To Be Bribed or Lobbied: Political Control or Regulation

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Abstract

The form of political governance determines the structure of competition among interest groups. A politician choosing direct control of firm entry can be bribed, while regulating it through requirements makes her prone to lobbying. Direct control offers exclusive benefit to the winning group resulting in competition among bribers, so all rents accrue to the politician. Under regulation some agent cannot be excluded from entry, giving their lobby a competitive advantage. They extract rents at the expense of the politician. If institutional quality is low politician prefers being bribed as she faces a low risk of prosecution. Heterogeneous legal power of citizens may induce unequal competition also under bribing, allowing powerful bribers to share in political rents.

1 Introduction

Models of political influence by interest groups often treat bribing and lobbying as equivalent (Persson and Tabellini, 2016). While they both entail a transfer towards the government in exchange for favors, in practice they differ across several dimensions. Critically, bribing aims at circumventing an existing policy, whereas lobbying seeks to change it (Harstad and Svensson, 2011). Moreover, bribing is illegal (Rose-Ackerman, 1975), while some form of lobbying is allowed in most jurisdictions and considered a legitimate form of advocacy.

This paper explores the implications of these differences for competition among interest groups under bribing and lobbying. The competitive structure determines both the policy and the size of political rents. We show how the quality of institutions such as political accountability and strength of the legal system affect politician's preference for being bribed or lobbied.

Bribing involves competition for an exclusive benefit of circumventing regulation, and therefore allows the politician to extract maximum political rents. Lobbying aims to alter universally applicable policy criteria. Rules generate non-excludable benefits for those who satisfy it, giving the corresponding lobby a bargaining power in the political game. This allows lobbyists to extract a share of rents at the expense of the politician. A key result is that when the political accountability is low and the legal system is weak the politician prefers to be bribed. As stronger institutions increase the risk of prosecution, they make bribing less attractive relative to lobbying.

The model considers a semi-benevolent politician who decides on the level of firm entry. She can choose to control market access directly or to regulate it by setting a minimum entry requirement based on some attribute. Citizens may form competing interest groups in order to seek entry. They lobby for a favorable entry requirement if the politician opts for regulation or bribe to be granted market access if she chooses direct control. Since bribing is illegal, the politician setting entry via direct control faces the risk of costly prosecution.

As characteristics do not matter under bribing, perfect competition between briber groups emerges. Each seeks to convince the politician to breach the rule in its' favor allowing her to extract maximal political rents. Lobbying aims to define the level of the entry requirement. Individuals endowed with a strong characteristic can satisfy the requirement more easily. They unite in an interest group (forming a "strong lobby") and win the lobbying game by

outbidding any counteroffer. Since no rule can exclude entry by the strong lobby while allowing entry by weaker individuals, counter-lobbies stand to gain lower monopoly profits if they enter. They are thus unable to offer high transfers to a politician, weakening her bargaining power against the strong lobby. As a result the strong lobby retains some of the political rents. It can increase its' share of rents by admitting more members, thereby weakening the competition and further undermining politician's outside option. Such strategic enlargement under lobbying results in higher entry rates than under bribing.

Governing via direct control and being bribed promises higher political rents to the politician, but comes with the risk of prosecution. Prosecution of a corrupt politician is more likely in economies with a stronger legal systems. Moreover, higher political accountability diminishes the difference in potential rents under the two regimes. Thus, the politician opts for direct control only if the institutional quality is not too high. With sufficiently high accountability the politician prefers to be lobbied, a result consistent with evidence of lobbying being more prevalent than bribing in states with stronger democracies and more independent media (Campos and Giovannoni, 2007).

An extension explores the outcomes when likelihood of prosecution depends on the number and identity of entrepreneurs. Customers support the legal inquiry against the politician and thereby increase the probability of prosecution. The effectiveness of these efforts depends on their total legal power, which can reflect the literacy, access to legal advice and representation or connections in the judiciary system of the opposing coalition. Thus, de facto strength of the legal system is determined endogenously by the interaction of exogenous distribution of power and politician's policy choice.

Higher entry lowers the de facto legal strength and the associated probability of prosecution, as it diminishes the total power of the coalition of customers. Thus, the more powerful the citizens the lower the optimal level of entry. When legal power is homogenous across all citizens, entry is set so that to maximize the expected rents of the politician, like in the baseline model. With heterogeneous power, the competitive structure of the bribing game changes. Powerful citizens form a bribing group with an advantage over others: the politician allowing entry by a less powerful group would face a higher risk of prosecution. This reduces politician's bargaining power vis-a-vis the most powerful bribing group, forcing her to surrender a share of the political rents. The result resembles the outcome in the case of lobbying,

however the mechanisms differ. Here the bargaining power derives from citizens ability to influence the prosecution risk, while in the case of lobbying it is driven by non-excludability of strong citizens.

The distribution of legal power plays a key role in determining the equilibrium level of entry. If the inequality is not too large, entry is higher than in the case of homogenous power. The intuition is that powerful bribing group has an incentive to expand its' size so that to further undermine the outside option of the politician and extract higher share of the political surplus. If power is distributed very unevenly, entry level may be lower than in the homogenous setting. In this case the marginal expansion of the powerful bribing group does not affect the likelihood of prosecution (and thus the political rents accruing to the group) sufficiently to justify diluted profits.

2 Related Literature

This paper contributes to the extensive literature on the special interest politics, dating back to seminal work of Olson (1965). We study competition between interest groups in a setting in which the goal of regulation is to allow groups to extract rents in the spirit of Stigler (1971); Posner (1974) and Peltzman (1976).

Early contributions explore welfare implications of competition for political favors between exogenously determined interest groups (Krueger, 1974; Becker, 1983; Grossman and Helpman, 1996). Mitra (1999) studies the decision to form an interest group by modeling both the costs of association and the benefits of political influence. Abstracting from these costs Perotti and Volpin (2007) endogenize the size of a single interest group seeking preferential access to production. Our paper builds on this work and explores the differences that emerge between lobbying and bribing when multiple groups compete for market access.

Shleifer and Vishny (1993) show that, in weak states, lack of coordination between multiple agencies may lead to very high corruption levels as corrupt officials do not internalize the externality that their demands impose on other officials. Moreover, secrecy of bribery, necessary due to its' illegality, can make even well-coordinated corruption less efficient than taxation. Relatedly, our setting considers a single politician and focuses on the impact of competition between interest groups on the size of her rents and points to illegality as in important determinant of the choice between being bribed or lobbied.

Previous research explores the differences between lobbying and bribing and their welfare implications (Lambsdorff, 2002). Our distinction between the two is most closely related to that used by Harstad and Svensson (2011). We view lobbying as a means of changing the shape of a policy and bribing as a way to gain direct economic benefits. They explore the choice of a firm between these two modes of exerting political influence on a politician or a bureaucrat. We abstract from the agency conflict within the government and contribute by studying the incentives of a politician to design policy in a way that makes her susceptible to either lobbying or bribing. As in Damania et al. (2004) we assume bribery to be illegal. However, while their work investigates the possibility of lobbying that targets the reform of legal institutions, we treat these as sticky and analyze how their quality may affect the preference of politicians for regulation via rules or direct control.

