Business Associations, Lobbying, and Welfare

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Abstract

Are business associations - private, formal, nonprofit organizations designed to promote the common interests of their members - positive or negative for the economy and overall welfare? Scholars from new institutional economics, on the one side, and industrial organization, law & economics, and public choice, on the other side, have given different answers to this question, which is instrumental for policy making. We construct a model that endogenizes association membership of firms and the main functions of associations, which can have positive or negative spillovers for the economy. We derive predictions regarding associations' functions and their net welfare effects, depending on the level of property rights securitization, which are in line with empirical observations.

1 Introduction

Since at least one thousand years, business firms and other professionals have joined forces to supply public goods that benefit everyone in the industry, to decrease common economic and political risks, and to increase the profitability of their individual ventures. Often the vehicles for such cooperation have been formal, member-owned organizations that are designed to promote the common business interests of their members but that do not pursue profit-maximization goals independent of their members (Pyle, 2005,

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2006). Trade, business, or industry associations, professional clubs, trade unions, chambers of commerce, academic societies, industry trade groups, standard setting organizations and medieval guilds are all shapes of the same generic organizational form, which we call an *association* in this paper.[1]

During the Commercial Revolution, which started in the tenth and eleventh centuries in Europe, the primary function of the first merchant guilds was to protect the property rights of their members vis-a-vis nonmembers (Volckart and Mangels, 1999). However, associations have other purposes, too. Grafe and Gelderblom (2010:481) categorize the functions of merchant guilds and other associations as, "(1) guilds' protection of merchants from predatory rulers, (2) their deterrence of cheating by merchants, (3) their enabling of traders to extract monopoly rents, and (4) their ability to balance supply and demand in markets of limited size." Crucially, whereas we can expect that all of these functions benefit association members as long as membership is voluntary, the spillover effects onto nonmembers are ambiguous. The understanding and evaluation of such externalities, however, is important for policy makers' decision making: whether to promote associations (for instance by awarding tax breaks due to associations' nonprofit status), whether not to interfere in industries that are privately managed by associations (for instance, diamond trading; see Bernstein, 1992), or whether to tax or even prohibit certain functions of associations (for instance, cartelization of industries.)

Despite the need for unambiguous advice, scholars from law, economics, management, and political science have come to very different conclusions regarding the impact of associations on overall efficiency and welfare. The theoretical literature has mostly focused on the negative side of associations, and has not yet shed light as to under which situations we may expect associations to generate positive *or negative* spillovers.

The large divergence of the positive and negative views of business associations in the literature suggests a bundle of research questions. How can we explain that both the positive and the negative views on associations simultaneously exist in the research community? Are some associations unambiguously good and others unambiguously bad for total welfare? Or does each of these organizations have the ability to do both good and bad? Is it possible to delineate the impact factors that let associations tip in one or the other direction depending on the environment they operate in?

To tackle these questions we construct a model, in which we endogenize the individual association membership decisions of the business firms in an industry - and thereby existence of the association in the first place. We also endogenize the main functions of the association, given that it exists. Inspiration for

[1]The existence of associations has been documented in Europe, North Africa, the Near East, Central and South America, India and China (Ogilvie, 2011).

the type of functions we model is delivered by Döner and Schneider (2000:263), who distinguish between "market-supporting" and "market-complementing" activities of associations: the first category is attributed to the private provision of public goods, such as property rights or the rule of law, and the second category - "more club than public goods" - to horizontal coordination and other rent seeking activities.[2]

We allow the members of an association to collectively decide about two types of costly activities: (i) whether the association influences the political reform process to increase the level of property rights securitization in the economy (*good lobbying*); and (ii) whether the association lobbies for rents that exclusively accrue to association members, to the detriment of non-members (*bad lobbying*). Good lobbying is characterized by a free-riding problem because all traders in the economy, not only association members, benefit from more secure property rights, for instance, in the form of less banditry, safer roads, or a less corrupt bureaucracy, which allows firms to retain more of their business profits. Bad lobbying, in turn, is characterized by negative externalities because funds are diverted from the public to the associations' budget. Association members use majority voting to decide whether to jointly invest in one or both lobbying types, or not.

Solving the model, we show that firms with bigger size (or alternatively, with larger profit potential) have higher incentives to join an association than smaller firms. We also show that good lobbying arises in equilibrium when a large share of firms joins the association, which reduces the incentives to free-ride on the association's efforts to increase property rights securitization. By contrast, an association only invests in bad lobbying if it has relatively few member firms (the largest ones in the economy) because the revenues from such rent-seeking are divided among all members.

Moreover, it turns out that good lobbying and bad lobbying are complements: if the association lobbies politicians to increase property rights, this has a positive effect on the equilibrium effort chosen by every firm because it expects to keep a larger share of its gross profits. Higher effort levels lead to higher gross profits, which increases the state's tax revenues. As lobbying for rents shifts tax revenues to association members, they are more willing to spend on bad lobbying.

The key parameter in this model is the level of property right securitization. We show that the equilibrium is characterized by three parameter regions: (i) If property rights are rather insecure (and the cost of good lobbying is not prohibitive), an association endogenously exists and exclusively lobbies politicians to increase property rights. The intuition is that here the marginal private benefit from increased property rights is strong enough to overcome the free rider problem. (ii) For intermediate levels of property

[2]Associations can also provide club goods that do not generate negative spillovers on non members. However, we focus on the roles of associations that have a greater impact on nonmembers' welfare.

rights securitization, both good and bad lobbying are executed, strengthening each other's effects by the complementarity explained above. (iii) If property rights are rather secure, the marginal benefit of further promoting property rights decreases. Here an association only invests in rent-seeking lobbying, which benefits the largest firms exclusively.

Whereas it is clear that the surplus effects of associations for their members are always positive (because firms would not become members otherwise), this model can also shed light on the effects for non-members. We show that the net welfare effects generated by associations are positive as long as the level of property rights securitization in an economy is sufficiently low. This may hold for most countries throughout history and for most developing (and probably also some emerging) economies today. Our model suggests that only the most advanced economies, which are governed by the rule of law and characterized by highly secure property rights, can be expected to suffer from the existence of associations. This is possible because only in these countries associations focus on rent-seeking activities to a large extent, which benefit their members but are detrimental for the rest of the economy.

The remainder of the article is organized as follows: Section 2 reviews the related literature. Section 3 describes the model setting. Section 4 presents the equilibrium analysis and results. Section 5 analyses welfare and efficiency. Section 6 discusses some technical details and extensions of the model, and Section 7 concludes and presents empirical applications of the predictions of our model.

2 Literature

Theoretical literature about business associations is rather scarce, and mostly represents a negative view of associations. That view comes from industrial organization, law and economics, and public choice and goes back at least to Nelson (1922), and was recently promoted by Röller and Steen (2006), amongst others. This literature underlines the negative effects of business associations for welfare and economic progress, in particular because of the ability of associations to coordinate their members' behavior, for instance to publish prices, to allocate quota, and to reduce industry output to the detriment of consumers (Vives, 1990; Döner and Schneider, 2000; Motta, 2004) or to lobby politicians for selective favors (Besley and Coate, 2001; Tucker, 2008; Pyle, 2011).[3] Probably the best known theoretical work on associations is Olson's (1982) study on collective action. He views associations as aggregations of particular interests. Broad associations are more representative of the economy, and thus will try to push for reforms that make

[3]Along the same line, Olson (2000) stresses that business associations contribute to the uncompetitive, corrupt, and inefficient nature of post-communist economies in Eastern Europe. Bernstein (1992) emphasizes the ambiguous nature of associations in her study of the modern diamond trading industry.

everyone better off. However, broad associations often lack the necessary lobbying strength because the interests of their members are very heterogeneous. Narrow associations that represent particular interests (that only benefit members) are much more likely to exert influence on rulers because coordination is easier among few, homogeneous members.

