TRADE ASSOCIATIONS, LOBBYING, AND ENDOGENOUS INSTITUTIONS

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ABSTRACT

This article explores whether positive or negative effects of trade associations—private, formal, nonprofit organizations designed to promote the common interests of their members—on the economy prevail. We construct a model that endogenizes association membership of firms and the main functions of associations, which can have positive or negative spillovers on the economy. We show that, all else equal, the incentives of associations to lobby for better property rights are highest when property rights are unprotected. In turn, incentives to seek rents are strongest when property rights are well protected. This suggests that associations can be a valuable private ordering institution when governments are ineffective but recommends caution when governments supply a functioning legal system.

(JEL codes: D02, D62, D71, D72, L44).

1. INTRODUCTION

For over 1,000 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, 2006). Trade, business, or industry associations, professional clubs, trade unions, chambers of commerce, academic societies, industry trade groups, and mediev guilds are all shapes of the same generic organizational form, which we call an association in this article.1

During the Commercial Revolution, which started in the 10th and 11th centuries in Europe, the primary function of the first merchant guilds was to protect the property rights of their members vis-à-vis nonmembers (Volckart & Mangels 1999). Associations have other purposes, too. Grafe & Gelderblom (2010, p. 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 firms to extract monopoly rents, and (4) their ability to balance supply and demand in markets of limited size.”2 Crucially, whereas we can expect that all of these functions benefit association members as long as membership is voluntary, the spillover effects on 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 advice, scholars have come to very different conclusions regarding the impact of associations on overall efficiency and welfare. Notably, the literature in industrial organization, political economy, and public choice has mostly taken a critical viewpoint of associations, whereas work in institutional and organizational economics has mostly taken a positive view. As a whole, the theoretical literature is unclear under which circumstances we may expect associations to generate positive or negative spillovers.

The large divergence of scholarly views of trade 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

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

2 Both historical and modern associations have assumed further functions, which we abstract from in this study, for the sake of clarity. Some offer members a platform to meet and to exchange views about other industry participants and to learn about the latest technologies, foreign markets and standardizations and about prospective trade partners. Others offer their members arbitration services and help to resolve disputes. In supporting honest trade both between members and between members and nonmembers, associations serve as substitutes for ineffective legal systems. See Prüfer (2016) for a more detailed literature overview.
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 get traction on these key issues we construct a game-theoretic model. We endogenize the individual association membership decisions of the business firms in an economy—and thereby existence of the association in the first place. We also endogenize the main function(s) of the association. Inspiration for the type of functions we model is delivered by Dönert & Schneider (2000, p. 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.

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 protection in the economy (good lobbying); and (ii) whether the association lobbies for rents that exclusively accrue to association members, to the detriment of nonmembers (bad lobbying). Good lobbying is characterized by a free-riding problem because all firms 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 association’s members. Association members jointly decide whether to invest in one or both lobbying types, or not to lobby at all. Besides being association members, or not, firms are individual decision makers who set an effort level to maximize their individual business profits. We show that larger firms—or, alternatively, those with larger profit potential—have higher incentives to join an association than smaller firms.

The key parameter in this study is the level of property rights protection, which we model as the share of operating profits before taxes that firms do not lose due to threats such as corrupt bureaucrats, banditry, incompetent judges, or the like. Therefore, better protected property rights are an unalloyed good in

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3 Specifically, the loss to business profits and, hence, the state’s tax revenues can be interpreted as corruption at low levels of the bureaucratic hierarchy, as described by Duvanova (2007): “[H]ere corruption is a set of unpredictable, arbitrary actions on the part of regulating agencies and other state authorities to extort resources from businesses. Such corruption operates at the lower levels of bureaucratic hierarchy and might involve, but is not limited to, ‘speed money’—extra unofficial fees
the model—and lobbying for increased property rights protection is characterized by positive externalities from association members, who pay for it, on nonmembers, who cannot be excluded from the benefits of better property rights.

Our model predicts that an association adopts a different set of functions, depending on the level of property rights protection: (i) if property rights are rather insecure (and the cost of good lobbying is not prohibitive), an association 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 rights protection, both good and bad lobbying take place, strengthening each other’s effects. (iii) If property rights are rather secure, the marginal benefit of further promoting property rights is small. Here an association only invests in rent-seeking lobbying, which exclusively serves the largest firms.

It turns out that good lobbying and bad lobbying are complements: if the association lobbies politicians to increase property rights, this incentivizes all firms to do more business because they expect to keep a larger share of their gross profits. Doing more business leads 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 effect also works in the opposite direction: associations that expect to exert bad lobbying, have more incentives to invest in good lobbying, because they take into account that a higher protection of property rights increases the tax revenues which can be appropriated through rent seeking.

Turning to the key question that motivated conducting this research, this model sheds light on the effects of associations on members and nonmembers. We show that, all else equal, the net welfare generated by associations is positive as long as the level of property rights protection in an economy is sufficiently low. We also show which firms benefit and which firms suffer from the existence of an association, and thereby create intuition for a problem that is specific to medium-sized firms, but not to large or to small firms. Notably, as the notion of property rights captured in our model necessarily abstracts away from several aspects of the concept in (legal) practice, for tractability, and as we restrict our

for the official services provided by bureaucrats—and bribes and favors designed to reduce bureaucratic red tape.”

4 We believe that this notion of property rights captures the essence of the concept (Alchian 2008). Admittedly, it does not capture all of its facets, for instance, the idea that intellectual property rights can be protected too much, from a welfare perspective (Boldrin & Levine 2002; Heller & Eisenberg 1998). We honor this difference when interpreting our theoretical results in Section 6.
attention to the lobbying function of associations, leaving other functions aside, the interpretation of these results for policy purposes warrants caution (see footnote 6; details in Section 6).

In the remainder of the article, Section 2 reviews the related literature. Section 3 describes the model setting. Section 4 presents the equilibrium analysis and results, whereas Section 5 analyzes welfare and efficiency. Section 6 discusses the practical relevance of the results and presents empirical applications. Appendix A contains a technical discussion and model extensions. Appendix B contains all proofs and mathematical derivations of key variables.

2. TRADE ASSOCIATIONS AND WELFARE: THE COSTS AND BENEFITS OF PRIVATE ORDERING

Theoretical literature about the welfare effects of trade associations is rather scarce. A negative view, which is brought forward by scholars from industrial organization, law and economics, and public choice, underlines 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 (Döner & Schneider 2000; Motta 2004; Vives 1990) or to lobby politicians for selective favors (Besley & Coate 2001; Pyle 2011; Tucker 2008).5 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 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, which 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 institutional and organizational economics literature, which underlines the supportive effects of private ordering institutions for the transactors involved. In theoretical terms, where noncontractibility or prohibitive transaction costs make court enforcement of business agreements no available option for firms, private governance institutions such as information exchanges or arbitration tribunals that are managed by associations can avoid social dilemma problems

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5 Along the same line, Olson (2000) stresses that trade associations contribute to the uncompetitive, corrupt, and inefficient nature of postcommunist economies in Eastern Europe. Bernstein (1992) emphasizes the ambiguous nature of associations in her study of the modern diamond trading industry.
that arise through impersonal exchange. This effect reduces the risk of market breakdown and increases the total amount of efficient business transactions.

More specifically, Prüfer (2016) analyzes the interaction between a private, formal business association and an informal social network in a context where mutual cooperation is efficient but no equilibrium in one-shot interactions. The key parameter, borrowed from Dixit (2003), is socioeconomic distance between traders. Prüfer (2016) shows that traders will only trade with other transactors if socioeconomic distance between them is small because proximity increases the probability of future encounters, generating intertemporal incentives to cooperate in the current transaction. In that model, associations, which have only imperfect access to public coercion, assume functions of information intermediaries or arbitrators. They are shown to increase the scope of cooperation—and thereby welfare—by coordinating individual punishments or even exacting damage payments from traders who were found to renege on their contractual obligations. This result holds even when traders are already connected through an informal social network. However, the value of association membership decreases if transactors are better connected informally. This means that, despite the different channels of information transmission, social networks and associations are substitutes with respect to supporting cooperation. The results of that model are supported by and explain recent empirical findings, for instance, that members perceive associations to be less valuable in more competitive industries (Pyle 2005, 2006).

Another welfare enhancing function of associations is to manage collective reputation, when quality is an issue. Tirole (1996) shows that new members of a group can suffer from the bad reputation of past members long after they are gone, which creates stereotypes and history dependence. In order to keep group reputation high, an association can exclude members who do not cooperate in a transaction. Tirole shows that the threat of exclusion from the association steers individual behavior and is key to achieve high group reputation.

The idea that associations are created as a response to imperfect public governance is supported by a vast amount of empirical evidence. Using quantitative data on business associations’ membership as well as qualitative business survey
data on 25 postcommunist countries, Duvanova (2007) finds a strong correlation between firms’ perception of corruption and their membership in an association.\(^8\) Corruption stimulates collective action organized by 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 protecting firms’ property rights: \(^9\) “[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.” This confirms our prediction that the good lobbying role of associations is particularly important in contexts of low institutional quality. 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 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 on the rest of the economy (Döner & Schneider 2000). Associations also increase members’ joint impact on institutional reform (Acemoglu, Johnson, & Robinson 2005; Lambsdorff 2002).

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.\(^10\) Lucas (1993) describes how local and sectorial associations in Nigeria strongly opposed the state’s corruption and the politicization of administration. They achieved an improvement in governance that also benefited nonmembers. 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, Kuwait, and Mexico

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\(^8\) Duvanova (2007) uses data on firms’ participation in business associations from the European Bank for Reconstruction and Development (EBRD) and the World Bank Business Environment and Enterprise Performance Survey (BEEPS). BEEPS covers around 4,000 firms from different sectors and industries and varying size and ownership type in 25 postcommunist countries and was conducted during 1999–2000.

\(^9\) Pyle (2011) conducted two separate surveys in 2003. A screening survey of 1,353 firms in seven industrial sectors, in 48 territorial subjects in Russia; complemented by a more detailed survey of a selected sample of 606 out of the 1,353 firms. A different survey was administered to the directors of 200 independent business associations. Also, an index of “political competition” from the Democratic Audit of Russia was used in the study.

\(^10\) For a detailed summary, see Döner & Schneider (2000).
were key to successful market-oriented reforms and macroeconomic stabilization.\textsuperscript{11} Similarly, in Pakistan, interindustry associations pushed for the government to improve infrastructure and solve the problem of severe power shortages.\textsuperscript{12} Goldsmith (2002) studies associations in Africa, using qualitative data from a survey to business people and civil servants in eight African countries, and finds that they have been key in pushing, bargaining, and implementing public policy.\textsuperscript{13} In particular, Goldsmith tests the hypothesis that associations are a cure for bad public governance, as they represent the interests of the private sector and thus provide pluralism in the political process, versus the theory supported by public choice theorists that associations facilitate rent seeking. He finds support for the former hypothesis: associations in Africa are formed primarily in reaction to bad governance.

In between the two opposed streams of literature, we take a neutral stand. In the next section, we construct a model that first endogenizes association membership and then allows associations to choose whether to invest in an activity with positive externalities (coined \textit{good lobbying}) and an activity characterized by negative externalities (called \textit{bad lobbying}).

Our article is also related to de Soto (1990, 2000), who proposes that one of the main reasons of poverty in developing countries is the lack of appropriate legal structures and established property rights. The poor own valuable assets but they cannot use them as collateral for loans (and thereby leverage them) without property rights. To survive in this context, they shelter themselves in the informal economy and create inefficient extralegal structures. Thereby, de Soto provides supporting theory and evidence for the positive net welfare effect of increasing property rights protection in countries with underdeveloped legal infrastructures. An important difference with our work, however, is that he mostly calls for government intervention in defining and protecting property rights, while we stress the potential role of private ordering institutions (including trade associations) to push for such a reform. The literature surveyed above shows that in several instances throughout history the latter has been the case. Finally, we analyze the dependence of property rights on other institutional indicators, such as the cost of bad lobbying, and show the conditions under which a better protection of property rights can lead to negative side effects.\textsuperscript{14}

\textsuperscript{11} Do¨ ner & Schneider (2000, p. 264–265). The associations mentioned are CPC (Chile), KCCI, (Kuwait), and CCE (Mexico).

\textsuperscript{12} Tewari (1990, p. 310), cited in Nadvi & Schmitz (1994, p. 26).

\textsuperscript{13} Goldsmith focuses on Ghana, Kenya, Madagascar, Malawi, Senegal, Tanzania, Uganda, and Zambia.

\textsuperscript{14} See Appendix A.5.
3. BASELINE MODEL

Consider an economy populated by a set \( N = \{1, \ldots, n\} \) of risk neutral firms, with \( n \geq 2 \). Each firm \( i \in N \) is characterized by a size parameter \( \rho_i \equiv \frac{i-1}{n-1} \).\(^{15}\) Firms decide individually how much effort \( e_i \) to invest in their businesses. We can interpret \( e_i \) as the effort to find someone to trade with. Exerting effort costs \( c(e_i) \), which is convex and unobservable for others:

\[
c(e_i) = \frac{e_i^2}{2}.
\]

(1)

Expected operating (gross) profits of firm \( i \in N \) from doing business are denoted by:

\[
\pi_i(e_i, \rho_i, \gamma) \equiv e_i(1 + \rho_i)\gamma,
\]

(2)

where \( \gamma \) denotes the degree of property rights protection. Firms maximize net profits:

\[
\tilde{\pi}_i(e_i, \rho_i, \gamma, \tau) \equiv \pi_i(e_i, \rho_i, \gamma)(1 - \tau) - c(e_i),
\]

(3)

where \( \tau \) denotes the tax rate.\(^{16}\) Both \( \gamma \) and \( \tau \) are common knowledge.

Before trade takes place, firms can form a nonprofit association that will have the single purpose of trying to influence the decisions of the political ruler.\(^{17}\) We assume that this trade association will take decisions collectively, as a single entity, by maximizing the joint profits of all members. Every association member must pay a fee \( f(\rho_i) \) that is endogenously determined and can be either a flat fee (equal for all members), or increasing in \( \rho_i \). In the latter case, and for tractability reasons, we consider a fee scheme \( f(\rho_i) \) that satisfies the following conditions: (i) it is linear in firm size \( \rho_i \), (ii) it aligns the incentives of members regarding lobbying decisions, and (iii) the sum of fees paid by members covers the association’s costs.\(^{18}\) The cost of an association is composed by the cost of lobbying plus an administrative fixed cost \( k \).