Empirically, misuse of office appears to be constrained by the quality of institutions Svensson (2005). Campos and Giovannoni (2008) show that lobbying is more likely than bribing in democracies with independent media. Related evidence links bribing with low political accountability Kaufmann and Vicente (2011) and transparency Bennedsen et al. (2011), in line with the predictions of our model. Pieroni and d'Agostino (2013) show that bribery is associated with lower levels of regulation. For us this relation is a direct consequence of the assumption that by choosing the mode of policy making the politician also chooses how she will be influenced by the interest groups.

Bribing firms tend to benefit from engaging in corruption (Zeume, 2017), but on a country level it reduces firm growth (Fisman and Svensson, 2007), investment and GDP growth Mauro (1995). Similarly, lobbying firms appear to exert negative externalities on their competitors through inducing politicians to pass legislation that favor their narrow interests Neretina (2019). In our framework, both bribing and lobbying lead to inefficiently low firm entry, however our analysis points to a clear normative ranking. Social welfare is higher under lobbying as strong lobby can weaken politician's bargaining position by expanding in size.

Our work explores the ability of special interest groups to influence politicians in the context of entry policy. Previous research points to an important relationship between corruption and market competition. Ades and Di Tella (1999) show that ability of firms to earn monopoly rents may stimulate corruption, though the relationship may be reversed if firms differ in their cost effectiveness (Bliss and Tella, 1997). In a related paper, Emerson (2006)

shows that when detection of bribery depends on the number of firms and the size of the bribe, multiple equilibria may emerge: one characterized with a positive and one with a negative corruption-competition relationship. In our setting the politician trades-off social welfare against contributions by interest groups, so that size of transfers is negatively associated with the firm entry. In our model the political accountability shifts politician's preference towards social welfare, resulting in higher entry. In line with this intuition evidence suggests that competition is more limited when citizens have fewer democratic rights Benmelech and Moskowitz (2010).

3 Model Set Up

We study the choice of a politician to govern firm entry through direct control or minimum requirement regulation. Agents can form interest groups to seek entry into the market under either of the modes of governance, they bribe in case of the former or lobby in case of the latter. The politician can accept the contribution of one of the groups in exchange for granting it's members market access.

The model consist of one period, a unit mass of citizens and a single politician. In this section we first lay out the preferences and production technology of the citizens. Then we introduce the problem of a politician and discuss the formation of special interest groups.

3.1 Citizens

A unit mass of citizens indexed by i, derive utility from consuming the intermediate good (a numeraire) and a final good. The amount consumed of each good is denoted by x_i and y_i respectively and the utility function is given by:

$$U_i = x_i + ay_i - \frac{1}{2}y_i^2 \tag{1}$$

where $a > 1$ scales the utility of consuming the final good relative to the numeraire and ensures positive demand. Citizens receive a homogenous endowment of the numeraire equal to ω.

Each citizen has access to technology to invest one unit of numeraire in order to produce one unit of final good. We refer to those who do so as entrepreneurs $i = e$. The number of entrepreneurs who can enter the product market, n, is determined by the politician who

either grants permission directly to specific agents or sets a regulatory requirement. Once allowed to enter they can sell the final good at endogenously determined competitive price $p(n)$ and earn a profit $\pi_e(n) = p(n) - 1$. Citizens who are denied entry cannot sell the final good therefore choose not to produce. They are referred to as consumers, $i = c$, and earn no profits, $\pi_c = 0$.

We define m as the entry level at which entrepreneurs make zero profits, $\pi_e(m) = 0$, and assume that $m \leq \frac{1}{2}$, so that even without politician's restrictions on entry consumers are in the majority.

Citizens are heterogeneous with respect to some observable characteristic $\delta_i \sim F(\delta)$ describing its' distribution in the population. For tractability, we assume that the characteristic is not correlated with agent's productivity nor preferences. It is however a criterion that the politician can use in setting the entry requirements. This assumption allows us to focus on the environment in which any policy limiting entry or selecting the identity of entrepreneurs is aimed solely at rent extraction and brings no social benefits.

Some of the citizens are also endowed with organizational talent, which allows them to solve the collective action problem in order to form interest groups and influence the policy. We refer to them as representatives. Their role and objective is discussed in section 3.3.

3.2 Politician

In the tradition of Grossman and Helpman (1996), we assume a semi-benevolent politician. We study her choice of a form of governance, g, and the level of entry that she allows, n.

Form of Governance

The politician can control entry directly or regulate it through a minimum requirement for market access. Table 1 compares the two forms of governance. Under direct control the politician can be bribed by interest groups for preferential access. When entry is regulated through requirements lobbying groups are formed to advocate a favorable rule. Since each form of governance corresponds to a different mode of influence by the interest groups, we sometimes refer to governance by direct control as "being bribed" (and denote it as $g = B$), and to setting regulation as "being lobbied" (denoted as $g = L$).

When governing through direct control, the politician selects the citizens who will be

Governance structure (g)	Selection technology	Influence by interest groups	Legality
Direct control ($g = B$)	Choosing individuals	Bribing	Illegal
Regulation ($g = L$)	Setting the rule	Lobbying	Legal

Table 1: Bribing versus lobbying

allowed to sell the final good in the market. As positive monopoly rents can be earned, citizens have an incentive to offer bribes to the politician in return for being allowed exclusive entry. This type of outright corruption, or quid-pro-quo is generally illegal and thus results in prosecution of the politician. The prosecution succeeds with probability $\rho(g = B) = \phi$, where ϕ measures the strength and independence of legal institutions. If it does the he politician is forced to give up the contributions through fines and is not allowed to compete for reelection which brings her utility to zero. For tractability we assume that the politician faces the risk of prosecution whenever she chooses to govern by direct control. In Appendix A.3 we show that it does not affect the main result of the analysis.

Alternatively, the politician can regulate entry by imposing a minimum entry requirement. Regulation entails setting a threshold $\hat{\delta}$, such that only citizens with a characteristic above the threshold can enter the market (resulting in entry equal to $n(\hat{\delta})$. The requirement can represent a regulatory barrier to entry. This can be a criterion based on personal attributes such as minimum level of education or age. Alternatively technological standards, safety requirements or accounting and taxation rules can imply an entry limit dependent on agent's access to finance. Critically, regulation implies that those who satisfy the requirement cannot be excluded from the market, and that rules are implemented as legislation and thus legal. The risk of successful prosecution of a politician using regulation is zero $\rho(g = L) = 0$

Politician's Utility

Because of re-election concerns the politician values social welfare $S(n) = nU_e(n) + (1 - n)U_c(n)$. She also derives utility from contributions paid by interest groups, $K(n)$, because these can be consumed in the future or help finance campaign spending. The utility function weighs welfare and contributions by β and $1-\beta$ respectively, where $\beta \in [0, 1]$ measures public accountability. Taking into account the risk of successful prosecution the expected utility of

the politician can be expressed as:

$$U_p = (1 - \rho(g)) \left[\beta S(n) + (1 - \beta) K(n)\right] \tag{2}$$

We view both the accountability, β, and the quality of the legal system, ϕ, as persistent institutions that cannot be directly affected by the government.

3.3 Interest groups

There are J representatives indexed by j. Each representative can form a coalition consisting of q_j citizens and offer the politician a contribution K_j in return for market entry for the members of the group. The role of the representative is to solve the coordination problem, formulate the offer and collect the contributions from all of group's members. Representatives enter sequentially and can offer membership to any citizen not yet associated with another interest group.