On the other hand, a positive view of associations is assumed by most of the new institutional economics literature, which underlines the supportive effects of private ordering institutions for the transactors involved. In theoretical terms, where non-contractibility or prohibitive transaction costs make court enforcement of business agreements no available option for traders, private governance institutions such as information exchanges or arbitration tribunals that are managed by associations can avoid social dilemma problems that arise through impersonal exchange.[4] This effect reduces the risk of market breakdown and increases the total amount of business transactions.[5] Moreover, Prüfer (2014) shows that associations provide value to their members even if members are already embedded in informal social networks. Prüfer (2014) is also able to explain several recent findings by Pyle (2005, 2006). For instance, why members perceive that associations are less valuable in more competitive industries.

Our paper stands between this two streams of literature, as we model one positive, and one negative role of business associations. We believe that the theoretical literature so far have fail to account for one of the main roles of associations: representing their members interests. As opposed to Olson (1982) we argue that, when property rights are not secured, members of large, broad associations have a common interest, and that collective action to improve the protection of property rights will emerge spontaneously under certain conditions. Indeed, there is vast empirical evidence that supports our assumption that associations are created as a response to bad governance. In Russia and other post-communist countries, Duvanova (2007) demonstrates a strong correlation between firms' perception of corruption and their membership in a association. She argues that corruption stimulates collective action through business associations, and thus associations are able to protect firms from predatory state behavior. Similarly, Pyle (2011) finds, based on survey data about firms and business associations in the Russian Federation, that collective action organized by associations serves as a substitute for political competition in securing firms' property rights: "[T]he relationship between a firm's membership in a business association and the security of its property rights strengthens in less politically competitive regions." The high value that this relationship generates for members is reflected by the finding that, in Russia, there is a strong positive correlation between business association membership and a firm's propensity to invest (Frye, 2006). Moreover, when

[4]See Dixit (2004, 2009) and Williamson (2005) for general overviews of the New Institutional Economics approach to private ordering and Prüfer (2014) for a theoretical study of the positive, market-supporting effects of associations.

[5]It may have been instrumental in getting the Commercial Revolution going (Greif, 2006) and in facilitating transactions of any scale in developing countries today (Fafchamps, 2004).

associations lobby political leaders for increased property rights protection - even if primarily targeting the security of their own members' businesses - it has significant positive spillover effects onto the rest of the economy (Döner and Schneider, 2000). Associations also increase members' joint impact on institutional reform (Lambsdorff, 2002; Acemoglu et al., 2005).

Although the most recent empirical evidence mentioned above comes from Russia and other transition economies, there is evidence of the positive impact of associations on property rights protection and economic reform from several developing economies around the world.[6]. Lucas (1993) describes how local and sectorial associations pushed for the defense of property rights in Nigeria, which also benefited non-members. A similar case is described by Hewison (1989) for Thailand, where the effort of associations of ethnic Chinese improved the protection of property rights, generating positive spillovers on the rest of the economy. Encompassing associations in Chile (CPC), Kuwait (KCCI), and Mexico (CCE) were key to successful market oriented reforms and macroeconomic stabilization.[7]. Similarly, in Pakistan, broad associations pushed for the government to improve infrastructure and solve the problem of severe power shortages.[8] In Africa, Goldsmith (2002) finds that business associations have been key in pushing, bargaining and implementing public policy and reducing corruption.

3 Baseline model

Consider an economy populated by a set $N = \{1, ..., n\}$ of risk neutral traders (firms), with $n \geq 2$. Each trader $i \in N$ is characterized by a size parameter $\rho_i \equiv \frac{i-1}{n-1}$.[9] This definition implies that (i) traders are ordered by size, such that $\rho_{i+1} > \rho_i$ for all $i, i+1 \in N$, and (ii) the average size of traders in the economy is independent of the number of traders, and it is always equal to $1/2$.

Before any trade takes place, firms can form a nonprofit association that will have the single purpose of trying to influence the decisions of the ruler. We assume that this business association will take decisions collectively, as a single entity, by maximizing the joint profits of all members.[10] All association members must pay a fee that is endogenously determined and satisfies the following conditions: (i)is linear in size, (ii)aligns the incentives of members, and (iii)the sum of fees paid by members completely covers association costs.[11] The cost of an association is composed by the cost of lobbying plus an administrative fixed cost k.

[6]For a detailed summary, see Döner and Schneider (2000)
[7]Döner and Schneider (2000)
[8]Tewari(1990), p.310, cited in Nadvi and Schmitz (1994), p.26.
[9]Alternatively, ρ_i can be interpreted as a measure of potential profitability of the firm.
[10]This is equivalent to majority voting with sincere voters.
[11]The assumption of joint profit-maximization requires transferable utility among members, which is given here via differing fees. The assumption of linearity on size is based on the fact that most real-world associations have a fee structure that is

In a one shot game, firms decide individually how much effort e_i to invest in their businesses. We can interpret e_i as the effort to find buyers or someone to trade with. Effort increases operating profits proportional to firms' size, but it is costly for firms. In particular, the cost of effort is convex:

$$c(e_i) = \alpha \frac{e_i^2}{2}, \tag{1}$$

with $\alpha \in [0, 1]$ an exogenous parameter representing how costly it is to find a buyer or trade partner in the market.[12] Effort costs represent implicit economic costs that are not tax deductible.

Property rights are imperfectly secured in this economy and, as a consequence, traders lose a share $(1 - \gamma)$ of their operating profits.[13] Importantly, we assume that the part of operating profits that traders are not able to keep "disappears" from the economy and therefore is lost for efficiency or welfare effects.[14] The degree of property rights securitization (γ) is common knowledge and is exogenous for an individual trader. However, a business association can invest an amount s in lobbying the ruler to increase the level of property rights securitization. We refer to this type of lobbying as *good lobbying*. In particular, good lobbying increases the level of property rights securitization for all firms to: $\gamma' \equiv 1 - \sigma(1 - \gamma) \geq \gamma$, with $\sigma \in [0, 1]$. We can interpret variable σ as the (in)efficiency of good lobbying. A high value of σ reflects cases in which the ruler is not very susceptible to this type of lobbying, or it is too difficult for him to improve the protection of property rights. Therefore, an investment of s will improve property rights securitization only slightly. On the contrary, a low level of σ implies that property rights securitization lobbying is very effective, because the ruler is susceptible to it or because it is easy for the ruler to increase the protection of property rights. Note that the investment of s has a (positive) decreasing marginal impact on the level of property rights securitization [15].

The ruler in this economy does two things: he is susceptible to lobbying, and imposes an exogenous and publicly observed tax rate τ over traders' operating profits.[16] The ruler spends tax revenues on public goods such that each firm gets a payoff that is directly proportional to its size, and the ruler makes zero

increasing in size. We assume that associations set a fee that aligns members' incentives because it is in their own interest that the association is formed and lobbies the ruler (see Hansmann (1996) and Herbst and Prüfer (2011) on the importance of alignment of incentives on organizations.)

[12] α may capture the liquidity of the market, or marketing costs.

[13] An alternative interpretation would be that each trader loses all his operating profits with probability $1 - \gamma$.

[14] This captures the idea that revenues from illegitimate activities suffer from inefficient uses.