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15 This definition implies that (i) firms are ordered by size, such that \( \rho_{i+1} > \rho_i \) for all \( i, (i+1) \in N \), and (ii) the average size of firms in the economy is independent of the number of firms, and it is always equal to 1/2. Alternative to size, \( \rho_i \) can be interpreted as a measure of potential profitability of the firm.

16 Results are qualitatively unchanged if taxes are paid on net profits, \((\pi_i - c(e_i))\). In that case, however, the tax rate \( \tau \) does not affect the effort decision and becomes a perfect substitute of \((1 - \gamma)\), thereby losing some results. In practice, some effort costs are not verifiable and, hence, cannot be tax deductible.

17 In Appendix A.1, we argue why the nonprofit form is efficient for associations.

18 Many real-world associations have a fee structure that is increasing in members’ size. To assume that this increase occurs linearly matches expected profits, which also increase linearly in size.
Property rights are imperfectly protected in this economy and, as is visible in (2), firms lose a share \((1 - \gamma)\) of their operating profits, for instance, through robbery or corruption.\(^{19}\) For simplicity, we assume that the “disappearing” part of operating profits is lost from a welfare perspective.\(^{20}\) The degree of property rights protection is common knowledge and is exogenous to an individual firm. However, a trade association can invest an amount \(s\) in lobbying the ruler to increase the level of property rights protection.\(^{21}\) We refer to this type of lobbying as *good lobbying* because it is subject to positive externalities. In particular, good lobbying increases the level of property rights protection for all firms to:

\[
\gamma' = 1 - \sigma(1 - \gamma) \geq \gamma,
\]

with \(\sigma \in [0, 1]\), which implies that the investment of \(s\) has a (positive) decreasing marginal impact on the level of property rights protection:

\[
\frac{d(\gamma' - \gamma)}{d\gamma} = \sigma - 1 \leq 0.\(^{22}\)
\]

The ruler in this economy is an automat that does two things. He is susceptible to lobbying and he imposes an exogenous tax rate \(\tau\) over firms’ operating profits.\(^{23}\) The ruler spends all tax revenues on public goods such that each firm gets a payoff that is directly proportional to its size.\(^{24}\) Formally, firm \(i \in N\) gets associations set a fee that aligns members’ incentives because it is in their own interest that the association is formed and lobbies the ruler, but keeps costs of collective decision making, which are crucial in member-owned organizations, low (Hansmann 1996; Herbst & Prüfer 2011).

\(^{19}\) An alternative interpretation would be that each firm loses all its operating profits with probability \(1 - \gamma\).

\(^{20}\) We show in Appendix A.3 that assuming an arbitrarily small but positive degree of inefficiency in the use of revenues from illegal activities is enough for our results to hold.

\(^{21}\) Whether \(s\) is spent on activities truthfully informing political decision-makers about how to increase \(\gamma\) or whether the ruler takes \(s\) as a bribe and uses parts of this sum to implement higher \(\gamma\) is irrelevant for this article.

\(^{22}\) We can interpret \(\sigma\) as the (in)efficiency of good lobbying. A high value of \(\sigma\) 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 protection only slightly. On the contrary, a low level of \(\sigma\) implies that property rights protection 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.

\(^{23}\) We do not model the ruler as a strategic player because the empirical evidence reported in Section 2 suggests that associations arise in situations where governments and other public authorities are rather ineffective or dysfunctional.

\(^{24}\) In reality, rulers may use a share of tax income to finance their administration and may be 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.
a payoff from public good consumption equal to: \[\frac{2\rho_i}{n} \omega \left(\tau \sum_{i=1}^{n} \pi_i(\rho_i)\right),\] (5)

where \(\tau \sum_{i=1}^{n} \pi_i(\rho_i)\) are total tax revenues, \(\omega > 0\) is the public good “multiplier”, and the factor \(\frac{2\rho_i}{n}\) captures the fact that large firms benefit more from the use of public goods in absolute terms. \(\omega > 1\) corresponds to a ruler who spends taxes for public goods efficiently, whereas \(\omega < 1\) represents a ruler wasting public resources.\(^{26}\)

Inspired by empirical observations, we also allow the association to exert bad lobbying. More specifically, the association may invest in lobbying authorities to redistribute tax revenues toward 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.\(^{27}\) All traders expect the largest firms to join the association.\(^{28}\)

Denoting by \(\hat{i}\) the marginal member of the association, who is indifferent between joining and not joining, hence a member \(i \in \{\hat{i}, \hat{i} + 1, ..., n\}\) of size \(\rho_i\) expects a rent-seeking benefit of:

\[
\frac{2(n - 1)\rho_i}{(n - \hat{i} + 1)(n + \hat{i} - 2)} \left(\tau \sum_{i=1}^{n} \pi_i(\rho_i)\right).
\] (6)

The above equation ensures that the totality of appropriated tax revenues is distributed among association members.\(^{29}\) The distribution is directly proportional to members’ size, just as the utility derived from public goods.

\(^{25}\) Technically, the level of property rights protection, \(\gamma\) is also a public good. However, we treat this variable separably. Public good production refers to equation (5) in this article, not to the level of \(\gamma\).

\(^{26}\) Note that (5) approaches zero if \(n\) is large, which is given in nearly all economies. Therefore, and for tractability of the model, we assume that an individual firm \(i\) neglects the effect of its own effort on the level of total tax revenues when choosing \(e_i\) but takes it as given. In Appendix A.4, we discuss how relaxing this assumption affects our results.

\(^{27}\) Think of rent seeking lobbying as an investment to obtain an industry-specific tax cut or an exclusive trade privilege, which benefits association members but not others. All members benefit from this advantage but large members can benefit more than small members, in absolute terms.

\(^{28}\) Technically, we assume the common belief such that the marginal member, who is indifferent between joining the association or not, is the smallest member of the association. We show in Appendix A.2 that indeed the largest members join the association in equilibrium, even if the players hold different beliefs.

\(^{29}\) That is \(\sum_{i}^{n} \frac{2(n - 1)\rho_i}{(n - i + 1)(n + i - 2)} = 1.\)
Finally, consider the following timing of the game:\(^{30}\)

1. **Membership**: The largest firm (at \( \rho_i = 1 \)) decides whether to establish an association and the membership-fee scheme \( f(\rho_i) \), maximizing viability of the association. If an association is established, every firm \( i \in N \) decides about association membership. Fees are paid by the members to the association.

2. **Good lobbying**: Association members jointly decide about lobbying for increased property rights protection.

3. **Doing business**: Every firm \( i \in N \) individually decides about effort \( e_i \) at cost \( c(e_i) \). Firm-specific profits are realized.

4. **Bad lobbying**: Association members jointly decide about lobbying for rent seeking. Public good benefits are realized.

We solve this game by backward induction for a unique subgame-perfect Nash equilibrium.

### 4. ANALYSIS

**At stage 4**, association members collectively decide about lobbying for rents (whether or not to invest a total amount \( r \)) by maximizing the total net benefits from rent seeking. Total gross benefits from rent seeking correspond to the difference between appropriating all tax revenues, and the proportion of public good benefits that would accrue to association members in case no bad lobbying took place. Members’ total net benefits, \( B' \), are obtained by subtracting the cost of bad lobbying from this benefit. Hence, the association will exert rent seeking if, and only if, \( B' \geq 0 \), where:

\[
B'(\hat{i}, \gamma) = \tau \sum_{i=1}^{n} \pi_i(\rho_i, \gamma) - \left( \sum_{i=1}^{n} \frac{2\rho_i}{n} \right) \omega \tau \sum_{i=1}^{n} \pi_i(\rho_i, \gamma) - r \geq 0. \tag{7}
\]

Equation (7) shows that the benefits from stealing tax revenues do not depend on the public goods multiplier \( \omega \), whereas (in the second term of \( B'(\hat{i}, \gamma) \)) the benefits from forgone public goods consumption do depend on \( \omega \). Substituting \( \pi_i \) from equation (2) into (7) and rearranging terms, leads to the following

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\(^{30}\) The rationale for this sequence is that the membership body has to be known before the association decides about its functions, and that firms have to know the level of property rights protection (\( \gamma \) or \( \gamma' \)) when making individual business decisions. The results are robust to changes in the timing of effort decisions and rent seeking.
condition to make bad lobbying incentive compatible:

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

(8)

We postpone the intuition of this result until Lemma 1.

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

$$
\text{Max}_{e_i} \pi_i = e_i(1 + \rho_i)\gamma(1 - \tau) - c(e_i).
$$

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

$$
e_i^* = (1 + \rho_i)\gamma(1 - \tau).
$$

(9)

The profit-maximizing effort positively depends on the level of property rights protection and the size of the firm, and negatively on the tax rate. Because in equilibrium individual effort is given by (9), we can replace the optimal effort $e_i^*$ in condition (7) that determines rent seeking. The association lobbies for rents if, and only if:

$$
\hat{\rho} \geq \begin{cases} 
\frac{1}{2(n-1)} \left(1 + \frac{24(n-1)^2r + 4(14n-13)n(n-1)\gamma^2\tau(1-\tau)(\omega-1)}{(14n-13)\gamma^2\tau(1-\tau)\omega} \right) \\
\hat{\rho}'(\gamma') \quad \text{if } s \text{ was invested,} \\
\frac{1}{2(n-1)} \left(1 + \frac{24(n-1)^2r + 4(14n-13)n(n-1)\gamma^2\tau(1-\tau)(\omega-1)}{(14n-13)\gamma^2\tau(1-\tau)\omega} \right) \\
\hat{\rho}'(\gamma') \quad \text{otherwise}
\end{cases}
$$

(10)

where $\hat{\rho} \equiv \frac{i-1}{n-1}$ is the size of the marginal association member, $\hat{i}$.

**Lemma 1**

The association invests in rent-seeking lobbying if the marginal member $\hat{\rho}$ satisfies condition (10), that is, if the marginal member is large enough (and the association comprises relatively few firms).

The larger the size of the marginal member $\hat{\rho}$ is (that is, the fewer members), the more likely it is that condition (10) holds, ceteris paribus. The reason is that the smaller the association is, the larger are the joint benefits from rent seeking and therefore the higher are the incentives to exert bad lobbying. Naturally, the higher the cost of rent seeking ($r$), the less likely it is that the association decides to lobby for rents.
Equation (10) also reveals that the likelihood of rent seeking is higher for tax rates $\tau$ close to 0.5. The intuition comes from the Laffer curve: a high $\tau$ 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 $\tau$ 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, a higher level of property rights protection makes it more likely for the association to extract rents because higher $\gamma$ increases the returns of firms’ individual effort and thus the size of tax revenues that can be appropriated by the association.

While equations (2), (3), and (9) may give the impression that $\tau$ and $(1 - \gamma)$ are perfect substitutes, the result expressed in equation (10) 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 firms, while the proportion $\tau$ that is collected by the ruler via taxes can be recovered by association members through bad lobbying. Therefore, a higher value of $\tau$ is not always bad news for firms, as they can form an association and lobby the ruler to appropriate the tax revenues (of themselves and of nonmembers). We formalize this result in the following Lemma:

**Lemma 2**
The tax rate $\tau$ and the level of property rights protection $\gamma$ affect the association’s incentives to seek rents, captured by $\hat{\rho}(\gamma)$ and $\hat{\rho}(\gamma')$, differently.

At stage 2, association members decide about lobbying for increased property rights protection by maximizing joint private profits, that is, if:

$$B'(\hat{i}) = \sum_{i=1}^{n} (\hat{\pi}_i(e^*_i(\gamma'), \rho_i, \gamma', \tau) - \hat{\pi}_i(e^*_i(\gamma), \rho_i, \gamma, \tau)) - (s + k) \geq 0. \quad (11)$$

Note that the fixed cost $k$ is included as a cost of good lobbying. The reason is that if the association only exerts good lobbying, then both $s$ and $k$ are costs that depend on the decision of whether to lobby, or not. A firm that is pivotal in decision making of exerting good lobbying only joins the association if both costs are covered. \(^{31}\)

By substituting equations (3) and (9) in (11), we get the following expression:

$$B'(\hat{i}) = \frac{(1 - \tau)^2}{2} (\gamma'^2 - \gamma^2) \sum_{i=1}^{n} (1 + \rho_i)^2 - (s + k) \geq 0. \quad (12)$$

\(^{31}\) The case in which both good and bad lobbying take place is analyzed later.
The following Lemma summarizes the necessary and sufficient condition for equation (12) to hold. Let us define:

\[ \hat{\rho}^s \equiv \{\hat{\rho} \in [0, 1]|(B'(\hat{i}) = 0)\}. \] (13)

**Lemma 3**

The association lobbies to increase property rights protection if the marginal member \( \hat{\rho} \) satisfies: \( \hat{\rho} \leq \hat{\rho}^s \), that is, if the marginal member is small enough (and the association comprises sufficiently many member firms).

Lemma 3 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 positive externality associated with good lobbying: all firms benefit from increased property rights protection, but only association members bear the corresponding cost. This generates incentives to free-ride. When a firm joins the association, the externality from the association to that firm is internalized. Therefore, the association is more likely to invest in property rights protection. Rephrased, lobbying to increase property rights protection 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; whereas small associations are more likely to lobby for rents that exclusively benefit its members, to the detriment of nonmembers.

So far, we have considered each type of lobbying in isolation. However, there are instances in which both types of lobbying may occur simultaneously and, therefore, we need to account for the interaction between them. There is a two-way complementarity. The first complementarity stems 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 (10) 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 at stage 4, then the relevant net benefits from good lobbying are not given by equation (12). Instead, they are given by \( \tilde{B}^s \), which in addition to the increased profits from doing business depicted in equation (12), include the rise in rent seeking benefits due to increased property rights protection \( (B'(\gamma') - B'(\gamma)) \). That is:

\[ \tilde{B}^s(\hat{i}) \equiv \frac{(1 - \tau)^2}{2}(\gamma'^2 - \gamma^2)\sum_{i=\hat{i}}^n (1 + \rho_i)^2 - B'(\gamma') - B'(\gamma) - s. \] (14)
Let us define:

$$\bar{\rho}^s \equiv \{\hat{\rho} \in [0, 1] | \tilde{B}^s(\hat{\rho}) = 0 \}. \quad (15)$$

The proof to the following Lemma is analogous to the one of Lemma 3 and hence omitted.