Each group can commit to pay its' promised contributions after its' offer has been accepted, the corresponding policy implemented and the profits were realized. This group can refuse to pay the contributions if the politician does not implement its' preferred policy. This threat ensures that the politician can only accept an offer of one interest group. However, under lobbying a subset of agents with high characteristic q'_j may be granted entry rights by free-riding on the offer of another group that advocates for a lax minimum requirement.

The representative charges a fee that represents an infinitesimal fraction of the coalitions profit Π_j i.e., total profits of entrepreneurs in the coalition net of paid contribution. Therefore, he maximizes:

$$\Pi_j = \begin{cases} q_j(p-1) - K_j & \text{if } j \text{ wins} \\ q'_j(p-1) & \text{if } j \text{ looses but } q'_j \text{ get access} \\ 0 & \text{otherwise} \end{cases} \tag{3}$$

If the politician governs via direct control interest group j bribes the politician for exclusive access to the market by its' members to ensure that $n(B) = q_j$. In case of regulation through minimum entry requirements, group j lobbies for the requirement to be set so that all agents in coalition q_j satisfy it. Let $\underline{\delta_j}$ be the characteristic of the lowest ranked member of coalition j, then the requirement that the group lobbies for is $\hat{\delta} = \underline{\delta_j}$.

3.4 Timeline

The timing of actions by different agents in the economy is the following:

1. Citizens receive their endowments ω
2. Politician chooses governance structure g
3. Representatives $j = 1, 2, ..J$ enter sequentially to form interest groups and make an offer to a politician (n_j, K_j)
4. The politician chooses one of the offers or decides on entry policy independently forgoing contributions
5. Entrepreneurs produce and sell their good to consumers
6. Interest group whose offer was accepted pays the contribution K_j
7. Citizens consume x_i and y_i
8. The uncertainty about the success of prosecution is realized

3.5 Social welfare and Laissez-Faire

The utility maximization by citizens yields the individual demand function for the final good: $y_i^d = a - p$. The total supply of the final good corresponds to the number of active entrepreneurs $y^s = n$. Aggregating the individual demand and equating with the supply gives an expression for the equilibrium price $p = a - n$. Since $n = m$ is the maximum size of the market, entrepreneurs' profits can be expressed as:

$$\pi_e = m - n$$

Using that in indirect utilities of entrepreneurs $V_e(n)$ and consumers $V_c(n)$, gives the social welfare:

$$S(n) = n\left(m - \frac{1}{2}n\right) \tag{4}$$

Corollary 1. *Under free entry entrepreneurs enter the market until no more profits can be earned, $n = m$, and the social welfare is maximized, $m = argmax_n S(n)$.*

4 Political Equilibrium

In this section we study the outcomes of competition among interest groups under direct control and regulation: political offers made, resulting policy and distribution of political rents. We show how these depend on the institutional quality and ultimately determine politician's preferred form of governance.

Under both governance structure interest groups have incentives to offer contributions in return for preferential entry. For the politician to accept the offer of interest group j, the level of entry and the contribution it proposes must be such that she is better of accepting the offer than not accepting any and the offer made by group j cannot be dominated by an offer from another group $k \neq j$. If the politician does not accept any offer she chooses the level of entry that maximizes her utility conditional on receiving no contributions: $n = m$. In this case the policy is implemented by allowing entry by the first m firms. The resulting participation and incentive constraints of the politician considering an offer by group j are:

$$\beta S(n_j) + (1-\beta)K_j \geq \beta S(m) \tag{PC-P}$$

$$\beta S(n_j) + (1-\beta)K_j \geq \beta S(n_k) + (1-\beta)K_k \ \forall k \neq j \tag{IC-P}$$

4.1 Direct Control and Bribing

If market access is determined by direct control, special interest groups can bribe the politician in order to seek exclusive entry. Since the representative can only charge a fee based on the profits of its' members, under bribing he will never seek an entry policy that is broader than its' member base. The profits of each bribing group are:

$$\Pi_j^B = \begin{cases} n_j(m-n_j) & \text{if group } j \text{ wins} \\ 0 & \text{otherwise} \end{cases}$$

The level of entry that maximizes the total profit of the bribing group is $n^* = \frac{m}{2}$. Any offer made by the group needs to satisfy its' participation constraint:

$$n_j(m-n_j) - K_j \geq 0 \tag{5}$$

Presence of multiple representatives induces competition among bribing groups. Any offer by group j that leaves it's participation constraint slack, thereby allowing the members to

earn positive rents, can be outperformed by a counter offer by briber k. The counter offer can provide the politician with higher utility by either increasing the size of the contribution or requesting higher entry. Consequently, a bribing group j finds it optimal to offer (n_j, K_j) that maximizes politicians utility while satisfying the group's participation constraint.

Proposition 1. *Under direct control the first* $l = \lfloor \frac{1}{n^B} \rfloor$ *representatives form bribing groups of equal size* n^B*. Each bribing group makes an offer* (n^B, K^B)*:*

$$n^B = \frac{m}{2-\beta} \tag{6}$$

$$K^B = n^B(m - n^B) \tag{7}$$

and has an equal chance of being granted market access.

Proof. In Appendix A.1 □

The political game between the interest groups and the politician can generate rents for both parties. However, competition forces bribing groups to forgo all the rents associated with exclusive entry to the product market and make an offer that maximizes politician's rents. They pledge all of the profits as contributions and seek entry above the profit maximizing level, $n^B > n^* = \frac{m}{2}$. The expected rents that accrue to the politician are:

$$\Omega_P^B(n^B, \phi) = (1-\phi)\left[\beta S(n^B) + (1-\beta)n^B(m - n^B)\right] \tag{8}$$

Lemma 1. *Under direct control:*

- *the level of entry increases in political accountability,* $\frac{dn^B}{d\beta} > 0$*,*
- *the size of the political contribution decreases in political accountability,* $\frac{dK^B}{d\beta} < 0$*.*

Proof. In Appendix A.1 □

With higher political accountability the politician favors social welfare relative to transfers. Consequently, bribing groups seeking to maximize politician's rents make offers that involve a higher entry level and a lower contribution.

4.2 Regulation and Lobbying

If the politician decides to regulate entry by setting a minimum requirement any citizen with a characteristic high enough to satisfy it can sell the product in the market. When choosing whether to lobby for entry, an agent with a given δ_i needs to consider that if he is allowed entry, so is anyone with a higher characteristic. As a consequence representatives sequentially form lobbying groups composed of citizens with highest characteristics among those who are not yet associated in another group.