[15] Because $\frac{d(\gamma' - \gamma)}{d\gamma} = \sigma - 1 \leq 0$

[16] Importantly, traders observe τ when making their effort decisions, and the association observes τ when deciding whether to invest in property rights securitization lobby or not.

net profits.[17] Formally, trader $i \in N$ of size ρ_i gets a payoff from public good consumption:

$$\frac{2\rho_i}{n}\left(\tau \sum_1^n \pi_i(\rho_i)\right), \tag{2}$$

were $\tau \sum_1^n \pi_i(\rho_i)$ are total tax revenues and the factor of distribution $\frac{2\rho_i}{n}$ is such that all tax revenues are distributed.[18]

Expected net profits of trader $i \in N$ from the central transaction are denoted as $\tilde{\pi}_i$:

$$\tilde{\pi}_i(e_i, \rho_i, \gamma, \tau) \equiv \pi_i(e_i, \rho_i, \gamma)(1-\tau) - c(e_i), \tag{3}$$

where π_i denotes operating (gross) profits, defined as:

$$\pi_i(e_i, \rho_i, \gamma) \equiv e_i(1+\rho_i)\gamma. \tag{4}$$

Inspired by empirical observations, we also allow the association to exert *bad lobbying*.[19] More specifically, the association may invest in lobbying authorities to redistribute total tax revenues towards association members. We assume that, by investing an amount r, all tax revenues are appropriated by the association. We also refer to this type of lobbying as *rent seeking lobbying*. Revenues from rent seeking lobbying are divided according to size among the members of the association. For now, we assume that the marginal member, who is indifferent between joining the association or not, is the smallest member of the association. This means that the largest firms will join the association. We show in the discussion section that this is indeed what happens in equilibrium.[20]. Denoting as $\hat{i}$ the marginal member of the association, a member $i \in \{\hat{i}, n\}$ of size ρ_i will get a rent seeking benefit of:

$$\frac{2(n-1)\rho_i}{(n-\hat{i}+1)(n+\hat{i}-2)}\left(\tau \sum_1^n \pi_i(\rho_i)\right). \tag{5}$$

The above equation ensures that the totality of appropriated tax revenues is distributed among association members.[21] The distribution is directly proportional to members' size.

[17] In reality, rulers use a share of tax income to finance their administration and are potentially biased when spending tax revenues. We normalize administrative costs to zero and abstract from biases, apart from the effect of lobbying modeled here, because the direction of possible biases is unclear.

[18] That is $\sum_1^n \frac{2\rho_i}{n} = 1$.

[19] See Döner and Schneider (2000), Olson (2000), Nugent and Sukiassyan (2009).

[20] See Discussion subsection (4.1)

[21] In other words: $\sum_{\hat{i}}^n \frac{2(n-1)\rho_i}{(n-\hat{i}+1)(n+\hat{i}-2)} = 1$, assuming that the largest firms will join the association. We show in the subsection (4.1) that this is indeed what happens in equilibrium.

Timing is as follows:[22]

1. Every firm $i \in N$ decides about association membership.
2. Association members jointly decide about lobbying for increased property rights securitization (good lobbying).
3. Every firm $i \in N$ individually decides about effort e_i at cost $c(e_i)$.
4. Association members jointly decide about lobbying for rent seeking (bad lobbying).

4 Analysis

In this section, we solve by backward induction for a unique Subgame-perfect Nash equilibrium of the game.

At stage 4, association members collectively decide about lobbying for rents (whether or not to invest a total amount r). We can express the total benefits from rent seeking as the difference between appropriating all tax revenues, and the proportion of tax revenues that corresponds to association members (in the form of public goods) in case no bad lobbying takes place. If the association already exerted good lobbying, members' total net benefits, B^r, are obtained by subtracting the cost of bad lobbying from this benefit. The association will exert rent seeking if and only if $B^r \geq 0$,where:[23]

$$B^r(\hat{i}, \gamma) \equiv \tau \sum_{1}^{n} \pi_i(\rho_i, \gamma) - \left(\sum_{\hat{i}}^{1} \frac{2\rho_i}{n} \right) \tau \sum_{1}^{n} \pi_i(\rho_i, \gamma) - r \geq 0$$

Substituting π_i from equation (4) and rearranging terms, leads to the following condition:

$$\sum_{1}^{n} e_i(\rho_i)(1 + \rho_i) \geq \frac{n(n-1)r}{\tau\gamma(\hat{i} - 1)(\hat{i} - 2)} \tag{6}$$

To get a clearer result, we need to replace the optimal effort for each trader in the above condition.

[22]The order of stages 3 and 4 is not actually important. Our results are robust to changes in the timing of effort decisions and rent seeking.

[23]Note that potential gains from rent seeking are the same for each trader, and therefore there is always unanimity among association members.

Hence, we postpone the intuition of this result until Lemma 1.

At stage 3, every trader $i \in N$ decides how much effort e_i to exert, at cost $c(e_i)$ given by (1). At the same time, the government taxes profits at the rate τ, and property rights are imperfectly secured. Formally, every $i \in N$ solves:

$$Max_{e_i} \tilde{\pi}_i = e_i(1+\rho_i)\gamma(1-\tau) - c(e_i)$$

Given that the second order condition holds, the optimal effort can be derived from the first order condition:

$$e_i^* = \frac{(1+\rho_i)\gamma(1-\tau)}{\alpha} \tag{7}$$

Note that the profit maximizing effort positively depends on the level of property rights securitization, and the size of the firm; and negatively, on the tax rate and the cost variable α. Because in equilibrium, individual effort is given by (7), we can replace the optimal effort in condition (6) that determines rent seeking. This leads to more meaningful conditions that determines the existence of rent seeking:

$$\hat{\rho} \geq \begin{cases} \frac{1}{2(n-1)}\left(1+\sqrt{1+\frac{24\alpha(n-1)^2 r}{\tau(1-\tau)\gamma'^2(14n-13)}}\right) \equiv \hat{\rho}^r(\gamma') & \text{if s was invested,} \\ \frac{1}{2(n-1)}\left(1+\sqrt{1+\frac{24\alpha(n-1)^2 r}{\tau(1-\tau)\gamma^2(14n-13)}}\right) \equiv \hat{\rho}^r(\gamma) & \text{otherwise.} \end{cases}$$

Where $\hat{\rho} \equiv \frac{\hat{i}-1}{n-1}$ is the size of the marginal association member. We express the condition for rent seeking in terms of $\hat{\rho}$ instead of $\hat{i}$ because $\hat{\rho}$ is normalized in terms of the number of traders. Hence, we can compare it for different values of n and its interpretation is more intuitive.

Lemma 1 *The association will exert rent seeking lobbying if the marginal member $\hat{\rho}$ satisfies condition (4). That is, if the marginal member is large enough (the association is small enough).*

Proof. Because $B^r(\hat{i},\gamma)$ is strictly increasing in $\hat{i}$ for $\hat{i} \in N$, $B^r(\hat{i},\gamma) > 0$ for all $\hat{i} > \{\hat{i}|B^r(\hat{i},\gamma) = 0\}$. Moreover, $\{\hat{i}|B^r(\hat{i},\gamma) = 0\}$ is unique and it is given by $\hat{\rho}^r(\gamma)(n-1)+1$. Therefore, $B^r(\hat{i},\gamma) > 0$ for any marginal member of size $\hat{\rho} \geq \hat{\rho}^r(\gamma)$. ■

We can interpret this result in the following way: the higher the size of the marginal member $\hat{\rho}$ (the fewer members), the more likely it is that condition (4) holds (ceteris paribus). The reason is that the smaller the association is, the larger the joint benefit from rent seeking and therefore the higher the incentives to exert bad lobbying. The higher the cost of rent seeking (r) or the higher the cost of effort (α), the less likely it is that the association decides to lobby for rent seeking. This is because a higher cost

of effort leads to lower effort of individuals and therefore, lower tax revenues that can be appropriated by the association through rent seeking.

Equation (4) also reveals that the probability of rent seeking is higher for values of τ close to 0.5. The intuition comes from the Laffer curve: a high τ reduces the effort of all firms in the economy and therefore reduces the total size of the pie, decreasing the return of rent seeking. On the other hand, a low τ increases the size of the pie, but reduces the slice of the pie that the government gets and that can be redistributed to the association in case of rent seeking.

Finally, note that a higher level of property rights securitization makes it more likely for the association to extract rents, since it increases the returns of traders' individual effort and thus the size of tax revenues that can be appropriated by the association.

Note that, while equations (3), (4), and (7) may give the impression that τ and γ are perfect substitute, the result expressed in equation (4) shows they are not. In particular, they have a different impact on the incentives for the association to exert bad lobbying. The reason for this result is that the proportion $(1-\gamma)$ that is expropriated cannot be recovered by the traders, while the proportion τ that is collected by the ruler via taxes, can be recovered by association members through bad lobbying. Therefore, a higher value of τ is not always bad news for traders, as they can form an association and lobby the ruler to appropriate the tax revenues (of themselves and of non members).

At stage 2, association members vote about lobbying for increased property rights protection. The median voter theorem applies under majority voting because the net individual gain from lobbying the ruler to improve the protection of property rights is strictly increasing in the size of the trader.[24]. Therefore, the association will decide to lobby for increased security if the joint net benefits are non negative:

$$B^s(\hat{i}) = \sum_{\hat{i}}^{n} (\tilde{\pi}_i(e_i^*(\gamma'), \rho_i, \gamma', \tau) - \tilde{\pi}_i(e_i^*(\gamma), \rho_i, \gamma, \tau)) - (s+k) \geq 0 \tag{8}$$

Note that we have included the fixed cost k as a cost of good lobbying. The reason is that if the association only exerts good lobbying, then both s and k are are costs that depend on the decision of whether to lobby or not.

[24] See equation (3).

By substituting equations (3) and (7) in (8), we get the following expression:

$$B^s(\hat{i}) = \frac{(1-\tau)^2}{2\alpha}((1-\sigma(1-\gamma))^2 - \gamma^2)\sum_{\hat{i}}^{n}(1+\rho_i)^2 - (s+k) \geq 0. \tag{9}$$

The following lemma summarizes the necessary and sufficient condition for equation (9) to hold.

Lemma 2 *Let us define*

$$\hat{\rho}^s \equiv \{\hat{\rho} | (B^s(\hat{i}) = 0)\} \tag{10}$$

The association lobbies to increase property rights securitization if the marginal member $\hat{\rho}$ satisfies: $\hat{\rho} \leq \hat{\rho}^s$. That is, if the marginal member is small enough.

Proof. See Appendix A. ■

Lemma 2 implies that, everything else equal, an association with a smaller marginal member (a larger association) is more likely to exert good lobbying. This is a consequence of the assumption that all traders benefit from increased property rights securitization, but only association members bear the corresponding cost. This generates incentives to free-ride. When a trader joins the association, the externality from the association to that trader is internalized. Therefore, the association is more likely to invest in property rights securitization. In other words, lobbying to increase property rights securitization will occur only if the free-riding incentive is not overwhelming. This result goes in the opposite direction of what we found for rent seeking lobbying. Large associations are more likely to lobby for increased property rights protection, which boosts profits of all firms in the economy; while small associations are more likely to exert the bad kind of lobbying that only benefits members (rent seeking).

So far, we have considered each type of lobbying in isolation. However, there are instances in which both types of lobbying will occur simultaneously and therefore we need to account for the interaction between them. There is a two-way complementarity. The first complementarity comes from the fact that good lobbying increases the level of property rights protection. This decreases the threshold for rent seeking from $\hat{\rho}^r(\gamma)$ to $\hat{\rho}^r(\gamma')$ in condition (4) and thus, makes it more likely for the association to exert bad lobbying. There is also a more complex complementarity effect in the other direction: when association members are voting for good lobbying, and they know that there will be bad lobbying in stage 4, then the relevant net benefits from good lobbying are not given by equation (9). Instead, they are given by $\tilde{B}^s$, which in addition to increased profits from the central transaction, include the rise in rent seeking benefits

due to increased property rights protection. Formally:

$$\tilde{B}^s(\hat{i}) \equiv \frac{(1-\tau)^2}{2\alpha}(\gamma'^2 - \gamma^2)\sum_{\hat{i}}^{1}(1+\rho_i)^2 + B^r(\gamma') - B^r(\gamma) - s. \tag{11}$$

Lemma 3 *Let us define*

$$\tilde{\rho}^s \equiv \{\hat{\rho}|\tilde{B}^s(\hat{i}) = 0\} \tag{12}$$

When association members expect to exert rent seeking in stage 4 (that is, if $\hat{\rho} \geq \hat{\rho}^r(\gamma')$), the association will lobby to increase property rights securitization if the marginal member $\hat{\rho}$ satisfies condition $\hat{\rho} \leq \tilde{\rho}^s$. Moreover, $\tilde{\rho}^s$ is strictly higher than $\hat{\rho}^s$.

Proof. Analogous to Lemma 2 and hence, omitted. ■

Association members can anticipate when the association will exert rent seeking. In those cases the relevant threshold marginal member for exerting property rights securitization is given by (12). The value of (12) is strictly higher than the value given by (10), that is $\tilde{\rho}^s > \hat{\rho}^s$. Hence, good lobbying is more likely when there is also bad lobbying. This reflects the existence of the complementarity explained above between good and bad lobbying.

An interesting question at this point is what happens with the role of the association when the level of property rights securitization changes. lemma (4) shows that the function or functions of the association will vary along the line of γ.

Lemma 4 *The thresholds for property rights securitization, $\hat{\rho}^s$, and $\tilde{\rho}^s$ are increasing in γ for $\gamma < \frac{\sigma}{1+\sigma}$, and decreasing for $\gamma > \frac{\sigma}{1+\sigma}$. Hence, good lobbying is more profitable for low levels of γ. The threshold for rent seeking, $\hat{\rho}^r(\gamma)$ is decreasing in γ, therefore, bad lobbying is more profitable for high levels of γ.*

Proof. Follows directly from the derivatives of $\hat{\rho}^r, \hat{\rho}^s$, and $\tilde{\rho}^s$ with respect to γ. ■

At stage 1, every trader decides whether to join the association or not. There is no asymmetric information and therefore, traders can anticipate the lobbying decisions (by majority voting) of the association in the future. According to lemma (4), the thresholds for good and bad lobbying change with the level of property rights protection. Hence, it is possible that for some levels of γ one type of lobbying is not profitable for the association. We analyze the equilibrium association size for all the possible cases: an association that exerts only god lobbying, only bad lobbying, or both.

If traders expect that the association will exert only good lobbying, the payoff from joining the association given that the association already exists is equal to the membership fee, and therefore, negative. Specifically,the membership fee in this case is given by:[25]

$$f_i^s = \frac{2(s+k)\left(3n^2 - (\hat{i}-3)(4+\hat{i}) - 2n(6+\hat{i}) + i(8n+4\hat{i}-11)\right)}{(n-\hat{i}+1)\left(24+7n(2n-5)-13\hat{i}+8n\hat{i}+2\hat{i}^2\right)} \tag{13}$$

Hence, a trader will only join an association that only exerts good lobbying if he is pivotal in the lobbying decision. The marginal member is better off by joining the association and ensuring his existence than by the original situation without an association, and a low level of property rights securitization. The marginal non-member on the other hand, does not have incentives to join because he can free ride on increased property rights securitization. The size of the equilibrium marginal member in case is: $\hat{\rho}^s$.

Consider now the case where an association exists and exerts both types of lobbying (and therefore, it is possible to free ride on increased property rights securitization). We denote payoff from joining such association as $R(i,\hat{\imath})$:

$$R(i,\hat{\imath}) \equiv \frac{2\rho_i(n-1)}{(n-\hat{i}+1)(n+\hat{i}-2)}\tau\sum_1^n \pi_i(\rho_i,\gamma') - f_i^{sr}, \tag{14}$$

where the first term on the right hand side is the individual revenue from rent seeking[26]. The term f_i^{sr} is the membership fee when the association exerts both good and bad lobbying and it is given by $f_i^{sr} = \frac{2\rho_i(n-1)(r+s+k)}{(1+n-\hat{i})(n+\hat{i}-2)}$. Note that $R(i,\hat{\imath})$ accounts for the net payoff of joining the BA, and abstracts from the benefit from increased property rights securitization, which all firms can enjoy independently of their membership decision. At first sight, it seems that the point at which this payoff equals zero will determine the equilibrium marginal member. However, since incentives are perfectly aligned, either all traders get a positive net benefit from joining the association, or none does. Therefore, the equilibrium marginal member is given by the member that is marginal in the decision of rent seeking. That is:$\hat{\rho}^* = \hat{\rho}^r(\gamma')$ for an association that exerts both types of lobbying.

Similarly, if traders expect that the association will exert only bad lobbying, the equilibrium marginal member is the member that is pivotal in the decision of bad lobbying:$\hat{\rho}^* = \hat{\rho}^r(\gamma)$. Note that the administrative costs are not relevant in determining the marginal member, because the decision of exerting bad lobbying is taken once this cost has already been paid. In this case, the membership fee is $f_i^r = \frac{2\rho_i(n-1)(r+k)}{(1+n-\hat{i})(n+\hat{i}-2)}$.

Before formally describing the equilibrium in Proposition 1, let us introduce some useful definitions:

[25]The formal derivation is on Appendix B

[26]This means that in case trader i decides not to join the association, the association will be formed anyway, and will get the revenues from rent seeking. Therefore, trader i will not get benefits from public goods in case of not joining the association

We define γ_1 as the value of γ at which the condition $\hat{\rho}^r(\gamma') \leq Min\{1, \tilde{\rho}^s\}$ is binding. For $\gamma > \gamma_1$, an association is formed and exerts both types of lobbying:

$$\gamma_1 \equiv Max\{ArgMin\{\gamma|\hat{\rho}^r(\gamma') = \tilde{\rho}^s\}, \{\gamma|\hat{\rho}^r(\gamma') = 1\}\} \tag{15}$$

Similarly, we define γ_2 as the value of γ at which it is not profitable anymore for the association to exert good lobbying. For $\gamma > \gamma_2$, the association will only invest in rent seeking.

$$\gamma_2 \equiv ArgMax\{\gamma|\hat{\rho}^r(\gamma') = \tilde{\rho}^s\} \tag{16}$$

The maximum value of s such that the association invests in good lobbying is:[27]

$$\overline{s}(\gamma) = \frac{(1-\tau)^2 n(14n-13)}{12\alpha(n-1)}\left(\gamma'^2 - \gamma^2\right) - k \tag{17}$$

The maximum value of r such that the association invests in bad lobbying is:

$$\overline{r}(\gamma) = \frac{\gamma^2(1-\tau)^2 n(14n-13)}{6\alpha(n-1)} \tag{18}$$

Finally, we define $\underline{k}$ and $\overline{k}$ as the minimum and maximum value of the administrative cost such that an association is formed and exerts lobbying. The intuition behind an upper threshold for this cost is straightforward. However, the intuition of a lower bound is less obvious. The reason is that if this cost is too low, there is an incentive for non-members to join associations that only exert bad lobbying, and vote against lobbying. This way, they can avoid suffering from the negative externality that rent seeking imposes over them. Assuming a lower bound on k ensures that this practice is too costly for non-members.

$$\underline{k}(\gamma) = \frac{\gamma^2(1-\tau)^2 n(14n-13)}{12\alpha(n-1)} - \frac{r}{2} \tag{19}$$

$$\overline{k}(\gamma) = \frac{\gamma^2(1-\tau)^2 n(14n-13)}{6\alpha(n-1)} - r \tag{20}$$

The following assumptions constrain the values of the costs, s, r and k for which a non-trivial equilibrium exist.

[27] The value of $\overline{s}(\gamma)$ is calculated analyzing the incentives to join an association of the smallest trader. That is, $\overline{s}(\gamma)$ is the maximum value of s for which $\tilde{\pi}_1(\gamma') - \tilde{\pi}_1(\gamma) - f_1^s \geq 0$.

Assumption 4.1 *(Cost of good lobbying)* $s \leq \overline{s}(\gamma)$.

Assumption 4.2 *(Cost of bad lobbying)* $r \leq \overline{r}(\gamma)$.

Assumption 4.3 *(Lower bound administrative cost)* $k \geq \underline{k}(\gamma)$.

Assumption 4.4 *(Upper bound administrative cost)* $k \leq \overline{k}(\gamma)$.

We summarize our results in the following proposition:

Proposition 1 *The Subgame perfect Nash equilibrium of the game is as follows:*

1. *If Assumption 4.4 holds and either i)Assumption 4.1 or ii)Assumption 4.2 and Assumption 4.3 hold, a non-trivial equilibrium exists.*

2. *At stage one, all traders $i \in N$ with size $\rho_i \geq \hat{\rho}^*$ will join the association and pay the corresponding fee (f_i^s, f_i^{sr}, or f_i^r), and all $i \in N$ with size $\rho_i < \hat{\rho}^*$ will not join the association. $\hat{\rho}^*$ is discontinuous in γ and is given by:*

$$\hat{\rho}^* = \begin{cases} \hat{\rho}^s & \text{if } \gamma \leq \gamma_1, \\ \hat{\rho}^r(\gamma') & \text{if } \gamma_1 \leq \gamma \leq \gamma_2, \\ \hat{\rho}^r(\gamma) & \text{if } \gamma \geq \gamma_2. \end{cases}$$

   The derivation and formal proof that $\hat{\rho}^*$ is the equilibrium size of the marginal member is on Lemmas 6, 7, and 8 in Appendix C.

3. *At stage two, the association lobbies for property rights protection if: i) $\hat{\rho}^* \leq \hat{\rho}^s$ or ii) $\hat{\rho}^s < \hat{\rho}^* \leq \tilde{\rho}^s$ and $\hat{\rho}^* \geq \hat{\rho}^r(\gamma')$. If one of these conditions holds, γ increases to γ'.*

4. *At stage three, every trader $i \in N$ exerts effort e_i^* at cost $c(e_i^*)$.*

5. *At stage four, the association, lobbies with rent seeking purposes if and only if the marginal member $\hat{\rho}^*$ satisfies condition (4).*

Proof. See Appendix C. ■

Obviously, an association can only exist if it mains functions, as well as the administrative cost, are not prohibitively high. The equilibrium is such that, for low levels of γ, an association is formed that only

exerts good lobbying. For medium levels of γ, a association will exert both types of lobbying, while it will only exert bad lobbying for values of γ close to one.

Intuitively, the individual potential gains from good lobbying are very high when the level of property rights protection is low. On the contrary, the potential gains from rent seeking lobbying are very low, because most of the revenues from production are lost due to unsecured property rights. In this context, if the cost of good lobbying is not prohibitive, a association will be formed such that the marginal member is pivotal in the decision of good lobbying. Because all traders can free ride on increased property rights protection, the only way that traders voluntarily decide to join the association and pay the cost of lobbying, is the expectation that the association will not be formed if they do not join.

For higher levels of γ, bad lobbying becomes profitable, and so the association will exert both type of lobbying. Note that the complementarity between the two types of lobby is crucial in determining the equilibrium of the game for medium levels of γ. The complementarity will increase the range of γ for which the association finds it optimal to exert both types of lobbying.

When γ is very high, property rights securitization lobbying is not profitable anymore for the association, because of the decreasing marginal impact of the investment of s. Hence, for high levels of γ, the association will only exert rent seeking.

5 Welfare and efficiency

We first analyze the welfare of members and non members of the association. We are particularly interested in the effect of the existence of the association on the welfare of non members, and how this value changes when the level of property rights securitization γ increases.

The total change in welfare due to the creation of an association is:

$$\Delta W = \sum_{1}^{\hat{i}-1} \Delta W_i^n + \sum_{\hat{i}}^{n} \Delta W_i^m \tag{21}$$

We define ΔW_i^n as the change in welfare due to the creation of an association for a non member i. Similarly, ΔW_i^m is the change in welfare due to the creation of an association for an association member i.

$$\Delta W_i^n = \frac{(1+\rho_i)^2(1-\tau)^2}{2\alpha}(\gamma'^2 - \gamma^2) - \frac{2\rho_i}{n}\tau \sum_{1}^{n} \pi_i(\rho_i, \gamma). \tag{22}$$

The first term on the right hand side of (22)comes from increased property rights protection; the second term is the loss due to rent seeking of association members.

$$\Delta W_i^m = \frac{(1+\rho_i)^2(1-\tau)^2}{2\alpha}(\gamma'^2 - \gamma^2) + \left(\frac{2(n-1)\rho_i}{(n-\hat{i}+1)(n+\hat{i}-2)} \tau \sum_1^n \pi_i(\rho_i, \gamma') - \frac{2\rho_i}{n} \tau \sum_1^n \pi_i(\rho_i, \gamma) \right) - \frac{2\rho_i(n-1)(r+s+k)}{(1+n-\hat{i})(n+\hat{i}-2)}, \quad (23)$$

where the first term on the right hand side comes from increased property rights protection; the second term are gains from rent seeking; and the third term, the fee from association membership.

Note that ΔW will be positive as long as the association invests in lobbying for improved property rights securitization, because rent seeking is a pure transfer from non members to association members. Nevertheless, our main interest is what happens with the decomposition of ΔW. Another interesting question is what happens with ΔW_i^n and ΔW_i^m when the level of property rights securitization in the economy increases.

If we distinguish between the change in welfare of members and non members, we can see that ΔW_i^m is non negative by definition, because membership is voluntary. On the other hand, ΔW_i^n is also positive when the association only exerts good lobbying, and it is negative when the association exerts only bad lobbying. In the less obvious case where both types of lobbying take place simultaneously, ΔW_i^n may be positive or negative, depending on the profits from increased security and the size of rent seeking by the association. Surprisingly, we find that ΔW_i^n is non negative for the smallest trader for any possible γ, and ΔW_i^n is decreasing in ρ_i. This means that the smallest traders benefit from the existence of the association even when both good and bad lobbying take place. The intuition is that, because the utility from public goods is increasing in size, small traders benefit very little from public goods, and thus do not suffer too much when the association extracts the tax revenues (and at the same time they benefit from increased property rights protection). For medium size traders, the impact of rent seeking by the association is larger, and may upset the benefits of increased property rights protection. Hence, ΔW_i^n is negative for medium size traders, and the size of the negative impact increases in γ.[28]

Let us define:

$$\hat{\gamma}_i \equiv \{\gamma | \Delta W_i^n = 0\} \quad (24)$$

Proposition 2 *For all $\gamma > \hat{\gamma}_i$ and for $i > 1$, the existence of the association negatively affects the welfare of non members ($\Delta W_i^n(\gamma) < 0$). Analogously, for $\gamma \leq \hat{\gamma}_i$, the impact of the association on non members'*

[28] See Appendix D for further discussion about welfare.

welfare is non-negative ($\Delta W_i^n(\gamma) \geq 0$).

This result implies that non-members' overall welfare is positively affected by the existence of the association in economies in which the protection of property rights by the ruler is weak. The opposite holds for economies in which property rights are properly secured. The reason is that, for high values of γ the association invests in rent seeking, and simultaneously, the positive spillovers from good lobbying become smaller.

In addition, we seek to determine whether the equilibrium always coincide with the efficient outcome. In particular, a relevant question is whether an association is formed whenever it is efficient to lobby for increased property rights securitization. We define $\hat{s}$ as the highest value of s such that it is efficient (or equivalently, welfare enhancing) to invest in good lobbying. To derive $\hat{s}$, we look at the net benefit of lobbying for increased property rights protection (equation 9) when all traders join the association (and therefore, there is no free riding). We define efficient good lobbying as those cases where this value is non-negative:

$$B^s\left(\hat{i}=1\right) = \frac{(1-\tau)^2}{2\alpha}(\gamma'^2-\gamma^2)\frac{n(24+7n(2n-5)-13+8n+2)}{6(n-1)^2} - s \leq 0 \tag{25}$$

The highest value of s such that it is efficient to invest in good lobbying, $\overline{s}(\gamma)$, is obtained at the point where the above condition is binding:

$$\hat{s}(\gamma) = \frac{(1-\tau)^2 n(14n-13)}{12\alpha(n-1)}\left(\gamma'^2-\gamma^2\right) = \overline{s}(\gamma) \tag{26}$$

Note that $\hat{s}(\gamma)$ is equivalent to $\overline{s}(\gamma)$. This means that an association that lobbies to increase the protection of property rights will be formed in equilibrium whenever it is efficient to do so. This result is a consequence of assuming differentiated fees that are able to align the interests of members. When it is efficient to create an association that exerts good lobbying, if the membership fee is such that each trader pays his private gain from increased property rights securitization, then all members happily join the association if they know that their contribution is pivotal in the lobbying decision.

In the following lemma, we formalize this result.

Lemma 5 *The value of* $\hat{s}(\gamma)$ *is always equal to* $\overline{s}(\gamma)$ *for any value of* γ. *Hence, an association is formed whenever it is efficient to exert good lobbying.*

Proof. The proof follows directly by comparing $\hat{s}(\gamma)$ and $\overline{s}(\gamma)$. ■

6 Model discussion and extensions

6.1 Off-equilibrium beliefs

Let us consider a deviation from the equilibrium. In particular, suppose that, for some reason, traders hold the belief that it is the smallest traders who will join the association, not the largest ones. The equilibrium described in the previous section should be robust to arbitrary changes in beliefs (off-equilibrium path). Thus, if the common belief is that all traders $i \in N$ of size $\rho_i \leq \hat{\rho}$ will join the association, how do the membership decisions change? From the two relevant variables: $R(\rho_i, \hat{\rho})$ and $\Delta\pi_i$, only the former changes with beliefs. We define the function $R^o(\rho_i, \hat{\rho})$ as the equivalent to $R(\rho_i, \hat{\rho})$ when the beliefs of traders are that the smallest firms will join the association:

$$R^o(\rho_i, \hat{\rho}) \equiv \frac{2\rho_i(n-1)}{\hat{i}(\hat{i}-1)} \left(\tau \sum_{1}^{n} \pi_i(\rho_i) \right) - \frac{2\rho_i(n-1)(r+s)}{\hat{i}(\hat{i}-1)}, \tag{27}$$

Note that the net rents from joining the association, R^o, are increasing in ρ_i. Therefore, if $\hat{\rho}^o$ is the threshold member size, all $\rho_i \leq \hat{\rho}^o$ get a negative net benefit $R^o(\rho_i, \hat{\rho}^o)$ from joining, and thus, will not join the association. This shows that off-equilibrium beliefs do not support a profitable deviation from the equilibrium.

7 Discussion and Conclusion

We have constructed a simple model that integrates different possible functions of associations, and relates the welfare effect of associations to the institutional setting of the economy. The main prediction is that when property rights are not properly secured by the state, associations will be formed that focus on trying to increase property rights protection, thereby solving a free-riding problem among traders. This will increase the welfare of both members and non members. Only when property rights are rather secure, and the marginal benefit of further promoting property rights decreases, an association will focus on rent seeking lobbying, which only benefits association members and reduces welfare of non members.

Our theoretical results are reflected by several empirical findings. Summarizing the results of a series of case studies, Döner and Schneider (2000:263) report that market-supporting activities of associations "are most relevant in periods of creating and consolidating emerging capitalist economies. [...] In incipient capitalist economies, enterprises may face basic problems of expropriation and other threats to property rights. Pressing for stronger property rights is one of the basic functions of most associations, in part because it is an issue that crosses all cleavages among members." This quotation not only supports the idea that property rights securitization is associations' most basic function (when starting at a low level of property rights protection) but also that significant (positive) spillovers exist onto the rest of the economy. Only if property rights are somewhat secured, member firms are better off by letting their association engage in "market-complementing" activities à la Döner and Schneider (2000) that enable traders to extract monopoly rents. The club good character of such activities implies that the benefits stemming from rent-seeking are restricted to members and, in contrast, may even be detrimental to the rest of the economy, due to biased laws and regulations as a result of lobbying and plain deadweight losses as a result of increasing members' market power and ability to collude.

An increase in γ can also be interpreted as a public sector administrative reform. We show in Section 2 that there are several instances in developing countries where associations have been key in organizing collective action in order to push for market oriented reforms or a better protection of property rights.

Pyle (2011), we argue that his measure of the level of political competition is positively correlated with the level of property rights securitization modeled in this paper, a point that is in line with Olson (1993:571), who writes: "Democratic political competition, even when it works very badly, does not give the leader of the government the incentive that an autocrat has to extract the maximum attainable social surplus." Consequently, the model presented here predicts that in polities with little political competition the main function of associations is the protection of their members' property rights, which benefits other citizens too, because of positive spillovers. The more politically competitive a polity becomes, the less pronounced is the property rights securitization function and the more important is the rent seeking function of associative lobbying. This insight explains and specifies Olson (1993, 2000), who links democracy to the rise of special interests that ultimately subvert property rights.

Moreover, our paper provides a possible answer for an important question raised by Pyle (2011): "It is less than clear why we would not observe higher membership rates in associations if indeed they offer services that secure property rights." We can explain relatively low association membership with free riding of small traders. They benefit from increased property rights protection, and do not have incentives to

join associations. Prüfer (2014) provides an alternative explanation for this question.[29] In an empirical test, we could be able to distinguish which explanation is correct by looking at what kind of firms join associations. If big firms join, the explanation from this article is more likely to apply; while if it is the smaller firms that join, then Prüfer's (2014) reasoning may be more appropriate.[30]

Finally, these results also suggest an explanation for the observation that today countries with high levels of property rights securitization are also characterized by a high development of competition law or antitrust law (Motta, 2004). Because of the negative net welfare effects that associations potentially create in these countries as long as associations are confined to the two functions modeled in this paper, developed democracies had to invent a legal armory that restricts business elites from pooling their rich resources and influencing the political process to their exclusive benefit. Antitrust legislation, starting with the Sherman Act in the US or the precursors of today's Articles 101 and 102 of the Treaty on the Functioning of the European Union, has offered authorities the means to confine the negative effects of business associations. This suggests that, due to the restrictions of competition law, associations in developed democracies focus more on less problematic activities such as distributing information about the latest laws and technologies, or setting industry standards, instead of using their full force to cartelize industries and lobby politicians for exclusive favors. In less developed democracies, it may not be necessary to use competition law for such purposes because associations are (partly) occupied with producing positive spillovers.[31]

[29] Suggesting that in a situation with multiple membership equilibria, certain beliefs could trap an association in a low membership equilibrium.

[30] Some preliminary evidence in this regard that may favor the hypothesis of this paper are: Golikova (2007) finds from recent survey evidence that larger Russian firms are more apt to be members of an association. In UK, Bennet (1998) finds that larger companies generally join more associations than small ones.

[31] Note that this model underlines that even if the business elite in an autocratic (but capitalist) state completely corrupts the government, it is necessary for them to first improve property rights securitization. Only then all firms in the economy (within and outside of the elite) will be incentivized to become more productive and thereby generate the tax resources that can be appropriated by the business elite (captured in this model by "bad lobbying") and the autocrat (captured by the costs of bad lobbying) subsequently.

Appendix

A) Proof of Lemma 2

We can rewrite B^s as:

$$B^s = \frac{(1-\tau)^2}{2\alpha}((1-\sigma(1-\gamma))^2-\gamma^2)\frac{(n-\hat{i}+1)(24+7n(2n-5)-13\hat{i}+8n\hat{i}+2\hat{i}^2)}{6(n-1)^2} - s \geq 0. \tag{28}$$

Note that B^s is strictly decreasing in $\hat{i}$, and hence also decreasing in $\hat{\rho}$ for $n \geq 2$. Also, if $s \leq \overline{s}(\gamma)$, $B^s(1) > 0$ and $B^s(n) > 0$. Therefore, $\hat{\rho}^s = \{\hat{\rho}|B^s = 0\}$, is unique, and for all $\hat{\rho} \leq \hat{\rho}^s$ it holds that $B^s \geq 0$.

Solving the equation $B^s = 0$ leads to

$$\hat{\rho}^s \equiv \frac{3-2n}{2(n-1)} + \frac{1+i\sqrt{3}}{2x2^{\frac{2}{3}}\Psi^{\frac{1}{3}}(n-1)} + \frac{(1-i\sqrt{3})\Psi^{\frac{1}{3}}}{12x2^{\frac{1}{3}}(n-1)}, \tag{29}$$

where Ψ depend on exogenous parameters and it is given by:

$$\Psi \equiv 648 - 2808n + 3888n^2 - 1728n^3 + \frac{1296\alpha(n-1)^2(s+k)}{(1-\tau)^2((1-\sigma+\sigma\gamma)^2-\gamma^2)} + \sqrt{-108 + \left(648 - 2808n + 3888n^2 - 1728n^3 + \frac{1296\alpha(n-1)^2(s+k)}{(1-\tau)^2((1-\sigma+\sigma\gamma)^2-\gamma^2)}\right)^2} \tag{30}$$

B) Derivation of f_i^s

Let us define:

$$G(\rho_i, \hat{\rho}) = \frac{(1+\rho_i)^2(1-\beta)^2}{2\alpha}(\gamma'^2 - \gamma^2) - f_i^s \tag{31}$$

Function $G(\hat{\rho}, \rho_i)$ represents the net gain of trader i of size ρ_i from joining an association that only exerts good lobbying if he joins the association, and does not exert any lobbying if he does not join. For low levels of property rights protection γ, a trader only joins the association if he is pivotal in the decision of exerting good lobbying and $G(\rho_i, \rho_i) \geq 0$. We define f_i^s as the differentiated fee that satisfies three conditions: (i)is linear in size, (ii)aligns the incentives of members, and (iii)the sum of fees paid by members completely covers association costs. Condition (ii) is equivalent to $\{\hat{\rho}|(G(\hat{\rho}, \hat{\rho}) = 0)\} = \hat{\rho}^s$.

Condition (iii) can be written as: $\sum_{\hat{i}}^{n} f_i^s = s + k$. The unique function f_i^s that satisfies this conditions is:

$$f_i^s = \frac{2(s+k)\left(3n^2 - (\hat{i}-3)(4+\hat{i}) - 2n(6+\hat{i}) + i(8n+4\hat{i}-11)\right)}{(n-\hat{i}+1)\left(24+7n(2n-5)-13\hat{i}+8n\hat{i}+2\hat{i}^2\right)} \tag{32}$$

C) Proof of Proposition 1

We divide the proof of proposition(1) in three lemmas:

Lemma 6 *If $s \leq \overline{s}(\gamma)$, for $\gamma < \gamma_1$, and Assumptions 4.1 and 4.4 are satisfied, an association will be formed in equilibrium that only lobbies the ruler with the purpose of increasing protection of property rights. In particular, the marginal member is given by: $\hat{\rho}^s$.*

Proof. First, recall from the proof of Lemma 2 that B^s is decreasing in $\hat{\rho}$, so if the association is large it is more likely to exert good lobbying. If $s \leq \overline{s}$, the smallest trader gets a benefit from increased property rights protection higher than his corresponding fee. That is $G(1,1) \geq 0$.[32] Therefore, the smallest trader is willing to join the association and pay the corresponding cost, if he knows that the association would not be formed without his participation. Since $G(\rho_i, \hat{\rho})$ is increasing in ρ_i, all traders $i > 1$ are also willing to join the association if they know they are pivotal in the decision of exerting good lobbying (i.e. if $\rho_i = \hat{\rho}^s$). As a consequence, a association will be formed with $\hat{\rho}^* = \hat{\rho}^s$ and will exert good lobbying. Note that $\overline{s}(\gamma)$ is decreasing in γ. Thus, when the level of property rights securitization increases, it becomes less likely that a association with good lobbying purpose is formed.

On the other hand, when γ is low the association has no incentives to invest in bad lobbying because B^r is increasing in γ and $\hat{\rho}$. We already showed that when γ is low, $\hat{\rho}$ will be low as well, and therefore, the benefits from rent seeking very low. The association will not vote for rent seeking unless its cost is close to zero. ■

Lemma 7 *If $s \leq \overline{s}(\gamma)$ and Assumptions 4.1, 4.2, 4.3 and 4.4 are satisfied, for $\gamma_1 \leq \gamma \leq \gamma_2$, there will be both good and bad lobbying. The equilibrium threshold size is: $\hat{\rho}^* = \hat{\rho}^r(\gamma')$.*

Proof. When $\hat{\rho}^r(\gamma') \leq Min\{1, \tilde{\rho}^s\}$, an association that exerts both types of lobbying becomes feasible. Some large traders have incentives to join the association because they gain from rent seeking. The

[32] The function $G(\rho_i, \hat{\rho})$ is defined in equation (31) in Appendix B.

association will not exert rent seeking lobby if $\hat{\rho} < \hat{\rho}^r(\gamma')$, then it must be that $\hat{\rho}^* \geq \hat{\rho}^r(\gamma')$. Because the incentives are perfectly aligned within the association due to differentiated fees, either all traders would like to join an association that exerts rent seeking, or none. When assumptions 4.1, 4.2 and 4.3 are satisfied, then all traders would like to join the association, because they get a positive net benefit from joining. But if all firms join the net benefits from membership are negative and thus, this cannot be an equilibrium. The only possible equilibrium is that the marginal member is pivotal in the decision of rent seeking, i.e. $\hat{\rho}^* = \hat{\rho}^r(\gamma')$. Hence, in equilibrium, some traders would like to join the association, but they do not do it because they cannot commit to vote in favor of rent seeking, and their membership will change the decision of the association with respect to rent seeking. On the other hand, the marginal member does not have incentives to leave the association because he would lose the positive net benefit from rent seeking. Assumption 4.4 rules out the possibility of small traders joining the association strategically with the purpose of changing its lobbying decision. ■

Lemma 8 *For $\gamma \geq \gamma_2$, if Assumptions 4.2, 4.3 and 4.4 are satisfied, there is only rent seeking lobbying. The equilibrium threshold size is: $\hat{\rho}^* = \hat{\rho}^r(\gamma)$.*

Proof. From Lemma 2, if $\hat{\rho}^r(\gamma') > \tilde{\rho}^s$, it is not optimal for the association to invest in good lobbying. But, as long as $\hat{\rho}^r(\gamma) \leq 1$, it is optimal to invest in rent seeking lobby according to Lemma 1. If $\hat{\rho}^* = \hat{\rho}^r(\gamma)$, the marginal member does not have incentives to leave the association, because he knows that the association will exert rent seeking anyway, and he gets a positive net payoff from rent seeking. On the other hand, the marginal non member does not have incentives to join the association, as the association would cease to exert rent seeking lobby if he joined. Therefore, the equilibrium is given by $\hat{\rho}^* = \hat{\rho}^r(\gamma)$. Assumption 4.4 rules out the possibility of small traders joining the association strategically with the purpose of changing its lobbying decision. ■

D) A note on welfare

Note that the result that medium size traders (or large non members) get the smallest benefit (or the largest lost) from the existence of the association depends on the assumption that the utility that traders derive from public goods is increasing on size. Instead, if all traders derive the same utility from public goods, then it is the smallest traders who lose the most from the association. Indeed, $\Delta W_{i=1}^n < 0$ for any value of γ, meaning that the smallest trader is always damaged by the existence of the association.

If the utility derived from public goods is the same for all traders, we can write the change in welfare of non members, due to the existence of the association, as:

$$\Delta\tilde{W}_i^n = \frac{(1+\rho_i)^2(1-\tau)^2}{2\alpha}(\gamma'^2 - \gamma^2) - \frac{1}{n}\tau\sum_1^n \pi_i(\rho_i, \gamma'). \tag{33}$$

We define $\tilde{\gamma}_i$ as $\{\gamma|\Delta\tilde{W}_i^n = 0\}$.

Lemma 9 *$\Delta\tilde{W}_i^n$ is increasing in ρ_i, and increasing in γ for γ large enough. Moreover, $\Delta\tilde{W}_{i=1}^n < 0$ for all $\gamma \in [0,1]$. As a consequence, for $\gamma > \tilde{\gamma}_i$, $\Delta\tilde{W}_i^n(\gamma) < 0$; and for $\gamma \leq \tilde{\gamma}_i$, we have that $\Delta\tilde{W}_i^n(\gamma) \geq 0$. We prove that $\tilde{\gamma}_i < 1$ for all $i \in N$.*

Proof. The first two results follow directly from taking the derivative of $\Delta\tilde{W}_i^n$ with respect to ρ_i and γ respectively, and by replacing $i = 1$ in equation (33). To prove that $\tilde{\gamma}_i < 1$ for all $i \in N$, we first look at the case where $\sigma = 0$. Then:

$$\tilde{\gamma}_i = \sqrt{3(n-1)(1-\tau)(1+\rho_i)^2 w_i}\left(3(n-1)(1-\tau)(1+\rho_i)^2 - w_i\sigma^2\right)^{-1}, \tag{34}$$

with

$$w_i \equiv -3 + 3n + 16\tau - 17n\tau + 6(n-1)(1-\tau)\rho_i + 3(n-1)(1-\tau)\rho_i^2 \tag{35}$$

This threshold will be lower than one if $(14n-13)\tau > 0$. Since this is always true for $n > 1$, we can conclude that for all $i \in N$: $\tilde{\gamma}_i(\sigma = 0) < 1$. Note that $\sigma = 0$ means that the property rights lobbying is very efficient and completely eliminates the possibility of expropriation. The benefits from good lobbying are maximized, and therefore we expect this to be the case where $\Delta\tilde{W}_i^n$ is maximal. To confirm this intuition, we take the derivative of $\Delta\tilde{W}_i^n$ with respect to σ, which turns out to be negative as long as the following condition is satisfied:

$$\frac{(14n-13)\tau}{3(n-1)} < (1-\tau)(1+\rho_i)^2 \tag{36}$$

If condition (36) is satisfied, then for any $\sigma > 0$: $\tilde{\gamma}_i(\sigma) \leq \tilde{\gamma}_i(\sigma = 0) < 1$. Now, if condition (36) is not satisfied, we use the property that $\Delta\tilde{W}_i^n < (1-\tau)(1+\rho_i)^2 - \frac{(14n-13)\tau}{3(n-1)}$. But then, the violation of condition (36) implies that $(1-\tau)(1+\rho_i)^2 - \frac{(14n-13)\tau}{3(n-1)} < 0$. This means that in these cases, $\Delta\tilde{W}_i^n$ is negative for all possible γ, which is equivalent to $\tilde{\gamma}_i = 0$. ■

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