**Lemma 4**

(Complementarity of good and bad lobbying) When association members expect to exert rent seeking in stage 4 (that is, if $\hat{\rho} \geq \bar{\rho}^s(\gamma')$), the association will lobby to increase property rights protection at stage 2 if the marginal member $\hat{\rho}$ satisfies $\hat{\rho} \leq \bar{\rho}^s$; where $\bar{\rho}^s > \bar{\rho}^s$.

Association members can anticipate when the association will exert rent seeking. In those cases, the relevant threshold marginal member for exerting property rights protection is given by (15), which is strictly higher than the value given by (13). Hence, good lobbying is more likely when there is also bad lobbying. This reflects the complementarity between good and bad lobbying.

Before we complete our analysis of the functions of trade associations, we study how these self-chosen functions change if the level of property rights protection changes.

**Lemma 5**

With increasing $\gamma$, good lobbying becomes more profitable for the association, for $\gamma < \frac{\alpha}{1 + \sigma}$, and less profitable, for $\gamma > \frac{\alpha}{1 + \sigma}$. Bad lobbying becomes ever more profitable with increasing $\gamma$.

If the cost of good lobbying, $s$, is relatively high, such that, for very low $\gamma$, setting up an association is not feasible, Lemma 5 implies that an exogenous increase in $\gamma$ can make good lobbying profitable. If this does not occur, the model predicts that economies with very weak protection of property rights and a very weak state (which is unable or unwilling to improve property rights a bit) can get stuck in the trivial (no association) equilibrium.

At stage 1, the association decides about the fee scheme and every firm decides whether to join the association, or not. There is no asymmetric information. Therefore, firms can anticipate the lobbying decisions of the association in the future. According to Lemma 5, the thresholds for good and bad lobbying change with the level of property rights protection. Hence, it is possible that for some levels of $\gamma$ one type of lobbying is not profitable for the association. We analyze the equilibrium association size and the membership-fee scheme for all three possible cases in Appendix B.5: an association that exerts only good
lobbying (charging a fee $f^s_i(\rho_i)$), only bad lobbying (charging $f^r_i$), or both (charging $f^{sr}_i$).\footnote{Note that only $f^s_i$ turns out to depend on a member firm’s size $\rho_i$, whereas $f^r_i$ and $f^{sr}_i$ do not. This key feature of the equilibrium has important real-world effects and will be explained and discussed below.}

In this game, a trivial equilibrium is a situation where no association is formed. The following conditions constrain the cost parameters, $s$, $r$, and $k$, such that a nontrivial equilibrium exists, where all threshold levels are derived in Appendix B.5.

**Condition 1**
(Cost of good lobbying) $s \leq \tilde{s}(\gamma)$.

**Condition 2**
(Cost of bad lobbying) $r \leq \tilde{r}(\gamma)$.

**Condition 3**
(Lower bound administrative cost) $k \geq k(\gamma, f(\hat{\rho}))$.

We summarize our results in the following proposition.

**Proposition 1**
If one of the following sets of conditions hold, a unique nontrivial equilibrium exists: (i) $\gamma < \gamma_1$ and Condition 1 is satisfied; (ii) $\gamma_1 \leq \gamma \leq \gamma_2$ and Conditions 1 to 3 hold; or (iii) $\gamma > \gamma_2$ and Conditions 2 and 3 hold. In this case, the subgame-perfect Nash equilibrium is characterized as follows:

1. At stage one, all firms $i \in N$ with size $\rho_i \geq \hat{\rho}^*$ join the association and pay the corresponding fee ($f^s_i$ for $\gamma < \gamma_1$, $f^{sr}_i$ for $\gamma_1 \leq \gamma \leq \gamma_2$, and $f^r_i$ for $\gamma > \gamma_2$). All $i \in N$ with size $\rho_i < \hat{\rho}^*$ do not join the association. $\hat{\rho}^*$ is discontinuous in $\gamma$ and is given by:

   \[
   \hat{\rho}^* = \begin{cases} 
   \hat{\rho}^s & \text{if } \gamma < \gamma_1, \\
   \Max\{\hat{\rho}_1, \hat{\rho}^r(\gamma)\} & \text{if } \gamma_1 \leq \gamma \leq \gamma_2, \\
   \Max\{\hat{\rho}_2, \hat{\rho}^r(\gamma)\} & \text{if } \gamma > \gamma_2.
   \end{cases}
   \]

2. At stage two, the association lobbies for property rights protection if, and only if, $\gamma \leq \gamma_2$. In that case, $\gamma$ increases to $\gamma'$. 

3. At stage three, every firm $i \in N$ exerts effort $e^s_i(\rho_i, \gamma)$ or $e^{sr}_i(\rho_i, \gamma')$ correspondingly, at cost $c(e^s_i)$.

4. At stage four, the association lobbies for rents if, and only if, $\gamma \geq \gamma_1$. 


An association can only exist if its main functions are not prohibitively costly. If those conditions hold, in equilibrium an association is formed that only exerts good lobbying, for low levels of $\gamma$. For medium levels of $\gamma$, an association will exert both types of lobbying, whereas it will only exert bad lobbying for values of $\gamma$ close to one. See Figure 1 for a numerical example illustrating the equilibrium functions and membership-decisions.

Intuitively, the marginal individual gains from good lobbying are high when the level of property rights protection is low (see equation (4)). These individual gains are increasing in firm size because the marginal return to effort is higher for larger firms (see equation (2)). On the contrary, the potential gains from rent-seeking lobbying are low for everybody because most of the revenues from production are lost due to unprotected property rights, which decreases the tax revenues that could be appropriated by the association. Because all firms can free-ride on increased property rights protection, the only way that firms 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. These expectations are steered by the membership-fee scheme, $f_s(i)$, which makes sure that all firms with $\rho_i \geq \hat{\rho}_s^i$ know that they are pivotal for the formation of the association and the joint decision to invest in good lobbying. For smaller firms, the incentive to free-ride is too strong; they would not join the association even if offered a modest membership fee. For $\gamma < \gamma_1$, the size of the

Figure 1. Equilibrium membership and association functions depending on property rights protection (example for $\tau = 0.25, \sigma = 0.6, k = 6, r = 12, s = 4, n = 100, \omega = 1.1$).
marginal member firm, \( \hat{\rho} \), is initially increasing but eventually decreasing in \( \gamma \), as is visualized by the bold-printed curve in Figure 1. This is a reflection of the decreasing marginal returns to good lobbying if property rights get better protected (equation 4)).

For intermediate levels of \( \gamma \), captured by \( \gamma_1 \leq \gamma \leq \gamma_2 \) or the dotted curve in Figure 1, the association exerts both types of lobbying. In this range, the complementarity between the two types of lobbying is crucial for determining the equilibrium of the game: good lobbying increases \( \gamma \), such that firms can keep a larger share of their business profits. Hence, all firms choose higher effort levels, which pushes up not only their profits but also total tax revenues. As these tax revenues can be appropriated by the association via rent seeking, bad lobbying becomes profitable. It is interesting that, once \( \gamma \) lies in the intermediate range, many firms decide not to join the association and, thereby, to leave the gains from rent seeking to a few very large firms. This is rational because the value of public goods that is lost to the smaller firms due to rent seeking is not exorbitant—but in exchange they can free-ride on the association’s lobbying to increase property rights protection, which benefits them directly through increased profits.

For high levels of \( \gamma \), captured by \( \gamma > \gamma_2 \) or the dashed curve in Figure 1, property rights protection lobbying is not profitable anymore for the association because of the decreasing marginal impact of the investment of \( s \). In turn, because highly protected property rights lead to a lot of business activity and tax revenues that can be appropriated by the association, lobbying for rents is a profitable activity for ever more firms with increasing \( \gamma \).

Analyzing the effects of governmental efficiency in public goods production, we obtain the following Corollary to Proposition 1.

**Corollary 1**

(i) \( \gamma_1 \) is increasing, and \( \gamma_2 \) decreasing in \( \omega \). (ii) \( k(\gamma, f(\hat{\rho})) \) increases in \( \omega \).

Corollary 1(i) indicates that the range of \( \gamma \)-parameters for which both types of lobbying exist in equilibrium becomes smaller for a higher levels of \( \omega \). This implies that governments that are highly efficient in public goods production lead to more radical behavior of associations: either to invest only in good lobbying or only in bad lobbying, depending on the overall level or property rights protection in the economy. In contrast, if a government is less efficient in producing public goods, firms that are members of an association are incentivized to sustain a broader range of activities, namely to invest in both good and bad lobbying. The reason is that governments with a high public goods production multiplier \( \omega \) make bad lobbying less attractive, which weakens the complementarity between good and bad lobbying.

Corollary 1(ii) extends this insight to the membership-fee structure of associations. A government that spends its tax resources more efficiently makes it
more likely that a rent-seeking association breaks down because it provides better incentives to medium-sized firms to join the association and boycott rent seeking. Such strategic memberships can only be avoided by high membership fees, which depend on high operating costs in this model.\footnote{This is explained in Appendix B.5. In reality, associations have other means to keep unwanted members out. The model’s intuition, however, survives because associations with high fees but modest administrative costs naturally keep piling up money, which could be of interest to tax authorities granting tax benefits, etc.}

5. Welfare and Efficiency

Owing to our initial research question, whether associations are rather positive or negative for the economy, we study the effect of an association’s existence on the welfare of firms, and how this value changes when the level of property rights protection $\gamma$ increases, all else equal.\footnote{The players in our game, firms, represent producers and traders of intermediate goods in the economy. We assume that on average consumers are also better off when firms are better off, for instance, because they own the firms or are employed by them. Hence, it is sufficient to analyze the welfare effects for members and nonmembers.}

For low levels of property rights protection, the effects on welfare that are triggered by the creation of an association are straightforward: for $\gamma < \gamma_1$, association members voluntarily pay the necessary costs $(s + k)$, whereas nonmembers only benefit from improved property rights. Consequently, an association that only exerts good lobbying has a positive impact on both members and nonmembers’ welfare.

For high levels of property rights protection ($\gamma > \gamma_2$), nonmembers suffer because the ruler diverts all public goods to association members. Moreover, members may also suffer from the existence of the association in this case, because the association makes the rent-seeking decision once the administrative cost is sunk and, anticipating this, too many firms join. Member-firm $i$ has an incentive to join the association, even though it is better off in the absence of an association because, if $r < \tau(\gamma)$, the largest firms will form an association anyway, and the alternative for firm $i$ is to suffer the negative externality from the association. In summary, rent seeking does not just shift tax revenues from nonmembers to members without having any positive economic effect; at an aggregate level, the existence of an association is negative for welfare here, for one, or potentially two reasons. First, rent seeking costs members $(k + r)$, which constitutes a pure welfare loss. Second, the net efficiency and welfare effect of an association that exerts bad lobbying, critically depends on $\omega$. A value of $\omega > 1$ implies that the government spends the tax revenues on public goods, the value
of which is higher than their cost. In this case, there is an extra inefficiency associated with associations that exert bad lobbying, namely, tax revenues are spent on private club goods instead of public goods, and thus the positive welfare effect of the public good multiplier is lost. On the other hand, a value of \( \omega < 1 \) implies that the government is very inefficient in spending tax revenues. Thus, rent seeking by the association may actually increase total welfare through this channel, a situation reflecting empirical evidence on the role of private ordering institutions as substitutes for ineffective states (see Section 2).

For intermediate levels of property rights protection \((\gamma_1 \leq \gamma \leq \gamma_2\), and Conditions 1 to 3 are satisfied), notably the most interesting range of \( \gamma \), where the association exerts both types of lobbying simultaneously, the welfare effects are less straightforward. The total change in welfare due to the creation of an association is:

\[
\Delta W = \sum_{i=1}^{\tilde{n}-1} \Delta W_i^n + \sum_{i=\tilde{i}}^{n} \Delta W_i^m. \tag{16}
\]

where \( \Delta W_i^n \) is the change in welfare for a nonmember \( i \) and \( \Delta W_i^m \) is the change in welfare for an association member \( i \).

\[
\Delta W_i^n = \frac{(1 + \rho_i)^2(1 - \tau)^2}{2}(\gamma'^2 - \gamma^2) - \frac{2\rho_i}{n \omega \tau} \sum_{i=1}^{n} \pi_i(\rho_i, \gamma). \tag{17}
\]

The first term on the right-hand side of (17) comes from increased property rights protection; the second term is the loss due to rent seeking of association members.

\[
\Delta W_i^m = \frac{(1 + \rho_i)^2(1 - \tau)^2}{2}(\gamma'^2 - \gamma^2) + \left( \frac{2(n-i)\rho_i}{(n-i+1)(n+i-2)} \sum_{i=1}^{n} \pi_i(\rho_i, \gamma') - \frac{2\rho_i}{n \omega \tau} \sum_{i=1}^{n} \pi_i(\rho_i, \gamma) \right) - \frac{r + s + k}{n - i + 1}. \tag{18}
\]

The first term on the right-hand side of (18) is due to increased property rights protection; the second term is gains from rent seeking; the third term is the fee from association membership. Our main remaining interest is in the decomposition of \( \Delta W \): how are members and nonmembers differently affected when the level of property rights protection in the economy increases? One may think that \( \Delta W_i^m \) is nonnegative because membership is voluntary. However, this is not necessarily true. As explained above, members may suffer from the existence of an association that exerts rent seeking, because too many firms join in equilibrium in
order to avoid the negative externality imposed by this type of lobbying. In particular, the smallest members are most likely to get a negative payoff from the existence of an association, since rent-seeking benefits are increasing in size but the fee is uniform. We define \( \rho^m(\gamma) \) as the size of the member who gains zero from the creation of the association, for a given level of \( \gamma \):

\[
\rho^m(\gamma) \equiv \{ \rho_i | \Delta W^m_i(\gamma) = 0 \}.
\]  

(19)

Similarly, \( \Delta W^m_i \) may be positive or negative, depending on the profits from increased property rights protection and the extent of rent seeking by the association. We define \( \rho^m(\gamma) \) as the size of the nonmember who gains zero from the creation of the association, for a given level of \( \gamma \):

\[
\rho^m(\gamma) \equiv \{ \rho_i | \Delta W^m_i(\gamma) = 0 \}.
\]  

(20)

By inverting \( \rho^m(\gamma) \) we obtain \( \gamma^m_i \), the level of \( \gamma \) at which the effect of the association on welfare for a nonmember firm \( i \) is zero:

\[
\gamma^m_i \equiv \{ \gamma | \Delta W^m_i = 0 \}.
\]  

(21)

Finally, we define \( \gamma \) as the level of property rights protection for which the total welfare effect of an association that exerts good and bad lobbying, is zero:

\[
\gamma \equiv \{ \gamma | \Delta W = 0 \}.
\]  

(22)

Proposition 2 (Welfare and distribution)

Consider the case where \( \gamma_1 \leq \gamma \leq \gamma_2 \) and Conditions 1 to 3 are satisfied. (i) For a given level of \( \gamma \), the existence of the association negatively affects the welfare of members of size \( \rho_i < \rho^m(\gamma) \), and positively affects the welfare of members of size \( \rho_i > \rho^m(\gamma) \). The set of members who are worse-off because the association exists \( (\{ i \in N | \hat{\rho}^* \leq \rho_i < \rho^m(\gamma) \}) \) grows in \( \gamma \). (ii) For all \( \gamma > \gamma_i^m \) and for \( i > 1 \), the existence of the association negatively affects the welfare of nonmembers \( (\Delta W^m_i(\gamma) < 0) \). Analogously, for \( \gamma \leq \gamma_i^m \), the impact of the association on nonmembers’ welfare is nonnegative \( (\Delta W^m_i(\gamma) \geq 0) \). (iii) \( \Delta W^m_i \) is nonnegative for the smallest firm, at \( i = 1 \), for any possible \( \gamma \), and \( \Delta W^m_i \) is decreasing in \( \rho_i \). (iv) For all \( \gamma > \gamma \), the existence of the association negatively affects total welfare \( (\Delta W(\gamma) < 0) \). Analogously, for \( \gamma \leq \gamma \), the impact of the association on total welfare is nonnegative \( (\Delta W(\gamma) \geq 0) \).

Proposition 2(i), (ii) and (iv) imply that members’ welfare, nonmembers’ welfare, and total welfare, respectively, are positively affected by the existence of the association in economies in which the public protection of property rights is weak. The opposite holds for economies in which property rights are properly protected because there the association invests in rent seeking. When \( \gamma \) increases, the losses for nonmembers from rent seeking also increase.
and, simultaneously, the positive spillovers from good lobbying become smaller.

Proposition 2(iii) reveals the surprising insight that the smallest firms 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 firms benefit very little from public goods, and thus do not suffer too much when the association extracts the tax revenues that would otherwise be used to finance them. In contrast, the smallest firms benefit from higher individual profits via increased property rights protection. For medium-sized firms, however, the negative impact of rent seeking by the association is larger and offsets the benefits of increased property rights protection. Hence, $\Delta W_i^n$ is negative for medium-sized firms, and the size of the negative impact increases in $\gamma$. The smallest members (medium size firms) also suffer from the existence of the association. Although they have incentives to join the association, because their alternative is to remain a nonmember and suffer from the negative externality that the association would impose on them; they would be better off without the association. Only very large members benefit in net terms, with the creation of an association.

These insights are illustrated in Figure 2, which is based on the same numerical example as Figure 1 but zooms into the range where $\gamma_1 \leq \gamma \leq \gamma_2$, which is studied in Proposition 2. The dashed curve reproduces the equilibrium marginal member $\hat{\rho}^*$ from Figure 1: above that curve firms join the association, below the curve firms do not join. The vertical line at about $\gamma = 0.606$ is $\hat{\gamma}$: to the left of that line, aggregate net welfare induced by the existence of the association is positive, to the right of $\hat{\gamma}$ it is negative. The surprising distributional result from Proposition 2(iii) is illustrated in the range covered by the dotted curve, $\rho^n(\gamma)$. For example, consider $\gamma = 0.58$: small firms (below $\rho^n$) do not join the association but benefit from its existence. Intermediate firms (with $\rho_i \in (\rho^n, \hat{\rho}^*)$) also do not join the association but suffer from its existence in net terms. Large firms (above $\hat{\rho}^*$) become members, but only firms of size larger than $\rho^m$, the bold-printed curve in Figure 2, are better off after the creation of an association. Members of size $\hat{\rho}^* \leq \rho_i < \rho^m$ get a negative net welfare effect from the association.

Turning to the role of the public goods multiplier $\omega$, we obtain the following Corollary.

Corollary 2
Both $\hat{\gamma}_i$ and $\hat{\gamma}$ are decreasing in $\omega$. 

35 Section A.7 studies the robustness properties of this result.
This Corollary implies that when the ruler spends the tax revenues more efficiently, an association is worse for nonmembers’ welfare. It also decreases total welfare for a larger range of \( \gamma \)-values. The economic reason for these effects is that increasing \( \omega \) reflects performance improvements by the state, which are destroyed by rent-seeking associations. This effect increases the range of medium-sized firms suffering from the creation of an association and, because there is no counterweighing positive effect, it decreases total net welfare for more \( \gamma \)-realizations.

In terms of efficiency, whenever \( \gamma > \hat{\gamma} \) the net welfare impact of the association is negative, which is equivalent to saying that the creation of the association is inefficient. Thus, in equilibrium an inefficient association will be formed when the ex-ante level of property rights protection is very high. In addition, we seek to determine whether an association is formed whenever it is efficient to lobby for increased property rights protection. Define \( \hat{s} \) as the highest value of \( s \) up to which it is efficient (or, equivalently: welfare enhancing) to invest in good lobbying. To derive \( \hat{s} \), we consider the net welfare benefit of good lobbying, equation (12), when all firms join the association and, therefore, there is no free-riding. Define efficient good lobbying as a situation where this value is nonnegative, that is, where:

\[
B^i(i = 1) = \frac{(1 - \tau)^2}{2} (\gamma^2 - \gamma^2) \frac{n(24 + 7n(2n - 5) - 13 + 8n + 2)}{6(n - 1)^2} - s \geq 0. \tag{23}
\]
As $B^i(i=1)$ is decreasing in $s$, \( \hat{s}(\gamma) \) is obtained at the point where (23) is binding:

\[
\hat{s}(\gamma) = \frac{(1-\tau)^2 n(14n-13)}{12(n-1)} \left( \gamma^2 - \gamma^2 \right) = \bar{s}(\gamma).
\] (24)

Equation (24) shows that \( \hat{s}(\gamma) \) is equivalent to \( \bar{s}(\gamma) \), the maximum level of $s$ such that an association will exert good lobbying (see equation (B.15)). When $\gamma < \gamma_1$, this is the only condition required for an association to be formed. This implies that, for low levels of $\gamma$ an association that lobbies to increase the protection of property rights is formed in equilibrium whenever it is efficient to do so. This result is a consequence of our perfectly discriminating membership-fee scheme, $f(\rho_i)$, which aligns members’ lobbying interests. For $\gamma < \gamma_1$, the membership fee is structured such that each firm pays its private gain from increased property rights protection whenever it is efficient to create an association that exerts good lobbying (see equation (B.10)) and all supposed members are willing to actually join the association because they know that their contribution is pivotal in the lobbying decision. The following lemma formalizes this result without needing further proof.

**Lemma 6**

(Efficiency) \( \hat{s}(\gamma) = \bar{s}(\gamma), \forall \gamma \). Hence, for $\gamma < \gamma_1$, an association is formed whenever it is efficient to exert good lobbying.

However, when $\gamma_1 \leq \gamma \leq \gamma_2$, two additional conditions (Conditions 2 and 3) need to hold for an association to be formed. Therefore, for $\gamma \geq \gamma_1$ it is not necessarily true that good lobbying takes place whenever it is efficient.

### 6. DISCUSSION, EMPIRICAL PREDICTIONS, AND CONCLUSIONS

We have constructed a model that endogenizes the existence, membership, fee scheme, and functions of associations, which can have positive or negative spillovers on the rest of the economy, and that relates the welfare effects of associations to the institutional environment. The main result of this model is that an association’s incentive to invest in good lobbying—and thereby to solve a free-rider problem—is strongest when property rights are only weakly protected by the state. This incentive decreases with better property rights protection because the marginal benefits from increased property rights protection are getting smaller and smaller. In turn, this model shows that, all else equal, the incentives of an association to invest in rent-seeking lobbying grow with better
protected property rights. The intuition is that better protected property rights incentivize firms to exert more effort in doing business, which increases not only firms’ profits but also the ruler’s tax revenues, which can be appropriated by an association via rent seeking. Notably, this result depends on our definition of property rights as the share of business profits that firms can retain after having paid for corrupt bureaucrats or being exploited by other forms of banditry. As, according to this definition, stronger property rights are an unalloyed good, we have to caution about directly derived policy implications because, in practice, it has been noted that it is possible to overprotect property rights, from a welfare perspective (Boldrin & Levine 2002; Heller & Eisenberg 1998).

However, the results offer an answer to our initial research question. The model suggests that the literatures on associations in institutional and organizational economics and in development studies underline the positive private ordering effects of associations because these fields focus on institutional environments where property rights are protected weakly—be it in history or in today’s developing countries. In contrast, the more skeptical literatures in industrial organization, public choice, and political economy often study cases in modern times, where the level of property rights protection is more developed. Our model thereby offers a unified picture of the literature on associations, where diverse strands do not oppose but complement each other, by (often implicitly) looking at different settings.

Going a step further, our theoretical results have some empirical support. There is evidence for the positive role of associations in economies with weak protection of property rights, corruption, and absent or ineffective public institutions. Döner & Schneider (2000) summarize the results of a series of case studies, and 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”. Their results not only support the idea that property rights protection is associations’ most basic function (when starting at low levels of protection) but also that significant positive spillovers exist on the economy. Goldsmith (2002, p. 22) concludes his survey study of business associations in eight African countries along similar lines: “[W]here these groups are seen as less dependent on government, they are perceived to be meeting their objectives. African business associations are likely to be foundation stones for future progress in governance.... These findings lend support to the pluralists’ salutary theory.
of business interest groups, and they suggest that public choice’s apprehension about corporate rent-seeking may be less relevant in embryonic market economies, as are found in Africa.”

An increase in the level of property rights can also be interpreted as a public sector administrative reform (indicating endogenous institutional quality that depends on private associations’ actions). In Section 2, we report on several empirical regularities found 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, thereby benefitting all citizens.

In contrast, if property rights are better protected by the state, associations have the capacities to engage in “market-complementing” activities à la Dönér & Schneider (2000), which enable them to extract monopoly rents. The club good character of such activities implies that the benefits stemming from rent seeking are restricted to members and are detrimental to the rest of the economy. Associations achieve this outcome via biasing laws and regulations (as a result of lobbying) and plain deadweight losses (as a result of increasing members’ market power and ability to collude)—a process described in detail by Olson (1982, 2000). A case in point is presented by Nank & Alexander (2012), who study how two associations representing the coal industry influenced public opinion and policy outcomes in Texas in the last years—notably a jurisdiction where property rights are well developed, measured at a global scale. Their “[r]esults suggest that trade associations inhibit rather than strengthen the democratic process and threaten the legitimacy of the nonprofit sector” (429).

Our results are reminiscent of Adam Smith’s warning that guilds may be vehicles for the cartelization of markets—but that they also have positive features.36

A remarkable illustration of the applicability of our model is provided by Puga & Trefler’s (2012) case study of medieval Venice (800–1350 AD). They

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36 Pack (1991) quotes student notes from Adam Smith’s course, “Lectures on Jurisprudence,” dating from the 1760s [LJ(B) 176:472]: “To bring about therefore the separation of trades sooner than the progress of society would naturally effect, and prevent the uncertainty of all those who had taken themselves to one trade, it was found necessary to give them a certainty of a comfortable subsistence. And for this purpose the legislature determined that they should have the priviledge of exercising their seperate trades without the fear of being cut out of their livelyhood by the increase of their rivals. That this was necessary therefore in the 1st stages of the arts to bring them to their proper perfection, appears very reasonable and is confirmed by this, that it has been the generall practise of all the nations in Europe. But as this end is now fully answered, it were much to (be) wished that these as well as many other remains of the old jurisprudence should be removed.” Rephrased in the terms of our model, associations of competitors can have positive effects initially but later the negative effects of collusion overwhelm.
show that the profits from long-distance trade made during the Commercial Revolution in the 11th and 12th centuries served as an initially exogenous, positive shock for the Venetian merchant community. The merchants used the political influence that resulted from their new riches to lobby for political and legal reforms, for instance, to tighten constraints on the executive and to establish new contracting institutions. These changes significantly improved the security in long-distance trading and benefited all merchants. However, when a group of very rich merchants evolved around 1300 AD, they started using their resources to reduce political and economic competition, generating negative spillovers for the rest of the economy. We can interpret the initial wealth increase as a shock that made the cost of (good) lobbying affordable (at least for large merchants), and thus made collective action to increase the protection of property rights possible. When further security improvements became relatively less profitable, rich merchants focused on extracting rents from the economy and abusing their market and political powers.

Moving to modern associations in emerging economies, Pyle (2011) finds that business associations serve as a substitute for political competition in protecting property rights of firms in Russia. We argue that the index of political competition used by Pyle is positively correlated with the level of property rights protection modeled in this article, a point that is in line with Olson (1993, p. 571) writing: “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 can be used to predict 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-protection 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.

As in any model, the one at hand suffers from a precise mapping between theoretical model parameters and empirically-observable regularities. However, it can be used to direct the investigative resources of antitrust and other public authorities, as well as nongovernmental organizations monitoring joint commercial activities of firms in one industry, or in the context of development aid. These (big) business watchers should be aware that small, exclusive clubs of the biggest or most profitable firms in countries where property rights are well protected have the highest tendency to seek rents by mingling with the political
elite, to the detriment of others. In contrast, associations in jurisdictions with ineffective governments, where commercial activities are hampered by slow bureaucracies or ubiquitous corruption, require less monitoring. The reason is that, even if associations in the latter context would also ultimately strive to exploit the political and economic system to their particular favor, they first have to make sure that the state has enough resources that are worth appropriating. This requires that the owners of firms of all sizes feel sufficiently secure to invest in upcoming business opportunities, which is modeled in this article as increasing property rights.

De Soto (1990, 2000) stresses that ill-defined or absent property rights drive the poor in developing countries to the inefficiencies of the informal economy. Whereas he looks to public authorities to remedy this problem, we focus on how a formal private ordering institution, such as an association, can push for better property rights protection when the authorities fail to do so independently. The results of our basic model depend on the assumption that the costs of rent seeking ($r$) are independent of the legal development of an economy ($\gamma$). Alternatively, and approaching de Soto’s ideas, we consider the (realistic) scenario such that increasing property rights protection goes in line with other advanced forms of legal rules and protections, for instance, the development of antitrust or competition law. In this scenario, bad lobbying may already be worthwhile in countries with underdeveloped legal systems and become increasingly difficult (expensive) in developed jurisdictions.

In Appendix A.5, we analyze precisely this conjecture. Qualitatively, all results of the baseline model survive but bad lobbying associations break down for lower levels of $\gamma$. There we also show that only increasing property rights protection without increasing the constraints on rent appropriation can

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37 For empirical work, one could think about developing an index, where each of the attributes mentioned here—few members, big members, restrictive membership-procedures (inclusive vs. exclusive), countries with highly developed legal systems and low corruption, etc.—earns an association a point. The higher the index value of an association, the higher the threats this association may pose. Importantly, the index would not make any claim about actual deeds of association managers but it could direct scarce monitoring resources.

38 We do not explicitly account for the possibility of collusion between industry members in our model. However, we show that, for low levels of $\gamma$, associations tend to be large, which makes collusion less likely.

39 In technical terms, we make the cost of rent seeking an increasing function of the level of property rights: $r = r(\gamma), r'(\gamma) > 0$. As a consequence, it becomes cheaper for associations in economies with a low level of property rights protection to engage in bad lobbying. At the same time, however, because of the complementarity of good and bad lobbying (Lemma 4), good lobbying becomes more attractive for associations that already engage in bad lobbying. As a result, the range of $\gamma$-values for which an association that exerts both types of lobbying is formed ($\gamma_2 - \gamma_1$) increases.
lead to even more rent seeking, which does not necessarily improve the conditions in the economy. Therefore, we conclude that the policy prescription of de Soto’s work, to define property rights of the poor, may not be enough for developing economies to unleash their growth potential. This view is supported by Nugent & Sukiassyan (2009, p. 438), who conclude: “[W]e suggest that in the relatively oppressive conditions for businesses in transition economies, encouraging business associations of the type that can help firms deal with the problems facing them may be one important and virtually totally overlooked means of accomplishing these objectives. In this way, firms can achieve greater formality and the benefits thereof than in the case of unofficial payments.”

Rephrased, if an increase in property rights protection is accompanied by other forms of legal rules and protections such that rent seeking of interest groups gets more difficult, our model predicts that more associations will be active in both good and bad lobbying, and fewer associations will focus on only one type of such activities. The total welfare effect depends on the slope of the bad lobbying cost function $r(\gamma)$ and is therefore hard to generalize. However, Proposition 2 suggests that a positive slope of $r(\gamma)$ makes the winner-loser scheme pictured in Figure 2 more relevant. That is, the biggest and the smallest firms will benefit from the existence of an association, whereas medium-sized firms, both members and nonmembers, will suffer. Given that an increasing function $r(\gamma)$ may be a realistic assumption, our model predicts broad conflicts of interests between firms of different sizes—and offers intuition why and between which groups these conflicts exist. Moreover, this extension shows that it is important not to study the effects of improved property rights in isolation but to trade off the various effects that usually go hand in hand with legal development, including improved antitrust laws and rules restricting associations’ lobbying activities.

Our article also offers an explanation for another issue raised by Pyle (2011, p. 27): “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 in contexts of weak property rights protection with free-riding of small firms. They benefit from increased

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40 Lemma A.1 specifies cutoff levels for $r(\gamma)$ beyond which bad lobbying breaks down.

41 In the light of these results, one could be tempted to speculate about related applications of the model. For instance, if firms are citizens and associations are political parties, the model might be used to suggest an explanation for struggles between the middle class, on the one hand, and the combined rich and poor, on the other hand, as seen in some emerging economies lately. We defer a proper analysis of the applicability of the model to this case and the relevant institutional details to future research.
property rights protection but have no incentives to join associations and to bear a share of the associated lobbying costs. Prüfer (2016) provides an alternative explanation for this puzzle. An empirical test could be able to establish which explanation fits the facts better by looking at what kind of firms join associations. If large firms join (first), the explanation provided in this article may deliver a good explanation. In contrast, if it is the smaller firms that join, then Prüfer’s (2016) reasoning, that less connected firms benefit more from association membership, may be applicable. Bernstein (2007) argues along similar lines for associations that provide dispute resolution services to their members, usually in the form of arbitration.

In addition to the results presented above, this study offers a rationale for the empirical observation of differentiated membership fees. Many real-world associations charge differentiated fees that typically depend on firms’ profits, revenues, or other measures of their size. Large member firms pay higher fees than small members. In our model, when associations are free to choose between a flat fee and a differentiated fee, they will endogenously choose to charge a discriminating fee that is increasing in firms’ size if the association only exerts good lobbying. This fee structure is efficient because it sustains an equilibrium that increases overall welfare. Thus, our research indicates that not only

42 He suggests that in a situation with multiple membership equilibria, certain beliefs could trap an association in a low membership equilibrium.

43 Some preliminary evidence in this regard may favor the hypothesis of the paper at hand (and crossing both low and high levels of property rights protection): Golikova (2007) finds that larger Russian firms are more apt to be members of an association. In the UK, Bennet (1998) finds that larger companies generally join more associations than small ones. Nugent & Sukiasyan (2009, p. 438) add: “Our empirical results confirm that larger firms are more likely to take up association membership, while smaller ones are more inclined to be making unofficial payments and evading taxes.” Bernstein (1996) provides a different rationale why large firms may benefit more from joining an association—however, in a context where associations enforce a private legal system and act as arbitrators rather than lobbying policy makers. In her case study of the NGFA (National Grain and Feed Association), Bernstein shows that the codification of the industry’s customary norms of trade by the NGFA and the lack of enforcement of unwritten customs reduces firms’ internal agency costs. This effect is more significant for large firms operating in geographically dispersed markets, since the unwritten customs may substantially vary from one to another region.

44 These services have greater value for small firms in the context of expensive litigation systems because small firms have no credible threat to take large firms to litigation in case of a dispute if it comes at a prohibitive fixed cost. Large firms with better financial resources do not suffer from this constraint. Therefore, access to association-run arbitration services benefits small firms more than proportional.

45 For example, German chambers of commerce charge fees that positively depend on accounting profits (https://de.wikipedia.org/wiki/Industrie_und_Handelskammer#Beitr.C3.A4ge), the Texas cotton association charges a fee that is increasing in production (http://www.tca-cotton.org/search), and the International Cotton Association charges a fee that is increasing in the amount of goods traded (http://www.ica-ltd.org/join-the-ica).
justice or equality concerns but also efficiency reasons can explain why we observe differentiated fees in real-world associations.

On the contrary, we show that an association that exerts rent seeking has incentives to set uniform fees and to artificially increase its costs of operation in order to make membership unattractive for smaller firms. This implies that large firms preferring a rent-seeking association have incentives to let the association invest in further functions that do not provide (much) direct value to members, for instance luxury club goods, but artificially increase membership fees. Think of extravagant club houses or conference dinners. Similarly, if an association that exerts bad lobbying can endogenously set the fee, it will set a uniform fee to restrict membership of small firms and thereby make the set of members more homogenous.46

Taking these two insights together creates another testable hypothesis: if an association is free to choose its membership-fee scheme and opts for a uniform fee (or a scheme that depends only modestly on member characteristics), our model predicts that this association may artificially restrict entry of certain potential members, which can be seen as an indication of (planned) rent-seeking activities that only benefit the exclusive group of members—despite the apparent “fairness” concerns that a uniform fee scheme may appeal to, at first sight. In turn, if an association chooses fees that strongly depend on members’ individual business characteristics, especially on some proxy for profits, this may not be an indication for “unfair” discriminatory practices but a tool that improves goal alignment among members and, thereby, increases total membership if the association’s main function has positive spillovers on the economy.

Importantly, even in cases where associations take over positive functions in place of ineffective states, the model still suggests, as a consequence of Lemma 6, that there is no reason to subsidize these organizations. Otherwise, one could think of such a policy in the context of foreign aid to private initiatives in developing countries. This result is blurred in practice, of course, because there may be transaction costs and other hurdles for associations to be active even if some firms would found and fund associations. But the basic intuition of Lemma 6 is that, if property rights protection is weak and we do not observe associations in a certain economy, the private incentives to support such means of organizing collective action may not be strong enough to warrant the investment. Therefore, (foreign) taxpayers’ money would also be spent inefficiently.

46 In some real-world cases, associations have the right to exclude members according to their own criteria. In those cases, exclusion of would-be members with different preferences than the incumbent members is possible even without high, uniform fees. In Appendix A.6, we study under which conditions a second association would be founded if the first one restricts membership.
Concluding, the evidence presented above, together with our model, suggests yet another reason for the importance of private ordering. If the government were a strategic player in our game that could actively determine $\gamma$, say for a cost, we would need to assume an objective function for it, typically maximization of total welfare (ignoring all public choice concerns). In such a model, the government would push up $\gamma$ as long as the marginal welfare gains from increasing $\gamma$ would equal its marginal cost. As a consequence, the government would implement the efficient level of $\gamma$—all changes to $\gamma$ stemming from associational lobbying would necessarily lead to an overproduction of property rights and, therefore, reduce net welfare. But we are living in a world where governments are neither necessarily benevolent nor where they have the power to perfectly tailor institutional quality to the efficient level. Consequently, private ordering institutions, including associations, even if they are primarily set up for the gain of their members, may play an important role in shaping the scope and quality of both private and public institutions, due to the positive externalities they generate.

**APPENDIX**

**A. MODEL DISCUSSION AND EXTENSIONS**

**A.1 Lobbying Intermediaries As For-Profit Associations?**

The definition of associations used in this article, taken from Pyle (2005, 2006), includes the feature that associations are *not-for-profit organizations*. We include this feature for two reasons. First, empirically many associations are incorporated as nonprofit organizations. In the USA, for instance, trade associations that meet the requirements of Internal Revenue Code section 501(c)(6) are exempt from federal income tax as *business leagues*. The same provision extends exemption to chambers of commerce, real estate boards, boards of trade, and professional football leagues (http://www.irs.gov/Charities-&-Non-Profits/Other-Non-Profits/Life-Cycle-of-a-Business-League-%28Trade-Association%29).

Second, in our model the association always breaks even, after accounting for membership fees, but does not produce profits. This implies that any for-profit intermediary who offered firms to lobby the ruler in their name could only survive in the market if she were significantly more efficient than the nonprofit association we model above—that her lobbying cost plus her own required profit would not exceed $r$ (and $s$). Even then the relationship between the for-profit intermediary and its customers would be plagued more by information asymmetries, creating distrust, than the relationship between the nonprofit association manager and her stakeholders/governing board.
A.2 Off-equilibrium Beliefs

All results in the main text were derived under the assumption that firms believe that the largest firms join an association and the smallest firms are most reluctant to join. Now suppose that firms hold the belief that it is the smallest firms who will join the association, not the largest ones. Thus, if the common belief is that all firms $i$ of size $\hat{C}_{26}^i$ join the association, how do the membership decisions change? We define the function $R^o(\hat{\rho}_i, \hat{\rho})$ as the equivalent to $R(\rho_i, \hat{\rho})$ when the beliefs of firms are such that the smallest firms will join the association (equation (B.10)):

$$R^o(\hat{\rho}_i, \hat{\rho}) \equiv \frac{2\rho_i(n-1)}{i(i-1)} \left( \pi \sum_{i=1}^{n} \pi_i(\rho_i) \right) - \frac{(r+s)}{n-i+1}. \quad (A.1)$$

The net rents from joining the association, $R^o$, are increasing in $\rho_i$. 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. It follows that such off-equilibrium beliefs do not support a profitable deviation from the equilibrium. A similar conclusion can be derived from analyzing the incentives for members to deviate from an association that only exerts good or only bad lobbying, given that they hold off-equilibrium beliefs.

A.3 Inefficiency in the Use of Resources from Illegal Activities

In the baseline model, we assume that a proportion $(1 - \gamma)$ of firms’ gross profits disappear from the economy due to imperfect property rights protection. Strictly speaking, these resources from illegal activities do not disappear but many inefficiencies are associated with their use. In this subsection, we relax the assumption that a proportion $(1 - \gamma)$ of firms’ production disappears from the economy, and instead, assume that “thieves” derive a utility of $\beta(1 - \gamma)\sum_{i=1}^{n} \pi_i(\rho_i)$, with $\beta < 1$. The equilibrium remains unchanged, and the welfare analysis differs slightly from the baseline model. Specifically, the total change in welfare due to the creation of an association that exerts good lobbying is:

$$\Delta W = \sum_{i=1}^{n} \Delta W_i^n + \sum_{i=1}^{n} \Delta W_i^m + \beta \left[ (1 - \gamma') \sum_{i=1}^{n} \pi_i(\rho_i, \gamma') - (1 - \gamma) \sum_{i=1}^{n} \pi_i(\rho_i, \gamma) \right], \quad (A.2)$$

where the last term represents the change of welfare of “thieves” and is negative: they are worse off with the formation of an association that exerts good lobbying. However, as long as $\beta < 1$, (as long as there is some inefficiency in the use of

47 Illegal activities and corruption typically lead to economic waste and inefficiency (Aidt 2003).
resources from illegal activities), the qualitative results from the baseline model’s welfare section hold. Proposition 2 remains unchanged; only the values of \( \hat{\gamma} \) and \( \hat{\gamma}_i \) change.

### A.4 Effect of Own Effort on Public Goods

If \( n \) is small, each firm can significantly affect the level of tax revenues and, thus, the amount of public goods provided by the ruler, in case no bad lobbying takes place. Since every firm also derives utility from public goods consumption, this affects the profit-maximizing effort levels. Taking this effect into account, firms’ objective function (3) can be extended to:

\[
\tilde{\pi}_i(e_i, \rho_i) = \pi_i(e_i, \rho_i)(1 - \tau) - c(e_i) + \frac{2\rho_i}{n} \omega \tau \left( \pi_i(e_i, \rho_i) + \sum_{j \neq i}^{n} \pi_j(e_j, \rho_j) \right).
\]

The addition of the final term changes firm \( i \)’s equilibrium effort to:

\[
e^*_i = (1 + \rho_i)\gamma \left( 1 - \tau + \omega \tau \frac{2\rho_i}{n} \right).
\]

Comparing (A.4) to the equilibrium effort in the baseline model (9) reveals that bad lobbying now decreases effort of nonmember firms, because \((1 + \rho_i)\gamma (1 - \tau + \omega \tau \frac{2\rho_i}{n}) > (1 + \rho_i)\gamma (1 - \tau)\). However, as long as \( n \) is large, any nonmember firm \( i \) perceives its own impact on tax revenues as negligible because \( \lim_{n \to \infty} \omega \tau \frac{2\rho_i}{n} = 0 \), an effect we use to simplify the baseline model. There, nonmembers can suffer from the association’s rent seeking but this effect is (at least in part) compensated by the gain of members, so net welfare only decreases because of the lobbying cost of the association, and potentially, because of the loss of the public good multiplier \( \omega \) (if \( \omega > 1 \)). However, when individual firms can significantly affect the level of tax revenues (because \( n \) is low), there is an additional possible source of welfare loss: nonmembers reduce their effort when they foresee that rent seeking will take place. At the same time, members of the association will increase their effort in the presence of rent seeking, because the impact of their own effort on profits is larger when tax revenues are divided among few firms. Given these two opposed effects on effort, the effect on the total net welfare generated by associations, \( \Delta W \), is ambiguous, and the qualitative results of Proposition 2 still apply. For nonmembers, however, we can show that the effect of associations on their welfare turns more negative in small economies (with small \( n \)), as long as rent seeking takes place. Given that in most economies the tax contributions of a specific firm on the level of public goods enjoyed by that firm are small, however, we perceive that the analysis of our baseline model is a good approximation for nearly all empirically relevant cases.
A.5 Endogenous Versus Exogenous Cost of Bad Lobbying

Assume that the cost of bad lobbying, \( r \), is endogenous and linearly increasing in \( \gamma \). That is, \( r = z \gamma \), with \( z > 0 \). In this case, our main results still hold, qualitatively. The thresholds for good lobbying do not change with respect to the baseline model, but the thresholds for bad lobbying do. In particular, equation (7) becomes:

\[
B'(i, \gamma) = \tau \sum_{i=1}^{n} \pi_i(\rho_i, \gamma) - \left( \sum_{i=1}^{n} \frac{2 \rho_i}{n} \right) \omega \tau \sum_{i=1}^{n} \pi_i(\rho_i, \gamma) - z \gamma \geq 0. \tag{A.5}
\]

Substituting \( \pi_i \) from equation (2) and rearranging terms, leads to the following conditions:

\[
\sum_{i=1}^{n} \epsilon_i(\rho_i)(1 + \rho_i) \geq \frac{nz}{\tau(n - \omega(n - \hat{i} + 1)(n + \hat{i})} \tag{A.6}
\]

\[
\hat{\rho} \geq \begin{cases} 
\frac{1}{2(n-1)} \left( 1 + \sqrt{1 + \frac{24(n-1)^2 z + 4(14n-13)n(n-1)\gamma' \tau(1-\tau)(\omega-1)}{(14n-13)\gamma' \tau(1-\tau)\omega} \right) \\
\equiv \hat{\rho}'(\gamma') \text{ if } s \text{ was invested,} \\
\frac{1}{2(n-1)} \left( 1 + \sqrt{1 + \frac{24(n-1)^2 z + 4(14n-13)n(n-1)\gamma \tau(1-\tau)(\omega-1)}{(14n-13)\gamma \tau(1-\tau)\omega} \right) \\
\equiv \hat{\rho}'(\gamma) \text{ otherwise.} 
\end{cases} \tag{A.7}
\]

Now it becomes cheaper for associations in economies with a low level of property rights protection to engage in bad lobbying. At the same time, good lobbying becomes more attractive for associations that already engage in bad lobbying. As a result, the range of \( \gamma \) for which an association that exerts both types of lobbying is formed, increases. That is \( \gamma_2 - \gamma_1 \) increases.

However, if the cost of bad lobbying increases too much with \( \gamma \) (if \( z \) is high), \( \hat{\rho}'(\gamma) > 1 \). Therefore, no association that exerts bad lobbying is formed in equilibrium. Formally:

**Lemma A.1**

For \( \gamma > \gamma_2 \), if \( z > \frac{(14n-13)\gamma(1-\tau)(n-2\omega)}{6(n-1)} \), no association that exerts bad lobbying will be formed in equilibrium. For \( \gamma_1 \leq \gamma \leq \gamma_2 \), if \( z > \frac{(14n-13)\gamma(1-\tau)(n-2\omega)}{6(n-1)} \), no association that exerts both good and bad lobbying will be formed in equilibrium.
A.6 Two Associations?

In the baseline model, we study only the existence of one association. However, in a modified version of the model, where the existing association can explicitly restrict membership, under certain conditions, an equilibrium exists where a second, “good” association is formed next to the first, “bad” one. In particular, denoting \( i^d \leq n \) the arbitrary marginal member set by an association that can explicitly restrict membership, a second association will be formed if \( \hat{\rho}^s(y) < 1 \), and \( \hat{\rho}^{s,d} > 0 \) exists, where \( \hat{\rho}^{s,d} > 0 \) is the equivalent of equation (13) and is given by:

\[
\hat{\rho}^{s,d} = \left\{ \hat{\rho} \in [0, 1] \mid \frac{(1 - \tau)^2}{2} (\gamma^2 - \gamma^2) \sum_{i=1}^{i^d} (1 + \rho_i)^2 - (s + k) = 0 \right\}. \tag{A.8}
\]

Intuitively, a second association will be formed only if it is profitable for a subset of the remaining firms to form an association that lobbies for increased property rights protection.

A.7 Distributional Effects if Public Good Benefits are Uniform

The result in Proposition 2(ii), that medium-sized firms (or large nonmembers) get the smallest benefit (or the largest loss) from the existence of an association that does both good and bad lobbying depends on the assumption that the utility that firms derive from public goods is increasing in firm size. Instead, if all firms derive the same utility from public goods, then the smallest firms lose the most due to the association’s actions. To show this formally, we define \( \Delta W^n_i \), the equivalent of (17), as the change in welfare of nonmembers that is due to the existence of the association when the utility derived from public goods is uniform across all firms:

\[
\Delta W^n_i = \frac{(1 + \rho_i)^2 (1 - \tau)^2}{2} (\gamma^2 - \gamma^2) - \frac{\nu}{n} \sum_{i=1}^{n} \pi_i(\rho_i, \gamma). \tag{A.9}
\]

The change of welfare for the smallest firm, denoted by \( \Delta W^n_i \), is negative for any value of \( \gamma \), meaning that the smallest firm is always damaged by the existence of an association that exerts good and bad lobbying in this case. Let us define:

\[
\tilde{\gamma}_i \equiv \{ \gamma \mid \Delta W^n_i = 0 \}. \tag{A.10}
\]
Lemma A.2

(i) In general $\Delta \tilde{W}_i^n$ is increasing in $\rho$, and decreasing in $\gamma$ for:

$$\gamma > \frac{3(n-1)(1+\rho)^2(1-\sigma)(1-\tau)}{3(n-1)(1+\rho)^2(1-\sigma^2)(1-\tau) + (14n-13)\tau\omega}.$$ 

(ii) For $\gamma > \tilde{\gamma}_i$, $\Delta \tilde{W}_i^n(\gamma) < 0$; and for $\gamma \leq \tilde{\gamma}_i$, we have that $\Delta \tilde{W}_i^n(\gamma) \geq 0$.

This lemma shows that if all firms derive the same utility from public goods, then the smallest firms are worse off when an association that exerts both good and bad lobbying is formed, even if the level of property rights protection is rather low. The welfare of medium size firms increases in this case, but when $\gamma$ is sufficiently high, the welfare of medium size firms also decreases when an association is formed and they do not take part of it. With respect to the baseline model, in this case the nonmember firms which benefit more (or loses less) are different. The reason is that, when all firms derive the same utility from public goods regardless of their size, then the damage generated by rent seeking is the same for all nonmembers, while the gains from increased property rights protection are increasing in size. Hence, small firms do not gain enough from good lobbying to compensate their losses from bad lobbying.

B. PROOFS

B.1 Proof of Lemma 1

Because $B'(\hat{i}, \gamma)$ is monotonically increasing in $\hat{i}$ for $\hat{i} \in N$, there is a unique value $\hat{i} = \{i|B'(\hat{i}, \gamma) = 0\}$ such that, for all $\hat{i} > \hat{i}$, $B'(\hat{i}, \gamma) > 0$. $\hat{i}$ is given by $\hat{\rho}'(\gamma)(n-1) + 1$. The proof is analogous for $B'(\hat{i}, \gamma')$. Q.E.D.

B.2 Proof of Lemma 2

Lemma 2 follows directly from computing the derivatives of $\hat{\rho}'(\gamma)$ and $\hat{\rho}'(\gamma')$ with respect to $\tau$ and $\gamma$. Q.E.D.

B.3 Proof of Lemma 3

We can rewrite $B^S$ from equation (12) as:

$$B^S = \frac{(1-\tau)^2}{2}((1-\sigma(1-\gamma)^2 - \gamma^2)$$

$$\times \frac{(n-\hat{i}+1)(24+7n(2n-5)-13\hat{i}+8n\hat{i}+2\hat{i}^2)}{6(n-1)^2} - (s+k) \geq 0.$$ 

(B.1)
\(B^i\) is continuous and strictly decreasing in \(\hat{i}\) and, hence, also decreasing in \(\hat{\rho}\) for \(n \geq 2\). Furthermore, \(B^i(\hat{i} = 1) > 0\) for \(s\) and \(k\) small enough, and \(B^i(\hat{i} = n) < 0\) for \(s\) and \(k\) large enough. Thus, \(\hat{\rho}^s = \{\hat{\rho} | B^i = 0\}\), is unique, and for all \(\hat{\rho} \leq \hat{\rho}^s\) it holds that \(B^i \geq 0\). Q.E.D.

### B.4 Proof of Lemma 5

Taking the derivatives of the thresholds for rent seeking (\(\hat{\rho}'(\gamma)\), \(\hat{\rho}'(\gamma')\)) and for property rights protection (\(\hat{\rho}^s\), \(\hat{\rho}^s\)) with respect to \(\gamma\) shows that \(\hat{\rho}^s\) and \(\hat{\rho}^s\) are increasing in \(\gamma\) for \(\gamma < \frac{\alpha}{1 + \sigma}\), and decreasing for \(\gamma > \frac{\alpha}{1 + \sigma}\), where \(\frac{\alpha}{1 + \sigma} \leq 0.5\). Increasing \(\hat{\rho}^s\) and \(\hat{\rho}^s\) implies that good lobbying becomes more profitable for the association. In turn, \(\hat{\rho}'(\gamma)\) is decreasing in \(\gamma\), where \(\hat{\rho}'(\gamma)\) is the lower bound on \(\hat{\rho}\) such that the association exerts bad lobbying. Q.E.D.

### B.5 Equilibrium Membership Decisions and Membership Fees

#### B.5.1 Membership Decisions in the Case of Only Good Lobbying

If firms 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. Since in this case the payoff from joining the association is negative, a firm will join such an association only if it is pivotal in the lobbying decision, that is, if the firm knows that the association will not have sufficient funds to invest in good lobbying if it does not join. If \(s\) and \(k\) are not prohibitive, the marginal member is better off by joining the association and ensuring its existence than by the original situation without an association, and a low level of property rights protection. The marginal non-member firm, on the other hand, does not have incentives to join because its membership would not affect its benefits through increased property rights protection. Thus, the size of the equilibrium marginal member in this case is: \(\hat{\rho}^s\).

The association can charge either a uniform fee or a differentiated fee that depends on firms’ size. However, if a flat fee is set, an association that only exerts good lobbying is not formed in equilibrium, under joint profits maximization, even if firms would like to form such an association. This occurs because the firm that is pivotal in the decision of exerting good lobbying gets a negative net payoff from good lobbying (the rise in its private profits from increased security is lower than the uniform membership fee). If the marginal member, \(\hat{\rho}^s\), leaves the association, the association does not exert good lobbying. At equilibrium no association is formed. Consequently, the association will endogenously implement a differentiated fee scheme that is increasing in firm size when the level of property rights protection is low. By setting a differentiated fee scheme that satisfies conditions (i) to (iii) in Section 3, the interests of association members are perfectly aligned, and there is unanimity in voting.
preferences. Thus, the association does not break down. To derive the equilibrium membership fee we define:

$$G(\rho_i, \hat{\rho}) = \frac{(1 + \rho_i)^2(1 - \tau)^2}{2}\left((\gamma' - \gamma) - f_i^s\right).$$  \(\text{(B.2)}\)

The function \(G(\rho_i, \hat{\rho})\) represents the net gain of firm \(i\) of size \(\rho_i\) from joining an association that only exerts good lobbying if it joins the association, and does not exert any lobbying if it does not join. For low levels of property rights protection, a firm only joins the association if it 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) it is linear in size, (ii) it aligns the incentives of members, and (iii) the sum of fees paid by members exactly covers the association’s costs.

Condition (i) holds if we define \(f_i^s = (s + k) \ast (i + a) \ast b\), where the auxiliary variables \(a\) and \(b\) are such that conditions (ii) and (iii) are satisfied. Condition (ii) is equivalent to requiring \(\hat{\rho}_i(G(\hat{\rho}, \hat{\rho}) = 0) = \hat{\rho}_i^s\). Condition (iii) can be written as: \(\sum_{i=1}^{n} f_i^s = s + k\). The unique function \(f_i^s\) that satisfies these conditions is:

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

### B.5.2 Membership Decisions in the Case of Both Good and Bad Lobbying

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 protection). We denote the individual payoff from joining such an association as \(R(\rho_i, \hat{\rho}, f_i^{sr})\):

$$R(\rho_i, \hat{\rho}, f_i^{sr}) = \frac{2\rho_i(n - 1)}{(n - \hat{i} + 1)(n + \hat{i} - 2)} \sum_{i=1}^{n} \tau \pi_i(\rho_i, \gamma') - f_i^{sr},$$  \(\text{(B.4)}\)

where the first term on the right-hand side is the individual revenue from rent seeking.\(^{48}\) The term \(f_i^{sr}\) is the membership fee when the association exerts both good and bad lobbying. \(R(\rho_i, \hat{\rho}, f_i^{sr})\) accounts for the net payoff of joining the association and abstracts from the benefit from increased property rights protection, which all firms can enjoy independently of their membership decision.

\(^{48}\) In case firm \(i\) decides not to join the association, the association will be formed anyway, and will acquire the revenues from rent seeking. Therefore, firm \(i\) would not get benefits from public goods, proxied by \(\omega_i\), in case of not joining the association.
Recall that according to Lemma 3, the association exerts bad lobbying only if the number of members is not too large. Hence, this kind of association endogenously sets a flat fee in order to restrict membership. That is:

$$f_{sr}^i = \frac{r + s + k}{n - i + 1} \quad (B.5)$$

As the gross benefits from bad lobbying are increasing in firms’ size (as a natural characteristic of sector-specific tax cuts, for instance), if the share of lobbying cost that an individual member has to bear via the membership fee is independent of size, small members are put at a disadvantage in net terms, relative to the situation with differentiated fees. In particular, only large firms benefit from joining an association that exerts bad lobbying.

A necessary condition for firm $i$ to join an association that exerts good and bad lobbying is $R(\rho_i, \hat{\rho}, f_{sr}^i) \geq 0$. Let us define $\hat{\rho}_1(\gamma)$ as the size of the marginal member firm that gains zero from joining such an association, given that it is the marginal member:

$$\hat{\rho}_1(\gamma) \equiv \{\rho \in [0, 1] | R(\rho, \rho, f_{sr}^i) = 0\}. \quad (B.6)$$

Only members of size $\rho_i \geq \hat{\rho}_1(\gamma)$ are willing to join the association. When $\hat{\rho}_1 \geq \hat{\rho}'(\gamma')$, the equilibrium marginal member is of size $\hat{\rho}_1(\gamma)$. The association favors rent seeking, according to Lemma 3, members get a positive net benefit from joining, and nonmembers do not strategically join the association because they would get a negative payoff from becoming members, that is $R(\rho_j, \hat{\rho}_1, f_{sr}^{j*}) < 0$ for $\rho_j < \hat{\rho}_1$. If, on the contrary, $\hat{\rho}_1 < \hat{\rho}'(\gamma')$, the equilibrium marginal member’s size cannot be $\hat{\rho}_1$, because, according to Lemma 3, such an association would not exert rent seeking. The candidate equilibrium marginal member size in this case is $\hat{\rho}'(\gamma')$. Let us analyze whether this is indeed an equilibrium for $\hat{\rho}_1 < \hat{\rho}'(\gamma')$. Members do not have incentives to deviate and leave the association since they get a positive net payoff from membership (i.e. $R(\rho_j, \hat{\rho}'(\gamma'), f_{sr}^{j*})$ for $\rho_j > \hat{\rho}'(\gamma')$). The incentives for nonmembers are less straightforward. In order to simplify the explanation, let us denote the marginal nonmember as $j$. Firm $j$ of size $\rho_j$ would get a positive net benefit from joining an association that exerts both types of lobbying (i.e. $R(\rho_j, \hat{\rho}'(\gamma'), f_{sr}^{j*}) > 0$ for $\rho_j < \hat{\rho}'(\gamma')$), but because $\rho_j < \hat{\rho}'(\gamma')$, Lemma 3 implies that if it joins, the association does not exert bad lobbying. Hence, the marginal nonmember firm $j$ has two options: either it remains a nonmember or it joins the association in order to “boycott” rent seeking. The latter option is profitable only if the membership fee of an association that only exerts good lobbying is lower than the utility firm $j$ gets from public goods. Hence, an additional constraint that needs to hold for $\hat{\rho}'(\gamma')$ to be an equilibrium when
\[ \hat{\rho}_1 < \hat{\rho}^r(\gamma') \] is that such “boycott” of rent seeking is too costly for nonmembers. Formally:

\[ f^r_j > \frac{2\rho_i}{n} \omega \left( \tau \sum_{i=1}^{n} \pi_i(\rho_i) \right). \] (B.7)

If this condition holds, then the equilibrium marginal member is of size \( \text{Max}\{\hat{\rho}_1, \hat{\rho}^r(\gamma')\} \) for an association that exerts both types of lobbying. We define \( k \) as the minimum value of the administrative cost such that this restriction is satisfied. Thereby, \( k \geq \hat{k} \) makes the association more exclusive and serves to protect the interests of “sincere” (rent seeking) members. \(^{49}\)

\[ k(\gamma, f^r_i) = \frac{(n - \hat{i} + 2)(\hat{i} - 2)(14n - 13)\gamma^2(1 - \tau)\tau \omega}{3(n - 1)^2} - s. \] (B.8)

### B.5.3 Membership Decisions in the Case of Only Bad Lobbying

Similarly, if firms expect that the association will exert only bad lobbying, the association will charge a flat fee equal to:

\[ f_i^r = \frac{r + k}{n - \hat{i} + 1}. \] (B.9)

The individual net gain from joining an association that only exerts bad lobbying is:

\[ R(\rho_i, \hat{\rho}, f_i^r) = \frac{2\rho_i(n - 1)}{(n - \hat{i} + 2)(n + \hat{i} - 2)} \tau \sum_{i=1}^{n} \pi_i(\rho_i, \gamma) - f_i^r. \] (B.10)

We define the size of the marginal member firm that gains zero from joining the association, given that it is the marginal member, as \( \hat{\rho}_2(\gamma) \).

\[ \hat{\rho}_2(\gamma) \equiv \{\rho \in [0, 1]|R(\rho, \rho, f^r_i) = 0\}. \] (B.11)

The size of the equilibrium marginal member is given by the maximum between \( \hat{\rho}_2 \) and \( \hat{\rho}^r(\gamma) \) for the same reasons as explained above. In this case, the

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\(^{49}\) In our model, \( k \) is given. If \( k \) was endogenous, the association could limit this strategic behavior of small firms by increasing the administrative cost \( k \), and consequently, the membership fee \( f^r_i \). The larger the negative externality on nonmembers, the higher the chosen level of \( k \). By restricting membership, an association that exerts rent seeking can be formed in equilibrium. On the contrary, an association that only exerts good lobbying would choose the lowest possible value of \( k \). We interpret this result in Section 6.
minimum value of the administrative cost such that “boycott” by nonmembers is not profitable is:

$$k(\gamma, f_i^r) = \frac{(n - \hat{i} + 2)(\hat{i} - 2)(14n - 13)\gamma^2(1 - \tau)\tau\omega}{3(n - 1)^2}.$$  \hfill (B.12)

We now introduce some definitions that are useful for Proposition 1: we define $\gamma_1$ as the value of $\gamma$ at which it becomes profitable for association members to exert rent seeking. For $\gamma > \gamma_1$, an association is formed and exerts both types of lobbying:

$$\gamma_1 \equiv \text{ArgMin}\{\gamma \in [0, 1]| \hat{\rho}_1(\gamma) = \text{Min}\{1, \hat{\rho}(\gamma)\} \}. \hfill (B.13)$$

Note that $\gamma_1$ is such that $R(1, 1, f_i^r) = 0$. For higher levels of $\gamma$, firms gain from joining an association that exerts both types of lobbying.

Similarly, we define $\gamma_2$ as the value of $\gamma$ 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.

$$\gamma_2 \equiv \text{ArgMax}\{\gamma \in [0, 1]| \hat{\rho}(\gamma) = \hat{\rho}(\gamma) \}. \hfill (B.14)$$

The maximum value of $s$ such that the association invests in good lobbying is:

$$\exists(\gamma) = \frac{(14n - 13)n(1 - \tau)^2}{12(n - 1)} \left(\gamma^2 - \gamma^2\right) - k, \hfill (B.15)$$

where we have included the administrative cost $k$ because for cases in which the association only exerts good lobbying, a firm will only join the association if the increase in his private profits covers both the lobbying and the administrative cost.

For a given level of $\gamma$, the maximum value of $r$ such that the association invests in bad lobbying is:

$$\overline{r}(\gamma) = \frac{(14n - 13)(n - 2\omega)\gamma^2(1 - \tau)\tau}{6(n - 1)} - k. \hfill (B.16)$$

**B.6 Proof of Proposition 1**

We have to show that all three parts of the equilibrium defined at the beginning of Proposition 1, (i) to (iii), hold.

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50 The value of $\exists(\gamma)$ is calculated by analyzing the incentives to join an association of the smallest firm. That is, $\exists(\gamma)$ is the maximum value of $s$ for which $\hat{\pi}_1(\gamma) - \pi_i(\gamma) - f_i^r \geq 0$.

51 $\overline{r}(\gamma)$ is the value or $r$, at which a rent-seeking association formed only by the largest firm is indifferent between exerting rent seeking, or not.
Part (i): Consider the case where $\gamma < \gamma_1$ and $s \leq 3(\gamma)$. First, recall from the proof of Lemma 3 that $B^s$ is decreasing in $\hat{\rho}$. Thus, if the association is large (if $\hat{\rho}$ is small), it is more likely to exert good lobbying. If $s \leq 3$, the smallest firm gets a benefit from increased property rights protection higher than its corresponding membership fee. That is $G(1, 1) \geq 0$; see (equation (B.2)). Therefore, the smallest firm is willing to join the association and pay the corresponding cost if it knows that the association would not be formed without its participation. Since $G(\rho_1, \hat{\rho})$ is nondecreasing in $\rho_1$, all firms $i > 1$ 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, an association will be formed with $\hat{\rho}^* = \hat{\rho}^s$ and will exert good lobbying. $\bar{s}(\gamma)$ is decreasing in $\gamma$. Thus, when the level of property rights protection increases, it becomes less likely that an association with good lobbying purpose is formed.

The association, maximizing its performance, chooses a differentiated fee because the nontrivial equilibrium of an association that only exerts good lobbying may break down under uniform fees and joint profit maximization. This occurs because the firm that is pivotal in the decision of exerting good lobbying would get a negative net payoff from good lobbying (the rise in its private profits from increased protection would be lower than the uniform membership fee). If the marginal member, $\hat{\rho}^s$, leaves the association, the association does not exert good lobbying. At equilibrium no association would be formed.

On the other hand, when $\gamma < \gamma_1$, the net payoff from joining an association that exerts both types of lobbying, even for the largest firm, are negative (i.e. $R(1, 1, f_i^{rs}) < 0$), so no firm is willing to join an association that exerts bad lobbying.

**Uniqueness:** $\hat{\rho} > \hat{\rho}^s$ cannot be an equilibrium, because according to Lemma 3 good lobbying does not take place in that case. $\hat{\rho} < \hat{\rho}^s$ cannot be an equilibrium either, because firms smaller than $\hat{\rho}^s$ have an incentive to leave the association and free ride on increased property rights protection. Note that, according to the proof of Lemma 3, $\hat{\rho}^s$ is unique. Hence, there is a unique equilibrium marginal member size for $\gamma < \gamma_1$.

Part (ii): (a) Consider the case where $\gamma_1 \leq \gamma \leq \gamma_2$ and that Assumptions 1 to 3 hold. At $\gamma = \gamma_1$, we have that $\hat{\rho}_1(\gamma) = \min[1, \hat{\rho}^s(\gamma)]$. This means that an association that exerts both types of lobbying becomes profitable. Some large firms have incentives to join the association because they have a positive net gain from joining. If $\hat{\rho}_1(\gamma') \geq \hat{\rho}^s(\gamma')$, the equilibrium is given by $\hat{\rho}_1$. The reason is that for the firm of size $\hat{\rho}_1$ the net gain from joining the association in which it is the marginal member, is equal to zero. Thus, that firm has no incentive to leave the association. On the other hand, any firm smaller than $\hat{\rho}_1$ would get a negative payoff from joining the association, because $R(\hat{\rho}, \hat{\rho}, f_i^{rs})$ is increasing.
in \( \hat{\rho} \). Hence, nonmember firms do not have an incentive to individually deviate and join the association.

**Uniqueness:** Any \( \hat{\rho} > \hat{\rho}_1 \) cannot be an equilibrium, because according to equation (B.4), all firms of size \( \hat{\rho} > \hat{\rho}_1 \) get a positive payoff from joining the association. Hence, it would be an optimal strategy for some firms to deviate and become members of the association. Similarly, \( \hat{\rho} < \hat{\rho}_1 \) cannot be an equilibrium, because some members would get a negative net payoff from membership, and would then deviate and leave the association. Furthermore, \( R(\hat{\rho}, \hat{\rho}, f_i^r) \) is monotonically increasing in \( \hat{\rho} \) when \( R(1, 1, f_i^r) \geq 0 \). Hence, \( \hat{\rho}_1 \) defined in equation (B.6) is unique.

(b) If, on the contrary, \( \hat{\rho}_1 < \hat{\rho}'(\gamma') \), the equilibrium marginal member cannot be \( \hat{\rho}_1 \). This would imply that the association is too large, and it is not profitable to exert bad lobbying. In order for the association to exert bad lobbying, it must be that \( \hat{\rho}^* \geq \hat{\rho}'(\gamma') \) according to Lemma 1. Hence, if \( \hat{\rho}_1 < \hat{\rho}'(\gamma') \), the equilibrium is given by \( \hat{\rho}'(\gamma') \). A member firm has no incentives to deviate since it gets a positive net payoff from membership. Some nonmembers would like to join but they know that their membership would change the decision of the association with respect to rent seeking, and it is not profitable for them to join an association that only exerts good lobbying, so in equilibrium, they do not join the association. Condition 3 rules out the possibility of small firms joining the association strategically with the purpose of changing its lobbying decision.

**Uniqueness:** As mentioned above, \( \hat{\rho} < \hat{\rho}'(\gamma') \) is not an equilibrium here, because according to Lemma 1 such an association would not exert bad lobbying. \( \hat{\rho} > \hat{\rho}'(\gamma') \) cannot be an equilibrium either because some firms would have the incentive to deviate and join the association (since \( \hat{\rho} > \hat{\rho}'(\gamma') \) and firms larger than \( \hat{\rho}_1 \) get a positive net payoff from joining an association that exerts good and bad lobbying.) Again, Lemma 1 states that \( \hat{\rho}'(\gamma') \) is unique, so the equilibrium is unique in this case.

**Part (iii):** Consider the case where \( \gamma > \gamma_2 \) and Conditions 2 and 3 hold. Lemma 4 established that if \( \hat{\rho}^* = \hat{\rho}'(\gamma') > \hat{\rho}^* \), it is not optimal for the association to invest in good lobbying. But, as long as \( \hat{\rho}'(\gamma) \leq 1 \), it is optimal to invest in rent seeking lobby according to Lemma 1. (a) If \( \hat{\rho}_2 \geq \hat{\rho}'(\gamma) \), analogously to part (ii)(a), the equilibrium is given by the marginal member that gains zero from joining the association, i.e. \( \hat{\rho}_2 \). (b) If \( \hat{\rho}_2 < \hat{\rho}'(\gamma) \), the equilibrium threshold member size is not \( \hat{\rho}_2 \), according to Lemma 1. Since \( R(\hat{\rho}, \hat{\rho}, f_i^r) \) is increasing in the relevant range of \( \hat{\rho} \), \( R(\hat{\rho}, \hat{\rho}, f_i^r) \) is positive for all \( \hat{\rho} > \hat{\rho}_2 \). If \( \hat{\rho}^* = \hat{\rho}'(\gamma) \), the marginal member firm does not have incentives to leave the association, because it knows that the association will exert rent seeking anyway, and it gets a positive net payoff from rent seeking (\( R(\hat{\rho}, \hat{\rho}, f_i^r) > 0 \)). On the other hand, the marginal nonmember does not have incentives to join the association, as the
association would cease to exert rent seeking lobbying if it joined. Therefore, the equilibrium is given by \( \rho^* = \rho'(\gamma) \). The proof of uniqueness is analogous to part (ii), and hence omitted. Q.E.D.

B.7 Proof of Proposition 2

(i) \( \Delta W_i^m(\gamma) \) is strictly increasing in \( \rho_i \). Hence, for \( \rho_i > \rho_i^m(\gamma) \), \( \Delta W_i^m(\gamma) > 0 \), and \( \Delta W_i^m(\gamma) < 0 \) for \( \rho_i < \rho_i^m(\gamma) \). The set of members who are worse-off from the association is: \( \{ i \in N | \hat{\rho}^*(\gamma) \leq \rho_i < \rho_i^m(\gamma) \} \). Since \( \hat{\rho}^* = \text{Max}(\hat{\rho}_1, \hat{\rho}'(\gamma)) \), we analyze the two cases separately: when the equilibrium is given by \( \hat{\rho}^* = \hat{\rho}'(\gamma) \), we need to prove that \( \rho_i^m(\gamma) \) is increasing in \( \gamma \), and because \( \hat{\rho}'(\gamma) \) is decreasing in \( \gamma \), it follows that the set \( \{ i \in N | \hat{\rho}^*(\gamma) \leq \rho_i < \rho_i^m(\gamma) \} \) is increasing in \( \gamma \). To prove that \( \rho_i^m(\gamma) \) is increasing in \( \gamma \), first note that \( \rho_i^m(\gamma) \) is the size of the member for whom \( \Delta W_i^m(\gamma) = 0 \). It is then sufficient to prove that \( \Delta W_i^m(\gamma) \) is the sum of the payoff from good lobbying, plus the payoff from rent seeking, minus the fee. Because the equilibrium is given by \( \hat{\rho}'(\gamma) \), by definition the payoff from rent seeking minus the fee equals zero, and is thus not affected by \( \gamma \). The payoff from good lobbying is decreasing in \( \gamma \), so it follows that \( \Delta W_i^m(\gamma) \) is decreasing in \( \gamma \).

To prove that the number of elements in \( \{ i \in N | \hat{\rho}^* \leq \rho_i < \rho_i^m(\gamma) \} \) is decreasing in \( \gamma \) when the equilibrium is given by \( \hat{\rho}^* = \hat{\rho}_1 \), consider the difference between \( \Delta W_i^m(\gamma) \) and \( R(\rho, \rho, f_i^{sr}) \):

\[
\Delta W_i^m(\gamma) - R(\rho_i, \rho_i, f_i^{sr}) = \tilde{\pi}_i(\gamma', \rho_i) - \tilde{\pi}_i(\gamma, \rho_i) - \frac{2\rho_i}{n} \omega \tau \sum_{i=1}^{n} (\pi_i(\gamma)).
\]  

(B.17)

This difference is useful to prove that \( \rho_i^m - \hat{\rho}_1 \) is increasing in \( \gamma \), because \( \rho_i^m \) is the value of \( \rho_i \) for which \( \Delta W_i^m(\gamma) = 0 \), while \( \hat{\rho}_1 \) is the value of \( \rho_i \) for which \( R(\rho_i, \rho_i, f_i^{sr}) = 0 \). Recall that we are interested in cases where \( \rho_i > \hat{\rho}_1 \), which is equivalent to \( \Delta W_i^m(\gamma) = R(\rho_i, \rho_i, f_i^{sr}) < 0 \), because both \( \Delta W_i^m(\gamma) \) and \( R(\rho_i, \rho_i, f_i^{sr}) \) are increasing in \( \hat{\rho}_1 \). In those cases, the difference in equation (B.17) increases in absolute terms when \( \gamma \) increases. That is \( \frac{d(\Delta W_i^m(\gamma))}{d\gamma} < 0 \). It follows that \( \frac{d(\rho_i^m - \hat{\rho}_1)}{d\gamma} > 0 \).

(ii) \( \Delta W_i^m(\gamma) \) is strictly decreasing in \( \gamma \) for:

\[
\gamma > \frac{3(i + n - 2)^2(1 - \sigma)\sigma(1 - \tau)}{3(i + n - 2)^2(1 - \sigma^2)(1 - \tau) + 2(i - 1)(14n - 13)\tau \omega}
\]

and strictly increasing for \( \gamma \) lower than this value.

Moreover, \( \Delta W_i^m(\gamma) = 0 \). This implies that \( \hat{\gamma}_i^n \) is the unique value of \( \gamma > 0 \) such that \( \Delta W_i^n = 0 \). Since \( \hat{\gamma}_i^n \) is strictly decreasing on \( i \) and \( \hat{\gamma}_i^n = 1 \), it follows that \( \hat{\gamma}_i^n < 1 \) for \( i > 1 \).

(iii) Take the derivative of \( \Delta W_i^n \) with respect to \( \rho_i \) in (17).
(iv) $\Delta W$ can be written as:

$$\Delta W = \sum_{i=1}^{n} \left( \frac{(1 + \rho_i)\tau(1 - \tau)\gamma^2}{2} (\gamma' - \gamma^2) + \tau \left( \sum_{i=1}^{n} \pi_i(\rho_i, \gamma') - \omega \pi_i(\rho_i, \gamma') \right) \right)$$

$$-r - s - k.$$  

(B.18)

For $\gamma = 0$, $\Delta W > 0$ and $\Delta W$ is increasing in $\gamma$. For $\gamma = 1$, $\Delta W < 0$ and $\Delta W$ is decreasing in $\gamma$. Moreover, $\Delta W$ is continuous on $\gamma$ and $\frac{d^2 \Delta W}{d\gamma^2} < 0$ for all $\gamma$. Hence, there is a unique value of $\hat{\gamma}$ such that $\Delta W(\hat{\gamma}) = 0$, and $\hat{\gamma} < 1$.

**Q.E.D.**

### B.8 Proof of Lemma A.1

The threshold $\hat{\rho}'(\gamma)$ is strictly increasing in $z$. For $z = \frac{(14n-13)\gamma(1-\tau)(n-2\omega)}{6(n-1)}$, $\hat{\rho}'(\gamma) = 1$. It follows that for a larger $z$, $\hat{\rho}'(\gamma) > 1$ and therefore, the formation of an association is not feasible. The proof is analogous for $\hat{\rho}'(\gamma')$. **Q.E.D.**

### B.9 Proof of Lemma A.2

Follows directly from taking the derivative of $\Delta \tilde{W}_i^n$ with respect to $\rho_i$ and $\gamma$ respectively. The proof of (ii) is analogous to Proposition 2. **Q.E.D.**

**REFERENCES**

Acemoglu, Daron, Simon Johnson, & James Robinson. 2005. The Rise of Europe: Atlantic Trade, Institutional Change, and Economic Growth. *Am. Econ. Rev.* 95, 546–579.

Aidt, Toke S. 2003. Economic Analysis of Corruption: A Survey. *Econ. J.* 113, F632–F652.

Alchian, Armen A. 2008. Property Rights. In David R. Henderson, ed., *Concise Encyclopedia of Economics*, 2nd edn. Indianapolis, IN: Library of Economics and Liberty.

Bates, Robert. 1981. *Markets and States in Tropical Africa: The Political Basis of Agricultural Policies*. Berkeley, CA: University of California Press.

Bennett, Robert J. 1998. Business Associations and Their Potential Contribution to the Competitiveness of SMEs. *Entrep. Region. Dev. Int. J.* 10, 243–260.
Bernstein, Lisa. 1992. Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry. *J. Legal Stud.* 11, 115–157.
———. 1996. Merchant Law in a Merchant Court: Rethinking the Code’s Search for Immanent Business Norms. *Univ. Penn. L. Rev.* 144, 1765–1822.
———. 2007. The NGFA Arbitration System at Work. Working paper, University of Chicago.

Besley, Timothy, & Stephen Coate. 2001. Lobbying and Welfare in a Representative Democracy. *Rev. Econ. Stud.* 68, 67–82.

Boldrin, Michele, & David Levine. 2002. The Case against Intellectual Property. *Am. Econ. Rev.* 92, 209–212.

De Soto, Hernando. 1990. *The Other Path: The Invisible Revolution in the Third World*. Lima, Peru: Perennial Library.
———. 2000. *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York, NY: Basic Books.

Dessi, Roberta, & Sheilagh Ogilvie. 2004. Social Capital and Collusion: The Case of Merchant Guilds. *Cambridge Working Papers in Economics* No. 417.

Dixit, Avinash. 2003. Trade Expansion and Contract Enforcement. *J. Polit. Econ.* 111, 1293–1317.
———. 2004. *Lawlessness and Economics: Alternative Modes of Governance*. Princeton, NJ: Princeton University Press.
———. 2009. Governance Institutions and Economic Activity. *Am. Econ. Rev.* 99, 5–24.

Döner, Richard F., & Ben Ross Schneider. 2000. Business Associations and Economic Development: Why Some Associations Contribute More Than Others. *Bus. Polit.* 2, 261–288.

Duvanova, Dinissa. 2007. Bureaucratic Corruption and Collective Action: Business Associations in the Post-Communist Transition. *Comp. Polit.* 39, 441–461.

Fafchamps, Marcel. 2004. *Market Institutions in Sub-Saharan Africa. Theory and Evidence*. Cambridge, MA: MIT Press.

Fyre, Timothy. 2004. Credible Commitment and Property Rights: Evidence from Russia. *Am. Polit. Sci. Rev.* 98, 453–461.

Goldsmith, Arthur. 2002. Business Associations and Better Governance in Africa. *Public Admin. Dev.* 22, 39–49.

Golikova, Victoria. 2007. Membership of Russian Companies in Enterprise Associations. In S. Avdasheva, V. Golikova, F. Sugiura, & A. Yakovlev, eds., *External Relationship of Russian Corporations*. Tokyo, Japan: The Institute of Economic Research, Hitosubashi University.

Grafe, Regina, & Oscar Gelderblom. 2010. The Rise and Fall of the Merchant Guilds: Re-thinking the Comparative Study of Commercial Institutions in Premodern Europe. *J. Interdis. Hist.* xl, 477–511.
Greif, Avner. 2006. *Institutions and the Path to the Modern Economy: Lessons from Medieval Trade*. New York: Cambridge University Press.

Greif, Avner, Paul R. Milgrom, & Barry R. Weingast. 1994. Coordination, Commitment, and Enforcement: The Case of the Merchant Guild. *J. Polit. Econ.* 102, 745–776.

Hansmann, Henry. 1996. *The Ownership of Enterprise*. Cambridge, MA: Belknap Press of Harvard University Press.

Heller, Michael A., & Rebecca S. Eisenberg. 1998. Can Patents Deter Innovation? The Anticommons in Biomedical Research. *Science* 280, 698–701.

Herbst, Patrick, & Jens Prüfer. 2011. Firms, Nonprofits, and Cooperatives: A Theory of Organizational Choice. CentER Discussion Paper, No. 2007-07.

Lambsdorff, Johann. 2002. Corruption and rent-seeking. *Public Choice* 113, 97–125.

Laothamatas, Anek. 1992. *Business Associations and the New Political Economy of Thailand*. Boulder, CO: Westview Press.

Lucas, Peter. 1993. “State and Society in Nigeria: A Study of Business Associations in Kano”, PhD dissertation, Indiana University.

MacLeod, W. Bentley. 2007. Reputations, Relationships, and Contract Enforcement. *J. Econ. Lit.* 45, 595–628.

Masten, Scott E., & Jens Prüfer. 2014. On the Evolution of Collective Enforcement Institutions: Communities and Courts. *J. Legal Stud.* 43, 359–400.

Moore, Pete. 1998. “Doing Business with the State: Explaining Business Lobbying in the Arab World”, PhD dissertation, McGill University.

Motta, Massimo. 2004. *Competition Policy - Theory and Practice*. New York: Cambridge University Press.

Nadvi, Khalid, & Hubert Schmitz. 1994. *Industrial Clusters in Less Developed Countries*. Sussex: Institute of Development Studies Discussion Paper 339.

Nank, Renee, & