor protection and more judicial independence (LLSV, 1998; LLS, 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). Secondly, allowing for direct control, state ownership of banks appears to lead to less efficient financial allocation (LLS 2002), with lending favouring politically connected firms (Sapienza 2004; Khwaja and Mian 2005; Claessens, Feijen and Laeven 2007). Connected firms receive larger loans and pay comparable interest rates as similar unconnected firms even though they are less likely to repay (Faccio, 2006; Khwaja and Mian, 2005). Thirdly, there is proof that public accountability, which makes state ownership more likely, is also associated with more constrained access to finance. We cite evidence emphasising that lower public accountability reduces entry and increases the importance of connected lending for firms. As such, both a stable democracy and free and widely accessible media stimulate financial development and entry (Bordo and Rousseau, 2006; Rajan and Zingales, 2003; Perotti and

[3] The results apply more generally to other financial forms to allocate funding across firms.

Volpin, 2007). Even across the United States, historical financial regulation supporting entry has been associated with stronger political and suffrage rights (Benmelech and Moskowitz, 2007) and less concentrated land ownership (Rajan and Ramcharan, 2007). Finally, in countries with weak limits on the executive and high discretion of state officials, a political connection adds more to firm value (Fisman, 2001; Faccio, 2006), with preferential access to finance as one of the political favours (Khwaja and Mian 2005; Claessens, Feijen and Laeven, 2006).

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, La Porta, Lopez-de-Silanes and Shleifer, 2002) and less entry (Klapper, Laeven and Rajan, 2004; Perotti and Volpin, 2007).

The paper proceeds as follows. In section 2 we set up the model, in section 3 we derive the results and in section 4 we conclude.

2 Model set-up

Consider a closed economy with a population normalised to one. Its citizens spend their disposable income ω 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. Potential firm profits can be used for consumption. 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. We consider debt as 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.

Under state ownership of banks S the politician can directly fund a group of citizens of his choice. 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 δ, loan size is limited at δI. 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 δ translates into a unique level of entry n the politician effectively sets entry when choosing δ.

To sustain the price of the final good, potential entrepreneurs seek to limit entry n. They do so by forming groups (or coalitions) to overcome collective action problems and then collectively bribe and lobby the politician under S and P respectively.

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

2.1 Players and welfare

The model contains citizens, being either entrepreneur, consumer, or the single politician and representatives.[4] We denote initial investment by I, disposable income for consumption by ω, 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 representative j forms a unique group (or set) of citizens Q_j and is spokesman for that group at zero cost. Then they offer contributions $r(n_j)$ in return for entry n_j under both S and P. Representatives maximise the expected sum of profits of their group's members[5]

$$\Pi_{Q_j} = \begin{cases} |Q_j| \pi_e(n_j) & \text{if the offer by group } j \text{ is accepted} \\ 0 & \text{otherwise} \end{cases} \tag{1}$$

in which the modulus of Q_j, or $|Q_j|$, denotes the number of elements (citizens) in Q_j, $\pi_e(n_j)$ and $\pi_e(n_j)$ denote profits per firm.

[4] It is natural to think of a representative as any consumer or entrepreneur.

[5] Our model allows for competing interest groups whereas Perotti and Volpin (2007) have a single lobbyist representing all entrepreneurs.

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.

An entrepreneur is a citizen who has been granted access to finance and has a firm. Every entrepreneur e competes on the final goods market and has profits of

$$\pi_e(n) = \begin{cases} p(n) - I - \frac{r(n)}{|Q_j|} \text{ if } e \in Q_j \\ \\ p(n) - I \text{ if } e \notin Q_j \end{cases} \tag{2}$$

where $\frac{r(n)}{n}$ are the political contributions paid per entrepreneur in winning coalition Q_j. Firm profits are used for further consumption by entrepreneurs.

Citizens decide whether to seek external finance and whether to accept requests to join interest groups. An average citizen i, consumer or entrepreneur, has utility from consumption

$$E[U_i] = k_i + ac_i - \frac{1}{2}c_i^2 \tag{3}$$

where k_i and c_i are the consumption of respectively the numeraire and final good while a is the strength of demand.[6] 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.

Social welfare is defined as the aggregate utility of all citizens

$$s(n) = U_i + r(n) \tag{4}$$

Define m as the entry level for which $\pi_e(m) = 0$, such that profits from (2) are zero. We will show that social welfare is increasing in $n \in [0, m]$ and maximised when $n = m$.

The politician chooses an offer containing entry n_j and contributions $r(n_j)$ by any group j or maximises social welfare. This results in the equilibrium

[6] Disposable income is high enough to pay for consumption expenditure, i.e. $\omega \geq \frac{1}{4}a^2$.

$(n_S, r_S(n_S))$ or $(n_P, r_P(n_P))$ under state and private ownership of banks respectively. His utility is

$$U_p(n) = \beta s(n) + (1-\beta) r(n) - K_S \tag{5}$$

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.[7]

2.2 Timeline

At $t = 0$ 'nature' sets public accountability β and judicial independence ϕ. Citizens are endowed their disposable income ω and wealth w_i.

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

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, representatives request citizens to join their group. Every citizen can accept or decline a request.

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. Under P citizens seek to legally lobby for a favourable set of rules. Formally, group representatives 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.

[7] The politician's utility from opportunism is

$$O_p = U_p - \beta s(m) \tag{6}$$

which measures how much utility the politician derives from being bribed or lobbied to serve special interests instead of implementing the social optimum and have utility $\beta s(m)$.

2.3 Group formation and offers

Under both mechanisms S and P, representatives $j \in \{1, 2, ..., J\}$ enter sequentially and form J different groups (or coalitions) each containing a subset Q_j of potential entrepreneurs. First representative $j = 1$ requests a citizen to join his group. Then this citizen accepts or rejects. The 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 the group generates positive expected profits, i.e. $\Pi_{Q_j} > 0$. An equilibrium coalition structure is $Q = (Q_1, Q_2, ..., Q_J)$.

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

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

$$\Pi_{Q_j} \geq 0 \tag{7}$$

and incentive compatible

$$n_j, r_j \text{ s.t. } \max_{n_j, r_j} \Pi_{Q_j} | n_k, r_k \forall k \neq j \tag{8}$$

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

$$U_p(n_j) \geq U_p(m) \Leftrightarrow \beta s(n_j) + (1 - \beta) r_j(n_j) \geq \beta s(m) \tag{9}$$

and incentive compatible (better than the offer of any other group $k \neq j$)[8]

$$U_p(n_j) > U_p(n_k) \Leftrightarrow \beta s(n_j) + (1 - \beta) r_j(n_j) > \beta s(n_k) + (1 - \beta) r_k(n_k) \tag{10}$$

The equilibrium level of entry and political contributions of (n_S, r_S) or (n_P, r_P) for S and P respectively satisfies (9), (10), (7) and (8) given Q.

[8] 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.

2.4 Bribing penalties

In this last part of the model set-up we return to the bribing penalties K_S in the politician's utility $U_p(n) = \beta s(n) + (1-\beta) r(n) - K_S$. Costs K_S only apply under state ownership of banks, that is when the politician is bribed. Citizens are maximally willing to spend $n[p(n) - I]$ on political contributions $r(n)$ and the politician at least receives $U_p(m)$, conform (7) and (9) respectively. Therefore, the politician and representatives bargain over

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

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

$$K_S = \beta q[\phi q \rho(n)] \tag{12}$$

Judicial independence $\phi \geq 0$ scales the expected punishment for illegal bribing.[9] K_S is increasing in β, ϕ and q such that bribing penaties are lower when public accountability and judicial independence are low and the bribes itself are small.

3 Solving the model

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

3.1 Product market equilibrium

In this section we discuss the market of the final good given entry n and its implications for social welfare.

Proposition 1 *Social welfare is maximised by allowing free entry or $n = m$, while entrepreneurs' income is maximised by limiting entry or $n = \frac{1}{2}m$.*

[9] One can see penalties K_S as a chance of revelation of bribes βq times damage $\phi q \rho(n)$. Alternatively, K_S can be viewed as the (expected) expenditure required to hide the bribe.

Proof. Taking the first order condition of the citizens utility from (3) 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 $p(n) = a - n$. As $p(m) - I = 0$ we know that $m = a - I$ and that the income of all firms together is $n(m - n)$, which decreases over $n \in \left[\frac{1}{2}m, m\right]$ and is maximised at $n = \frac{1}{2}m$.

Using (3), (4), $p(n) = a - n$ and $c_i = a - p(n)$ social welfare becomes

$$s(n) = \omega + n(m - n) + \frac{1}{2}n^2 \tag{13}$$

which is increasing in entry $n \in [0, m]$ and maximised at $n = m$. ■

Higher production leads to higher per citizen consumption at a lower unit price. For citizens, this effect outweights 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.

3.2 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 S all groups have size $n_S = \frac{m}{2-\beta}$. Entry is n_S and increases in public accountability β.*

Many overlapping groups make an offer (n_S, r_S) to maximise the politician's utility. Each group has an equal chance of getting external finance.

The politician gains less from being bribed the higher public accountability β and judicial independence ϕ.

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 entry $n_j = \frac{m}{2-\beta}$ and a share of surplus offered to the politician $q_j = \min\left\{\frac{1}{2\beta\phi}, 1\right\}$.

(iv) citizens accept all requests to join a group, such that representatives are able to form many 'optimal' groups.

(v) the utility from opportunism $O_S = U_S - \beta s(m)$ 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

$$n_S = n_j = \frac{m}{2-\beta} \tag{14}$$

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

$$q_S = q_j = \min\left\{\frac{1}{2\beta\phi}, 1\right\} \tag{15}$$

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 (7) by offerring 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. All the different groups have an equal chance of getting external finance and starting a firm.

We find that the higher public accountability β, the higher entry n_S (closer to the social optimum $n_S = m$) and the lower the remaining surplus $\rho(n_S)$.

The 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. Rents $q_S\rho(n_S)$ and utility from opportunism $O_S = U_S - \beta s(m)$ are decreasing in public accountability β and judicial independence ϕ.

3.3 Private ownership of banks

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

Proposition 3 *Under private ownership of banks the first group always wins by outbidding the second group. Other potential groups are irrelevant. Entry is* $n_P = n_1 = \frac{1+(2-\beta)(1-\beta)}{1+2(2-\beta)(1-\beta)} m$ *and increases in* β.

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 reduces free-riding.

The politician gains less from being lobbied the higher public accountability β.

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 (10), the rich lobby needs to offer

$$r_1 \geq r_2 + \frac{\beta}{1-\beta} \left[s(n_2) - s(n_1) \right] \tag{16}$$

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 (16). The optimal size of

the counterlobby is then $n_2 = \frac{m+n_1(1-\beta)}{2-\beta}$. The rich lobby has to offer $r_1 = r_2 + \frac{\beta}{1-\beta}\left[s\left(n_2\right) - s\left(n_1\right)\right]$ to ensure $n_P = n_1$. Given r_1 and n_2, $\max_{n_1} \Pi_{Q_1}$ as in (1) yields entry of

$$n_1 = n_P = \frac{1 + (2-\beta)(1-\beta)}{1 + 2(2-\beta)(1-\beta)} m \tag{17}$$

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:

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

These conditions make sure that by beating the counterlobby the individual rationality constraint in (9) and the incentive compatibility constraint in (10) 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. (7), is satisfied:

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

(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 $O_P = U_P - \beta s\left(m\right)$ is nonnegative, conform (9). 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 δ. 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 β 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 β.

3.4 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 δ 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.

In this setting 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.

3.5 Comparing private and state ownership of banks

In this section entry n, total revenues $n\,(m-n)$, total net profits Π_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.[10] 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

[10] This holds for $\beta \neq 1$, because at $\beta = 1$ social welfare is maximised under both P and G, implying $n_P = n_S = m$.

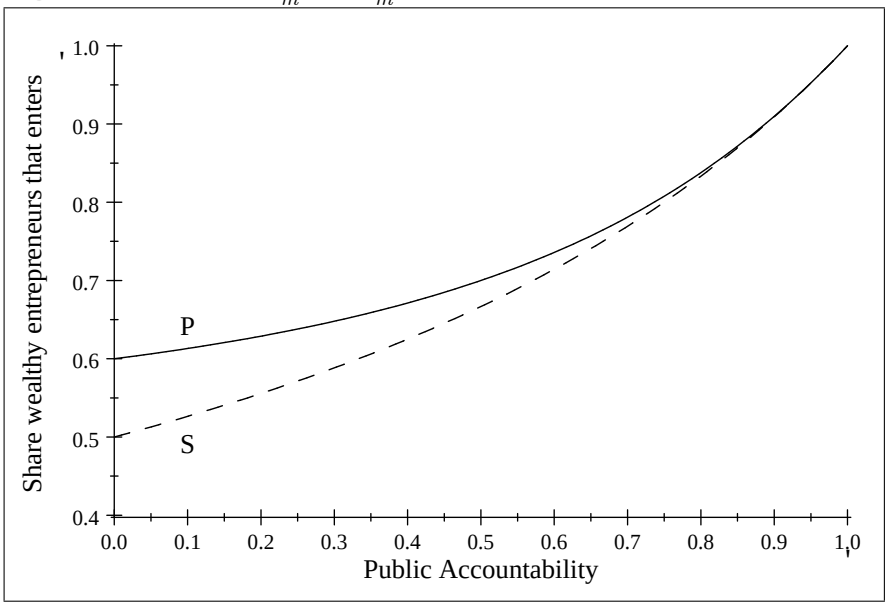
larger political rents. However, higher judicial independence ϕ increases bribing penalties and can therefore reverse this preference. In all graphs solid lines refer to P and dashed lines to S.

3.5.1 Entry

Proposition 4 *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 β results in



As shown before, entry n increases in β 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.

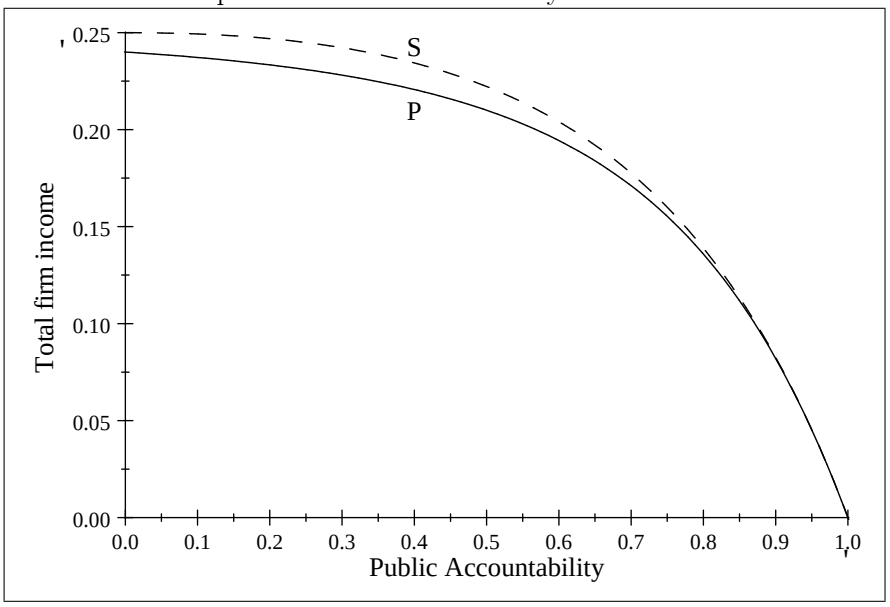
3.5.2 Firms' total income

Proposition 5 *For $\beta \in [0,1)$, firms' total income is higher under state than private ownership of banks and decreases in β.*

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

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

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



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

3.5.3 Entrepreneurs' total net profits

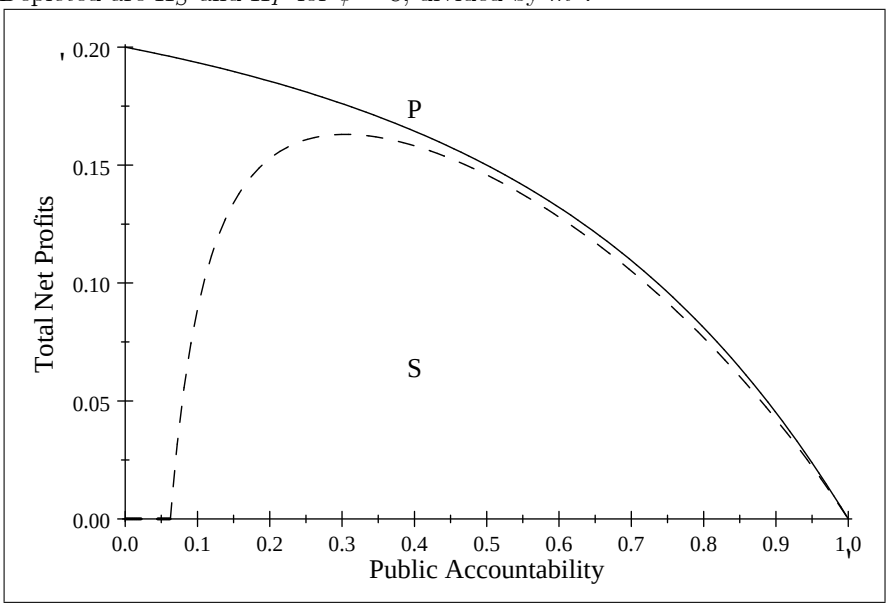
Proposition 6 *For $\beta \neq 1$, profits are lower under state than private ownership of banks if judicial independence $\phi < \frac{1+2(2-\beta)(1-\beta)}{2\beta(1-\beta)^2}$. Moreover, profits Π_S are decreasing in ϕ and profits Π_P are constant in ϕ.*

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.

$\Pi_S < \Pi_P \Leftrightarrow \frac{(1-\beta)(2\beta\phi-1)}{2\beta\phi(2-\beta)} < \frac{(1-\beta)(2-\beta)}{1+2(2-\beta)(1-\beta)} \Leftrightarrow \phi < \frac{1+2(2-\beta)(1-\beta)}{2\beta(1-\beta)^2}$.[11]

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

Increasing judicial independence ϕ leads to lower bribes r_S. Therefore, profits Π_S are increasing in ϕ such that $\Pi_S < \Pi_P$ for low ϕ and $\Pi_S > \Pi_P$ for high ϕ. Depicted are Π_S and Π_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 $\Pi_S > 0$. Under P, the higher β, the lower income, political contributions r_P and profits Π_P.

[11] It can be shown that $\Pi_e^G < \Pi_e^P$ as long as $\phi < 9.92$.

3.5.4 Politician's utility

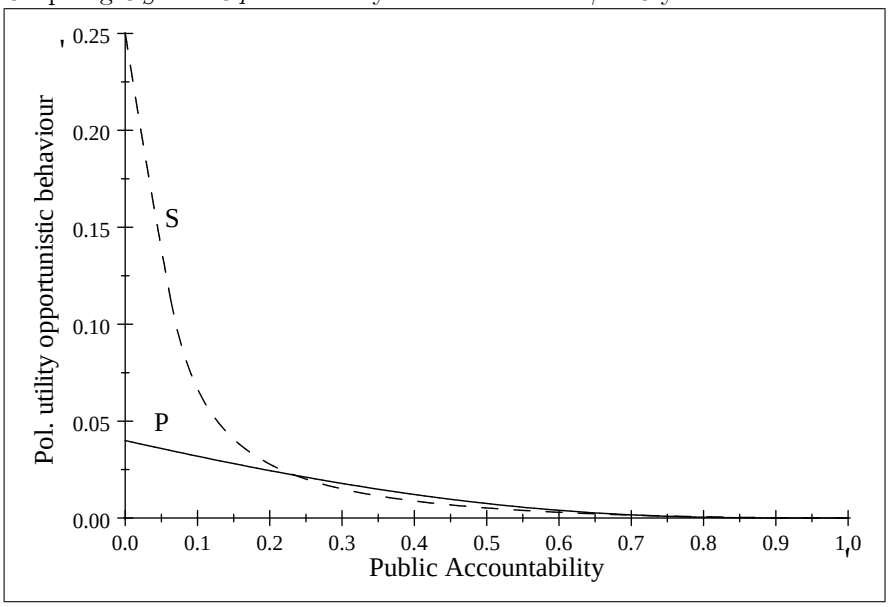
The politician chooses the governance system that results in the highest utility. To focus on lobbying and bribing we use the gains from opportunism O_p, which constitute an affine transformation of U_p.

Proposition 7 *Private ownership becomes more likely the higher ϕ. The politician prefers state ownership of banks as long as $\phi < \frac{[1+2(1-\beta)(2-\beta)]^2}{4\beta(1-\beta)^2(2-\beta)^2}$.*

Proof. $O_S > O_P \Leftrightarrow \frac{1-\beta}{4\beta\phi}\frac{1-\beta}{2-\beta} > \frac{(1-\beta)^4(2-\beta)}{[1+2(1-\beta)(2-\beta)]^2} \Leftrightarrow \phi < \frac{[1+2(1-\beta)(2-\beta)]^2}{4\beta(1-\beta)^2(2-\beta)^2}$.[12]
$\frac{\partial O_S}{\partial \phi} = \frac{\partial}{\partial \phi}\left(\frac{m^2}{2}\frac{1-\beta}{4\beta\phi}\frac{1-\beta}{2-\beta}\right) = -\frac{m^2}{2}\frac{(1-\beta)^2}{4\beta\phi^2(2-\beta)} < 0 \wedge \frac{\partial O_P}{\partial \phi} = 0.$

■

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



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

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

3.6 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 $\beta x(\phi vxnI)$. 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 λ of these liabilities is guaranteed by the government through taxation of citizens. We assume that $\lambda \in \left[0, \frac{1}{2}\right)$ 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 λmI is not repaid state banks fail. Then the politician suffers an additional damage of $\beta f(\phi, \lambda, I) \geq 0$.[13]

Proposition 8 *When negotiated non-repayment is possible, state loans are not fully repaid and rents are divided between entrepreneurs and the politician. This makes state bank ownership more likely.*

A single critical level of public accountability β^* exists such that (i) when $\beta < \beta^*$ the equilibrium share of non-repayment is $v_{S'} = 1$, leading to bank failure and (ii) when $\beta > \beta^*$, $v_{S'} = \frac{\lambda m}{n} < 1$ guaranteeing bank survival.[14] *As a result, $v_{S'}$ is nonincreasing in β and bank failures are more likely for low β.*

The share of non-repaid loans $v_{S'}nI$ appropriated by the politician (or $x_{S'}$) is nonincreasing in public accountability β and judicial independence ϕ.

Proof. The social welfare remains unchanged while the additional rents from non-repayment of loans are $(1 - \beta x\phi) vxnI$. In case of bank failure the politician

[13] For example, the penalty may positively depend on judicial accountability ϕ or bank capital $(1+\lambda)mI$.

[14] This result only holds if $f(\phi, \lambda, I)$ is not too large or too close to zero.

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 potential bank failure (iii) equilibrium entry $n_{S'}$ given $v \in [0,1]$ and (iv) equilibrium bank failure given $f(\phi, \lambda, I)$.[15] 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 $(1 - \beta x \phi) xnI$ and penalty $f(\phi, \lambda, I)$ is incurred by the politician. It is shown in appendix C that entry increases to $n_{S'} = \min\left\{m, \frac{m+(1-\beta)I}{2-\beta}\right\} > n_S$, because it allows the politician to extract more non-repayment rents.

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

(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.

[15] 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.

Moreover, the likelihood that too little is repaid for banks to remain solvent is decreasing in public accountability and the damage of bank failures to politicians. 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.

4 Conclusion

This paper investigates a politician's choice for either state or private ownership of banks in terms of public accountability and judicial independence. We study how this choice affects influence activities by special interests that offer the politician private benefits in exchange for exclusive access to finance. In state banks, politicians are bribed to direclty alter loan decisions, while politicians are lobbied to indirectly change the allocation of finance of private banks via their regulatory environment. We show that this difference can substantially affect the formation of interest groups, the allocation of finance and competition on the final goods market.

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 (1989) and LLSV (1998), we know that financial market development depends on minimum political and legal guarantees for investors. The approach also applies natural 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.

References

Acemoglu, Daron, Simon Johnson and Todd Mitton (2007), 'Determinants of Vertical Integration: Financial Development and Contracting Costs', working paper.

Beck, Thorsten, Asli Demirgüç-Kunt, Luc Laeven and Ross Levine (2007), 'Finance, Firm Size and Growth', working paper.

Benmelech, Efraim and Tobias Moskowitz (2007), 'The Political Economy of Financial Regulation: Evidence from U.S. State Usury Laws in the 19th Century', working paper.

Besley, Tomothy, Robin Burgess and Andrea Prat (2006), 'Mass Media and Political Accountability', LSE mimeo.

Bordo, Michael and Peter Rousseau (2006), 'Legal-Political Factors and the Historical Evolution of the Finance-Growth Link', European Review of Economic History, volume 10, pp. 421-444.

Bortolotti, Bernardo, Marcell Fantini and Domenico Siniscalco (2003), 'Privatisation around the world: evidence from panel data', Journal of Public Economics, volume 88, pp. 305-332.

Claessens, Stijn, Erik Feijen and Luc Laeven (2007), 'Political Connections and Preferential Access to Finance: The Role of Campaign Contributions', forthcoming Journal of Financial Economics.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer (2002), 'The Regulation of Entry', Quarterly Journal of Economics, volume 117:1, pp. 1-37.

Engerman, Stanley, and Kenneth Sokoloff (2002), 'Factor Endowments, Inequality, and Paths of Development Among New World Economies' NBER Working Paper No. 9259.

Faccio, Mara (2006), 'Politically Connected Firms', American Economic Review, volume 96:1, pp. 369-386.

Feijen, Erik and Enrico Perotti (2006), 'Deliberate Financial Fragility', working paper, University of Amsterdam.

Fisman, Raymond (2001), 'Estimating the Value of Political Connections', American Economic Review, volume 91, pp. 1095-1102.

Grossman, Gene and Elhanan Helpman (1994), 'Protection for Sale', American Economic Review, volume 84:4, pp. 833-850.

Haber, Stephen and Enrico Perotti (2007), 'The Political Economy of Finance', working paper.

Harstad, Bård and Jakob Svensson (2006), 'Bribes, Lobbying and Development', CEPR Discussion Paper 5759.

Khwaja, Asim Ijaz and Atif Mian (2005), 'Do Lenders Favor Politically Connected Firms: Rent Provision in an Emerging Financial Market', Quarterly Journal of Economics, volume 120:4, pp. 1371-1411.

Krozner, Philip and Randall Strahan (1999), 'What Drives Deregulation? Economics and Politics of the Relaxation of Bank Branching Restrictions', Quarterly Journal of Economics, volume 114, pp. 1437-1467.

La Porta, Rafeal, Florencio Lopez-de-Silanes, Christian Pop-Eleches and Andrei Shleifer (2004), 'Judicial Checks and Balances', Journal of Political Economy, volume 112:2, pp. 445-470.

La Porta, Rafeal, Florencio Lopez-de-Silanes and Andrei Shleifer (2002), 'State Ownership of Banks', Journal of Finance, volume 57:1, pp. 256-301.

La Porta, Rafeal, Florencio Lopez-de-Silanes and Andrei Shleifer (2006), 'What Works in Securities Laws?', Journal of Finance, volume 56:1, pp. 1-32.

La Porta, Rafeal, Florencio Lopez-de-Silanes and Andrei Shleifer (2007), 'The Economic Consequences of Legal Origins', NBER working paper 13608.

Lopez-de-Silanes, Florencio, Andrei Shleifer and Robert Vishny (1997), 'Legal Determinants of External Finance', Journal of Finance, volume 52:3, pp. 1131-1150.

Lopez-de-Silanes, Florencio, Andrei Shleifer and Robert Vishny (1998), 'Law and Finance', Journal of Political Economy, volume 106:6, pp. 1113-1155.

North, Douglas and Barry Weingast (1989), 'Constitutions and Commitment: The Evolution of Institutional Governing Public Choice in Seventeenth-Century England', The Journal of Economic History, volume 49:4, pp. 803-832.

Olsen, Mancur (1965), 'The Logic of Collective Action: Public Goods and the Theory of Groups', Harvard University Press.

Perotti, Enrico and Paolo Volpin (2007), 'Lobbying on Entry', CEPR Working Paper 4519.

Rajan, Raghuram and Rodney Ramcharan (2007), 'Landed Interests and Financial Underdevelopment in the United States', working paper.

Rajan and Zingales (2003), 'The Great Reversals: the Politics of Financial Development in the Twentieth Century', Journal of Financial Economics, volume 69:1, pp.559-586.

Sapienza, Paolo (2004), 'The Effects of Government Ownership on Bank Lending', Journal of Financial Economics, volume 72:2, pp. 357-384.

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:

$$\max_{n,q} U_p \text{ s.t. } \pi_e \geq 0 \tag{18}$$

resulting in

$$n^* = \frac{m}{2-\beta} \tag{19}$$

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

$$q^* = \begin{cases} 1 \text{ if } \beta \leq \frac{1}{2\phi} \\ \\ \frac{1}{2\beta\phi} \text{if } \beta \geq \frac{1}{2\phi} \end{cases} \tag{20}$$

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 $m < \frac{1}{2} : \exists Q_j, Q_h \in Q : Q_j \cap Q_h = 0$. 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 (7).

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 (1) with

$$|Q_k|\,\pi_{e\in Q_k} = \begin{cases} 0 \text{ if } \beta \leq \frac{1}{2\phi} \\ \\ \frac{m^2}{2}\frac{(1-\beta)(2\beta\phi-1)}{2\beta\phi(2-\beta)} \text{ if } \beta \geq \frac{1}{2\phi} \end{cases} \tag{21}$$

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 $E\left[\pi_e\left(n_j\right)\right] = 0$ **or** wins and has $E\left[\pi_e\left(n_j\right)\right] < 0$ (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 (13) in (6) yielding

$$\begin{aligned} O_S &= (1-\beta)\left(1-\beta q\phi\right) q_S \rho\left(n_S\right) \\ &= \begin{cases} (1-\beta)\left(1-\beta\phi\right)\rho\left(n_S\right) \text{ if } \beta \leq \frac{1}{2\phi} \\ \\ \frac{1-\beta}{4\beta\phi}\rho\left(n_S\right) \text{ if } \beta \geq \frac{1}{2\phi} \end{cases} \geq 0 \end{aligned} \tag{22}$$

with $\rho\left(n_S\right) = \frac{m^2}{2}\frac{1-\beta}{2-\beta}$. 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, $U_p\left(n_2\right) > U_p\left(m\right)$ if

$$\beta s\left(n_2\right) + \left(1-\beta\right) r_2 \geq \beta s\left(m\right) \tag{23}$$

$$\Leftrightarrow 1 + \frac{\left(1-\beta\right)^4\left(2-\beta\right)}{\beta\left(1+2\left(1-\beta\right)\left(2-\beta\right)\right)^2} \geq 1 \text{ for all } \beta \in [0,1]$$

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

$$U_p(n_j) = \beta s(n_j) + (1-\beta) n_j (m - n_j) \tag{24}$$

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 $w_{i-1} \in Q_j$,[16] **and** if (b) $i \notin Q_{j' \neq j}$. The first representative starts by requesting the richest citizen $i = 1$ to join his group[17], 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 $i = |Q_1| + 1$.

By maximising (1) 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.

[16] We order citizens such that $w_{i-1} < w_i < w_{i+1}$.

[17] As a matter of fact, he can ask any citizen with wealth $w_i \geq \frac{m-n_1}{m} I$.

(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 (9). 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.[18] 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 (9).

The utility from opportunism is found by substituting (17) in (6) such that

$$\begin{aligned} O_P &= \beta s(n_P) + (1-\beta) r_P - \beta s(m) \\ &= \frac{m^2}{2} \frac{(1-\beta)^4 (2-\beta)}{[1+2(1-\beta)(2-\beta)]^2} \end{aligned} \tag{25}$$

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

C. Non-repayment of state bank loans

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

[18] There is only downward mobility in joining an additional lobby.

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

Maximising this to q, x and n subject to (7) 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

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

Maximising this to q, x and n subject to (7) 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

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

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

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

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