The offer made by each lobby can be expressed in terms of the contribution offered and the preferred minimum requirement, $\hat{\delta}_j$, or equivalently the total entry that it permits, n_j. Given the sequential entry, the size of each lobby is given by $q_j = (n_j - n_{j-1})$, where $n_0 = 0$. Using this notation, the total profits of successive lobbying groups can be expressed as:

$$\Pi_j^L = \begin{cases} (n_j - n_{j-1})(m - n_k) & \text{if lobby } k > j \text{ wins} \\ (n_j - n_{j-1})(m - n_j) - K_j & \text{if lobby } j \text{ wins} \\ 0 & \text{if lobby } k < j \text{ wins} \end{cases}$$

Thus, the participation constraint for a lobbying group to offer a positive contribution to the politician is:

$$(n_j - n_{j-1})(m - n_j) - K_j \geq 0 \tag{9}$$

Critical feature of regulation is that only the lobby formed by the first representative, composed of the highest ranked citizens (thereafter referred to as the strong lobby), can enjoy exclusive market access upon winning the lobbying game. Victory by any subsequent lobby would enable entry by its' members as well as entrepreneurs associated in the previously formed lobbies. The non-excludability of the strong lobby gives it a competitive advantage over other groups in the lobbying game. The intuition is that any subsequent lobby shares the monopoly rents with the strong lobby. The lower profits earned by these groups imply a tighter participation constraint, limiting the size of contributions that they can offer to the politician. This weakened competition enables the strong lobby to secure exclusive access at a lower cost.

Proposition 2. *Under regulation two lobbying groups are formed: the strong lobby composed of n_1^L citizens with highest characteristic, and the counter-lobby composed of the next $n_2^L - n_1^L$*

citizens. The strong lobby makes a winning offer (n_1^L, K_1^L)*:*

$$n_1^L = \frac{1 + (2-\beta)(1-\beta)}{1 + 2(1-\beta)(2-\beta)} m \tag{10}$$

$$K_1^L = \frac{\beta}{1-\beta}(S(n_2) - S(n^L)) + (n_2^L - n^L)(m - n_2) \tag{11}$$

where $n_2^L = \frac{m+(1-\beta)n_1^L}{2-\beta}$ $K_2^L = (n_2^L - n_1^L)(m - n_2^L)$ *is the best offer of the counter-lobby. The minimum entry requirement* $\hat{\delta}$ *satisfies* $F(\delta > \hat{\delta}) = n_1^L$*.*

Proof. In Appendix A.2 □

In order to win the lobbying game the strong lobby needs to outbid its' fiercest competitor. Due to non-excludability of the stronger lobbies, the group formed around the second representative (composed of highest characteristic citizens among those not associated in the strong lobby) can make the most attractive counter-offer to the politician. Subsequent group can offer only a lower political contribution as higher entry results in lower monopoly rents. The best offer of the second lobbying group, also referred to as the counter-lobby, allocates all of the group's profits as contribution $(n_2^L - n^L)(m - n_2^L) = K_2^L$ and sets entry level that maximizes politician's utility.

Given the best counter-offer, the strong lobby's can win if it's offer satisfies politician's participation constraint:

$$U_p(n_2^L, K_2^L) \geq U_p(n_1^L, K_1^L) \tag{PC-P-L1}$$

As long as this holds, the strong lobby can choose its' size n_1^L so that to maximize own profits. The resulting entry and contribution are given by (10) and (11) in Proposition 2.

Inability of the counter-lobby to offer as high contributions to the politician, gives bargaining power to the strong group in the game against the politician. The strong lobby offers just enough of its' profits to compensate the politician for not choosing the offer of the counter-lobby and reaps the remainder of the rents generated by the policy. The total rents that accrue to the politician and the winning lobby are:

$$\Omega_P^L(n_1^L, n_2^L) = \beta S(n_2^L) + (1-\beta)(n_2^L - n_1^L)(m - n_2^L) \tag{12}$$

$$\Omega_L^L(n_1^L, n_2^L) = \frac{1}{1-\beta}\left[\beta S(n_1^L) + (1-\beta)n^L(m - n_1^L) - \Omega_P^L(n_1^L, n_2^L)\right] \tag{13}$$

An alternative strategy by the strong lobby could be to free-ride on the offer by other lobbies. In that case the level of entry would reflect the offer of the counter-lobby, which would choose it so that to maximize own rents while ensuring that it outbids the subsequent group. The counter-lobby does not internalize the impact of its offer on the rents accruing to the strong lobby. As a consequence the total rents earned by the entrepreneurs are lower than in case of the strong lobby making the winning offer. Therefore free-riding on the offer of the second lobby is sub-optimal for the strong.

Lemma 2. *Under minimum entry requirement:*

- *the level of entry increases in political accountability,* $\frac{dn^L}{d\beta} > 0$,
- *the rents accruing to the strong lobby decrease in political accountability,* $\frac{d\Omega_L}{d\beta} < 0$.

Proof. In Appendix A.2 □

As in the case of bribing, higher political accountability implies that importance of the social welfare in politician's utility increases. This increases the marginal costs of lobbying for low entry resulting in a lower equilibrium size of the strong lobby and entry level. Moreover, since with high accountability the politician cares more about the level of entry than contributions, the offer by the counter-lobby (which entails higher entry) becomes relatively more attractive. This weakens the bargaining power of the strong lobby, leaving it with fewer rents.

4.3 Choice of the Form of Governance

The structure of competition among the interest groups is one of the two key differences between direct control and regulation. It drives the equilibrium entry level and the distribution of political rents under the two governance structures. The other distinction is in terms of the risk of successful prosecution of the politician. The politician chooses the governance that maximizes her expected political rents. In this section we compare the equilibrium outcomes under direct control (bribing) and regulation (lobbying) and show how political accountability and legality shape politician's preference for one over the other.

The level of entry into the product market determines social welfare in this framework: higher entry implies higher citizens' utility. The profits earned by the entrants in the restricted

market improve the utility of entrepreneurs at the expense of the consumers. The lemma below compares the level of entry and welfare under direct control and minimum requirement regulation .

Lemma 3. *The level of entry and social welfare is lower under direct control than under minimum requirement policy.*

$$n^B > n^L$$
$$S(n^B) > S(n^L)$$

Proof. In Appendix A.3 □

Under direct control competition between interest groups results in each of them choosing its' size and the corresponding level of entry so that to maximize politician's rents. Weighing the social welfare benefits and the political contributions yields n^B as the optimal level of entry. Under regulation, the strong lobby chooses its' offer so that to maximize own rents. Increasing the level of entry (and the size of the lobby) has two effects on the rents. On one hand, increasing the number of firms operating decreases the profits that can be earned by the entrepreneurs. This mechanism is at play in the context of both bribing and lobbying. On the other hand, increasing the size of the lobby weakens the counter-lobby, thereby undermining the bargaining position of the politician. This lowers the rents accruing to the politician, $\Omega_P(L, n^L)$, leaving more available to the strong lobby. The group accounts for these additional benefits, that do not occur in the context of bribing, and therefore chooses a higher entry level (and the corresponding group size).

Corollary 2. *If the politician is not prosecuted, the rents she earns under direct control are higher than under regulation.*

$$\Omega_P^B(n^B, 0) > \Omega_P^L(n_1^L, n_2^L)$$

Under regulation the level of entry is set to maximize rent's accruing to the strong lobby, while under direct control it is set to maximize politician's rents. Consequently, without prosecution the politician could earn higher rents while being bribed than if she was lobbied. However, since direct control makes the politician exposed to the risk of prosecutions, the expected rents may be higher under regulation. The choice of the form of governance depends on the strength of the legal system and the level of political accountability.

Proposition 3. *There exists a threshold quality of the legal system $\hat{\phi}$ at which the politician is indifferent between governing through direct control and regulation. If the quality of the legal system is below the threshold, the politician prefers direct control (being bribed), if it is above she prefers regulation (being lobbied). The threshold decreases in political accountability:*

$$\frac{d\hat{\phi}}{d\beta} < 0 \tag{14}$$

Proof. In Appendix A.3 □

When choosing the governance structure, the politician trades off the size of political rents against the likelihood of earning them. Under direct control competition between bribing groups maximizes the surplus accruing to the politician, however the threat of prosecution implies that she may not be able to benefit from it. The lower the quality of the legal system, the lower the threat of prosecution. This results in a higher expected utility of the politician under bribing. The level of political accountability affects the trade-off indirectly. An increase in β implies that the politician cares more about social welfare and less about the financial gains. Since under lobbying the politician receives lower contributions and implements a higher entry than under bribing, higher political accountability makes governing via regulation relatively more attractive. In this case lower quality of legal system is sufficient to deter the politician from choosing to be bribed.

5 Legal Power

In this section we extend the framework by allowing the probability of prosecution to depend on the number and the identity of citizens granted entry. We explore it's effect on the equilibrium level of entry and the size of rents earned by the bribers and the politician.

Each citizen is assumed to have some legal power ψ_i, which can be used to increase the likelihood of prosecuting a politician. It can reflect citizen's legal literacy, access to advice and representation, or connections to the judiciary system. The citizen can commit to not contribute to the prosecution efforts if he is allowed to enter the product market. Therefore, the probability of prosecution is determined by the total legal power of the consumers $\rho(B) = \bar{\psi_c}$.

In the current setting the de facto strength of the legal system is no longer exogenous. It is endogenous and depends on the entry policy of the politician. What can be viewed as

an underlying stable institutional characteristic is now the distribution of legal power in the society. In this context we consider two cases.

First the legal power is assumed to be homogenous $\psi_i = \psi < 1$, which allows us to isolate the impact of the prosecution considerations on the level of entry under bribing.

Next, we allow for heterogeneous distribution of power, $\psi_i \sim G(\psi)$. In this context legal power affects the bargaining position of the bribing groups. We analyze the impact on the distribution of rents and study how the degree of inequality in power affects the level of entry.

5.1 Homogenous Legal Power

When citizens are homogenous with respect to their legal power, there is no natural ranking of the most preferred members of a bribing group. Thus, as in the baseline setting the representative j forms a group of size n_j composed of any citizens not yet associated elsewhere. Competition induces these identical bribing groups to maximize politician's utility by offering all of their future profits as contributions.

The difference relative to the no-legal-power-case is that now, tighter entry restrictions come at a cost of higher risk of prosecution for the politician, specifically:

$$\rho(B, n^B) = \phi + (1 - n^B)\psi \tag{15}$$

Lemma 4. *The level of entry under direct control increases in the legal power of the citizens.*

Proof. In Appendix A.4 □

Higher legal power of citizens implies a higher sensitivity of the probability of prosecution to the level of entry. This increases the cost of limiting entry for the politician. As bribing groups competing to win exclusive access maximize politician's utility, they choose their size and propose the level of entry that accounts for this additional effect.

5.2 Heterogenous Legal Power

If citizens differ in their legal power, the identity of entrepreneurs matters for the likelihood of prosecution. Thus, bribing groups composed of citizens with high legal power are able to make more attractive offers, by ensuring that their power does not contribute to the prosecution efforts.

The first representative finds it optimal to form a group composed of n_1^B citizens with highest legal power, $n_1^B = G(\psi > \psi_1)$. Each following representative j associates the group of next most powerful citizens, with the group size given by $n_j^B = G(\psi_{j-1} > \psi > \psi_j)$. If market access is granted to a bribing group j, the total power of the consumers is $\Psi(n_j, n_{j-1}) = \int_{-\infty}^{\psi_j(n_j)} \psi g(\psi) d\psi + \int_{\psi_{j-1}(n_{j-1})}^{+\infty} \psi g(\psi) d\psi$, with $n_0 = 0$.

Assumption 1. *The distribution of legal power is such that*

- *The probability of prosecution increases in the size of the group granted entry,* $\Psi'_{n_j}(n_j, n_{j-1}) < 0$*, for all* $n_j < \frac{2m}{2-\beta}$*;*
- *The probability of prosecution if group* j *wins increases in the size of the group formed previously,* $\Psi'_{n_{j-1}}(n_j, n_{j-1}) > 0$ *for all* $n_{j-1} \in (0, \frac{2m}{2-\beta})$
- *The probability of prosecution is between zero and one,* $\Psi(n_j, n_{j-1}) \in (0, 1)$ *for all* $n_j \in (0, \frac{2m}{2-\beta})$

The sequential group formation is based on a ranking of citizens. As in the case of lobbying, it emerges because associating highly ranked citizens in a group earns the group a competitive advantage over the subsequent ones. By committing to not engage in prosecution efforts, the first bribing group (referred to as a powerful bribing group) can make an equally attractive offer as the following group while giving up fewer rents. Thus, the powerful bribing group can maximize own profits as long as it makes an offer that outbids any offer by the competitors.

Lemma 5. *Under direct control of entry if legal power is heterogeneous rents are shared by the politician and the powerful bribers:*

$$\Omega_P^{BP}(n_1^B, n_2^B) = (1 - \Psi(n_2^B, n_1^B)) \left[\beta S(n_2^B) + (1-\beta) n_2^B (m - n_2^B)\right] \tag{16}$$

$$\Omega_B^{BP}(n_1^B, n_2^B) = \frac{1}{1-\beta} \left[\beta S(n_1^B) + (1-\beta)(n_1^B)(m - n_1^B) - \frac{\Omega_P^{BP}(n_1^B, n_2^B)}{1 - \Psi(n_1^B, 0)}\right] \tag{17}$$

Where $n_2^B = argmax_{n_2} \Omega_P^{BP}(n_1^B, n_2^B)$ *and* $n_1^B = argmax_{n_1} \Omega_B^{BP}(n_1^B, n_2^B)$.

Proof. In Appendix A.4 □

The problem of the powerful bribing group resembles that of the strong lobby. The inequality in terms of legal power ensures a superior bargaining position to the most powerful

citizens. If the powerful group is not allowed to enter it will strengthen the coalition of citizens who wish to prosecute the politician. Its' superior legal power implies that the outside option of the politician is to accept higher risk of prosecution and lower expected rents. Thus, the politician can only earn as much as would be available to her if the second group was granted entry and all the remaining gains accrue to the bribing group. High legal power of the first bribing group .

Lemma 6. *If citizens are heterogeneous with respect to legal power, the level of entry under direct control:*

- *is higher than in the case of homogenous legal power if* $-\Psi'_n(n,0)|_{n=\frac{2m}{2-\beta}} \geq \psi$ *and* $\Psi(\frac{2m}{2-\beta},0) \geq \psi(1-\frac{2m}{2-\beta})$
- *is lower than in the case of homogenous legal power if* $-\Psi'_n(n,0)|_{n=\frac{m}{2-\beta}} \ll \psi$, $\Psi(\frac{m}{2-\beta},0) \ll \psi(1-\frac{m}{2-\beta})$ *and* $\Psi_{n_1}(n_2,n_1)$ *is low,*

Proof. In Appendix A.4 □

The entry level in the case of heterogeneous legal power, n_1^B solves:

$$\underbrace{-\Psi'_{n_1^B}(n_1^B,0)\left[\beta S(n_1^B)+(1-\beta)n_1^B(m-n_1^B)\right]}_{PR}+$$
$$\underbrace{(1-\Psi(n_1^B,0))\left[\beta S'(n_1^B)+(1-\beta)(m-2n_1^B)\right]}_{BP}+$$
$$\underbrace{\Psi'_{n_1^B}(n_2^B,n_1^B)n_2^B(\left[\beta S(n_2^B)+(1-\beta)n_2^B(m-n_2^B)\right]}_{OO}=0 \quad (18)$$

Change in the level of entry and the size of the powerful bribing group affects their rents via three channels. First, increasing the level of entry lowers the likelihood of prosecution by the politician and thus increases the available political rents. This is referred to as the political rents channel and is captured by term PR in (18). Second, a higher entry lowers profits earned by the bribers. This is a briber profits channel and is represented by term BP. Third, larger size of the powerful group weakens the competing bribers. This impairs politician's outside option and thereby drives down her share of the political rents. We call this an outside option channel, captured by term OO. The equilibrium n_1^L, depends on the relative importance of the three channels and is determined by the shape of the distribution $G(\psi)$.

If inequality in legal power is not too high (ie. $-\Psi'_n(n,0)|_{n=\frac{2m}{2-\beta}}$ and $\Psi(\frac{2m}{2-\beta},0)$ are not too low), the effect of increasing entry on likelihood of prosecution is sufficiently high for the political rents and the outside option channels to dominate. In this case the entry level is higher than with homogenous legal power. Key to this results is that now the powerful bribing group can increase the share of political rents that it earns by increasing its size, thereby weakening the second group and lowering the outside option of the politician. The effect resembles the one that emerges in the case of lobbying, only now the lower utility of politician is achieved by increasing the likelihood of prosecution and not by lowering the profitability of the competition.

If inequality in legal power is sufficiently high ($-\Psi'_n(n,0)|_{n=\frac{m}{2-\beta}}$ is low) and the total legal power is not too high ($\Psi(\frac{m}{2-\beta},0)$ is low), only a few very powerful citizens have substantial impact on the likelihood of prosecution. Once their participation is secured, the marginal effect of increasing the size of the bribing group is low. This dampens the political rents and the outside-option channels, so that the briber profits channel dominates. As a result the powerful bribers may prefer the entry level lower than in the case of homogenous legal power. Key to this result is the low sensitivity of rents to changes in the level of entry at a higher n.

In the case of lobbying the distribution of the characteristic, δ_i, does not play a role. The heterogeneity only affects the equilibrium outcomes by creating a natural ranking that governs the non-excludability of entry under regulation. Under bribing in the context of citizens' legal power, distribution plays a key role in affecting the division of rents and the policy that follows from the political bargain.

6 Conclusions

We explore how different governance and the associated forms of influence gives rise to a different structure of competition among interest groups. Direct control of entry makes the politician prone to illegal bribery in return for market access. Regulation through minimum requirements lends itself to lobbying for favorable rules.

When the risk of prosecution under direct control does not depend on the identity of entrants (i.e., is either affected only by their number or determined altogether by exogenous institutional quality) competition among bribers drives down their bargaining power against the politician. The outcome is full appropriation of rents by the politician and a highly

restricted level of entry.

Since regulation generates a non-excludable benefit for agents endowed with strong attributes, competition between lobbies is uneven. The strong lobby is able to offer more to the politician than any following group, giving it bargaining power in the game with the politician. As a result lobbyists earn some of the rents generated by the policy eating into the share extracted by the politician.

While being bribed promises higher political rents, these benefits are only realized if the politician manages to avoid prosecution. As higher quality of the legal system or legal power of the citizens increase the risk of a successful prosecution, the politician prefers direct control only when the quality of institutions is low. With better institutions regulation is the optimal form of governance.

We show that homogeneity in bribing is key for the politician's ability to extract full rents under direct control. When the risk of prosecution is influenced by the identity of entrants, bribing groups composed of powerful agents gain a competitive advantage over others. In this case rent sharing may occur also under direct control. Moreover the distribution of legal power among citizens has important consequences for the resulting level of entry: market access is particularly limited when legal power is distributed very unevenly.

Forms of governance imply different competitive structures in political influence with critical consequences for the division of rents and the overall social welfare. In a more homogenous economy with low quality of institutions the politician governs by direct control earning full rents, leaving none to the entrepreneurs. In as far as financial wealth can help in acquiring legal power or improving institutions in the long run, these competition differences could have important dynamic implications.

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A Proofs

A.1 Direct control

Proof of Proposition 1

Each bribing group j seeks to maximize its' expected profits net of contributions taking as given the offers made by other groups. Let an offer of group k, (n_k, K_k), be the one among the competing offers that gives highest utility to the politician. It is optimal for bribery j to make an offer that gives the politician a marginally higher utility, so that to ensure victory in the bargaining game. As the same holds for all bribing groups, the optimal offer by j maximizes politician's utility while satisfying bribery's participation constraints. The problem is given by:

$$max_{n_j,K_k} S(n_j) + (1-\beta)K_j$$
$$\text{subject to:} K_j \leq n_j(m-n_j)$$

It follows that politician's utility is maximized when bribery's participation constraint is binding $K_j = n_j(m-n_j)$ and the level of entry is set at $n_j = \frac{m}{2-\beta}$. All bribing groups find it optimal to make the same offer. New bribing groups are formed as long as there are sufficiently many non-associated citizens to form a group of size $q_j = n^B$

Proof of Lemma 1

Taking first order derivative of (6) with respect to β yields:

$$\frac{dn^B}{d\beta} = \frac{m}{(2-\beta)^2} < 0$$

Taking first order derivative of (7) with respect to β yields:

$$\frac{dK^B}{d\beta} = (m - 2n^B)\frac{m}{(2-\beta)^2}$$

Since $n^B > \frac{m}{2}$, $\frac{dK^B}{d\beta} < 0$.

A.2 Minimum requirment regulation

Proof of Proposition 2

The strong lobby can either make a winning offer or free-ride on the offer of the competitors.

If it chooses to make a winning offer, it can set the entry level and contribution so that to maximize own profits as long as it ensures that politician's participation constraint is satisfied. The politician chooses the offer of the strong lobby if the utility she obtains from her offer is as high as that under the best alternative offer.

The best offer by any lobby maximizes politician's utility while satisfying own participation constraint $(n_k - n_{k-1})(m - n_k) = K_k$. Thus the utility of the politician is given by:

$$\max_{n_k} U_p(n_k, n_{k-1}) = \beta S(n_k) + (1-\beta)(n_k - n_{k-1})(m - n_k) \tag{19}$$

The utility of the politician decreases in the size of the lobby that was formed just prior to the counter lobby: $\frac{\partial U_p(n_k, n_{k-1})}{\partial n_{k-1}} = -(1-\beta)(m - n_k) < 0$. Thus, each subsequent lobby can make a less attractive offer to the politician. So the strong lobby needs to make an offer that outbids the lobby formed around the second representative (the counter-lobby). Solving (19) for $k = 2$ yields:

$$n_2 = \frac{m + (1-\beta)n_1}{2 - \beta} \tag{20}$$

The problem of a strong lobby is thus:

$$\max_{n_1} \frac{1}{1-\beta} \left[\beta S(n_1) + (1-\beta)n_1(m - n_1) - (\beta S(n_2) + (1-\beta)(n_2 - n_1)(m - n_2))\right] \tag{21}$$

Solving that yields (10) and (11). As a result the strong lobby extracts rents equal to 13.

If the strong lobby free-rides on the offer of another, the second lobby does not need to sacrifice all of its' profits and may still win the lobbying game. It needs to strategically outbid the fiercest competitor, the third representative. The offer by the third lobby (n_3, K_3) solves (19), where $k = 3$. The problem of the second lobby would then be:

$$\max_{n_2} \frac{1}{1-\beta} \left[\beta S(n_2) + (1-\beta)(n_2 - n_1)(m - n_2) - (\beta S(n_3) + (1-\beta)(n_3 - n_2)(m - n_3))\right]$$

In this case the strong lobby chooses its size so that to maximize own profits, under the entry lobbied for by the second group:

$$\max_{n_1} n_1(m - n_2)$$

Under free-riding, the total rents available to entrepreneurs are:

$$\max_{n_2} \frac{1}{1-\beta} \left[\beta S(n_2) + (1-\beta)n_2(m - n_2) - (\beta S(n_3) + (1-\beta)(n_3 - n_2)(m - n_3))\right]$$

If the second lobby was choosing n_2 so that to maximize the total surplus, the problem would be equivalent to that of a strong lobby trying to win given in (21). However, when strong lobby free-rides the second lobby chooses n_2 so that to maximize own surplus. The resulting n_2 differs from the one that would maximize the surplus of both lobbies whenever $n_1 > 0$. When free-riding it is optimal for the strong lobby to choose a positive size of a group. Thus, the surplus available to the two lobbies under free-riding by the strong lobby is lower than the surplus available to the strong lobby when it lobbies to win.

Proof of Lemma 2

Taking the first order derivative of n^L with respect to β yields:

$$\frac{dn^L}{d\beta} = \frac{3-2\beta}{[1+2(1-\beta)(2-\beta)]^2} > 0$$

Using (21) we take the derivative of the total rents of the strong lobby with respect to β and apply envelope theorem to get:

$$\frac{d\Omega_L(L,n^L)}{d\beta} = \frac{1}{(1-\beta)^2}\left[S\left(n^L\right) - S\left(n_2^L\right)\right] < 0$$

A.3 Equilibrium

Proof of Lemma 3

Comparing the levels of entry:

$$\begin{aligned}
\frac{m}{2-\beta} &< \frac{1+(1-\beta)(2-\beta)}{1+2(1-\beta)(2-\beta)}m \\
1+2(1-\beta)(2-\beta) &< (2-\beta)+(1-\beta)(2-\beta)^2 \\
(1-\beta)(1-2(2-\beta)+(2-\beta)^2) &> 0 \\
(1-\beta)(1-(2-\beta))^2 &> 0
\end{aligned}$$

So entry is lower under bribing than under lobbying.

Proof of Proposition 3

Proof. The existence of the threshold follows from comparing the utilities under the two strategies at $\phi = 0$ and $\phi = 1$ and observing that politician's expected utility under bribing

increases as ϕ rises. The threshold is implicitly defined in:

$$\Omega_P^B(n^B, \hat{\phi}) = \Omega_P^L(n_1^L, n_2^L) \tag{22}$$

To show that increase in political accountability lowers that threshold, we take a derivative of politician's utility under bribing and lobbying with respect to β. Using envelope theorem these simplify to

$$\begin{aligned}\frac{dU_p(n^B)}{d\beta} =&(1-\phi)(S(n^B) - n^B(m-n^B)) = (1-\phi)\frac{m^2}{2(2-\beta)}\\ \frac{dU_p(n^L)}{d\beta} =&S(n_2^*) - (n_2^* - n^L)(m-n_2^*) + (1-\beta)n_2\frac{dn^L}{d\beta}\end{aligned}$$

Since $n_2^* > n^L > n^B$, $n_2^* - n^L = \frac{m-n^L}{2-\beta} < \frac{m}{2-\beta}$ and $\frac{dn^L}{d\beta} > 0$, $\frac{dU_p(n^B)}{d\beta} < \frac{dU_p(n^L)}{d\beta}$ for all ϕ. For a given quality of legal institutions increasing political accountability increases politicians utility under minimum requirement policy more than under direct control. Therefore with high β a lower level of legality is sufficient to make politician indifferent between the two. □

Discussion: Risk of prosecution only if bribes are accepted

If the politician choosing direct control only faces a positive risk of prosecution if she accepts positive contributions, her participation constraint for accepting the offer of a bribing group j reads:

$$(1-\phi)(\beta S(n_j) + (1-\beta)K_j \geq \beta S(m)$$

The structure of competition among bribers is not affected and the optimal offer remains $n^B = \frac{m}{2-\beta}$ and $K^B = n^B(m-n^B)$. Using the participation constraint of the politician we can show that the offer is accepted only if:

$$\phi < (1-\beta)^2$$

Otherwise, the politician does not accept bribes $K^B = 0$ and sets entry at $n^B - m$. The politician choosing $n^L = m$ under lobbying would earn the same utility, however she finds it optimal to accept an offer with lower entry and positive contributions (n_1^L, K_1^L). Which implies that $\phi > (1-\beta)^2$ the politician prefers lobbying over direct control.

Therefore with the risk of prosecution depending on the acceptance of bribes the threshold strength of the legal system below which the politician prefers direct control over regulation is given by $\tilde{\phi} = \min[\hat{\phi}, (1-\beta)^2]$ and decreases in β.

A.4 Legal Power

Proof of Lemma 4

Each bribing group j is solving the following problem: The problem can be expressed as:

$$\max_{n_j} \left(1-\rho(B,n_j)\right)\left[\beta S(n_j)+(1-\beta)n_j(m-n_j)\right] \tag{23}$$

The first order condition reads:

$$\psi\Omega_P(B,n_j)+(1-(1-n_j)\psi)\Omega'_P(B,n_j)=0 \tag{24}$$

Since $\Omega'_P(B,n_j)=0$ at $n_j=\frac{m}{2-\beta}$ and $\Omega_P(B,\frac{m}{2-\beta})>0$, it must be that $n_j^*>\frac{m}{2-\beta}$. Since $\Omega_P(B,n_j)=0$ at $n_j=0$ and $n_j=\frac{2m}{2-\beta}$ it must be that $n_j^*<\frac{2m}{2-\beta}$. Implicit differentiation of (24) with respect to ψ yields:

$$\frac{\partial n_j^*}{\partial\psi}=\frac{n(m-\frac{2-\beta}{2}n)-(1-n)(m-(2-\beta)n)}{(1-\psi(1-n_j^*))(2-\beta)-(m-(2-\beta)n)}$$

Since $n_j* \in (\frac{m}{2-\beta},\frac{2m}{2-\beta})$, we have that $\frac{\partial n_j^*}{\partial\psi}>0$.

Proof of Lemma 5

The powerful bribing group aims to maximize own profits net of contributions while outbidding the strongest competitor. As the second bribing group can offer the next lowest risk of prosecution to the politician it has the potential to make the most attractive alternative offer. The highest offer of the second bribing group maximizes politician's utility while forgoing all profits as political contribution. The level of entry proposed by that group, n_2^B, solves:

$$\max_{n_2^B} \left(1-\Psi(n_2^B,n_1^B)\right)\left[\beta S(n_2^B)+(1-\beta)n_2^B(m-n_2^B)\right] \tag{25}$$

To ensure that it wins, the powerful bribery must provide the politician with at least as high utility as what she could get with the second bribing group. Therefore the problem of the powerful bribery can be expressed as:

$$\max_{n_1^B} \frac{1}{1-\beta}\left[\beta S(n_1^B)+(1-\beta)n_1^B(m-n_1^B)-\frac{1-\Psi(n_2^B,n_1^B)}{1-\Psi(n_1^B,n_0^B)}\left[\beta S(n_2^B)+(1-\beta)n_2^B(m-n_2^B)\right]\right] \tag{26}$$

Therefore the rents accruing are the solution of problem (25) and those earned by the powerful bribery are given by (26).

Proof of Lemma 6

The level of entry in the case of homogenous legal power, n^B solves:

$$\underbrace{\psi(m-\frac{(2-\beta)}{2}n^B)n^B}_{A}+\underbrace{(1-\psi(1-n^B))(m-(2-\beta)n^B)}_{B}=0 \tag{27}$$

Graphically (27) is a sum of two parabolas. Function A takes value of zero at $n^*=0$ and $n^*=\frac{2m}{2-\beta}$ and achieves its' maximum value of $\psi\frac{m^2}{2(2-\beta)}$ at $n=\frac{m}{2-\beta}$. Function B has two zeros at: $n^*=\frac{\psi-1}{\psi}<0$ the other one at $n^*=\frac{m}{2-\beta}$. Thus the positive solution of (27) lies in the set $n^B\in(\frac{m}{2-\beta};\frac{2m}{2-\beta})$.

The level of entry in the case of heterogenous legal power, n_1^B solves:

$$\underbrace{-\Psi'_{n_1^B}(n_1^B,0)(m-\frac{(2-\beta)}{2}n_1^B)n_1^B}_{PR}+\underbrace{(1-\Psi(n_1^B,0))(m-(2-\beta)n_1^B)}_{BP}+\underbrace{\Psi'_{n_1^B}(n_2^B,n_1^B)n_2^B(m-\frac{2-\beta}{2}n_2^B)}_{OO}=0 \tag{28}$$

The equation is a sum of three components: PR, BP and OO. First note that n_2^B solves:

$$-\Psi'_{n_2^B}(n_2^B,n_1^B)(m-\frac{(2-\beta)}{2}n_2^B)n_2^B+(1-\Psi(n_2^B,n_1^B))(m-(2-\beta)n_2^B)=0 \tag{29}$$

Since $\Psi'_{n_j}(n_j,n_{j-1})<0$ for all $n_j<\frac{2m}{2-\beta}$ and $1-\Psi(n_j,n_{j-1})\in(0,1)$ for all $n_j\in(0,\frac{2m}{2-\beta})$, the positive solution to (29) is $n_2^B\in(\frac{m}{2-\beta};\frac{2m}{2-\beta})$. Combining this with the fact that $\Psi'_{n_{j-1}}(n_j,n_{j-1})>0$ for all $n_{j-1}\in(0,\frac{2m}{2-\beta})$, term OO is strictly positive for all $n_1^B\in(0,\frac{2m}{2-\beta})$.

Term PR and BP correspond to terms A and B in the homogenous case.

Conditions for $n_1^B>n^B$:

The groups are formed sequentially and include citizens with the highest legal power of those not yet associated. This means that an increase in n_j at low levels of n_j has at least as strong impact on the probability of prosecution as at high levels of n_j, $\Psi''_{n_j}(n_j,n_{j-1})\geq 0$.

Consequently, if $-\Psi'_n(n,0)|_{n=\frac{2m}{2-\beta}}\geq\psi$ then $-\Psi'_n(n,0)|_{n<\frac{2m}{2-\beta}}\geq\psi$. Under this condition, function PR takes weakly higher values than function A for all $n\in(\frac{m}{2-\beta},\frac{2m}{2-\beta})$. Both are equal to zero at $n=\frac{2m}{2-\beta}$.

Functions BP and B are both equal to zero at $n=\frac{m}{2-\beta}$. The ordering of the values they take for larger n depends on their relative steepness. The derivatives are:

$$\frac{dB}{dn}=\psi(m-(2-\beta)n)-(2-\beta)(1-\psi+\psi n)$$
$$\frac{dBP}{dn}=-\Psi_n(n,0)(m-(2-\beta)n)-(2-\beta)(1-\Psi(n,0))$$

The function BP decreases in n less steeply than function B if the $\frac{dBP}{dn} > \frac{dB}{dn}$. Since $-\Psi'_n(n,0)|_{n=\frac{2m}{2-\beta}} \geq \psi$, the sufficient condition is $(1-\psi+\psi n) > 1-\Psi(n,0))$ For the decrease to be less steep for any $n \in (\frac{m}{2-\beta}, \frac{2m}{2-\beta})$ we need $\Psi(\frac{2m}{2-\beta},0) \geq \psi(1-\frac{2m}{2-\beta})$.

Thus, if $-\Psi'_n(n,0)|_{n=\frac{2m}{2-\beta}} \geq \psi$ and $\Psi(\frac{2m}{2-\beta},0) \geq \psi(1-\frac{2m}{2-\beta})$ functions PR and BP take lower values than functions A and B for $n \in (\frac{m}{2-\beta}), \frac{2m}{2-\beta})$

Equation (28) sums term PR, BP and OO. Since for all $n \in (\frac{m}{2-\beta}), \frac{2m}{2-\beta})$ both PR and BP take higher values than A and B respectively and since OO is positive, the positive solution of (28) has to larger than the positive solution of (27), $n_1^B > n^B$.

Conditions for $n_1^B < n^B$:

Since $\Psi''_{n_j}(n_j, n_{j-1}) \geq 0$, if $-\Psi'_n(n,0)|_{n=\frac{m}{2-\beta}} < \psi$, then $-\Psi'_n(n,0)|_{n>\frac{2m}{2-\beta}} < \psi$. Thus, if $-\Psi'_n(n,0)|_{n=\frac{m}{2-\beta}} < \psi$ function PR takes lower values than function A for all $n \in (\frac{m}{2-\beta}, \frac{2m}{2-\beta})$. Both are equal to zero at $n = \frac{2m}{2-\beta}$.

If $\Psi(\frac{m}{2-\beta},0) < \psi(1-\frac{m}{2-\beta})$, then function BP decreases in n more steeply than function B for all values of $n \in (\frac{m}{2-\beta}), \frac{2m}{2-\beta})$. Thus in this domain function BP takes lower values than function BP.

If $\Psi_{n_1}(n_2, n_1)$ is low, $-\Psi'_n(n,0)|_{n=\frac{m}{2-\beta}} \ll \psi$ and $\Psi(\frac{m}{2-\beta},0) \ll \psi(1-\frac{m}{2-\beta})$, then the entry that solves the heterogenous problem is lower than the one that solves the homogenous case, $n_1^B < n^B$.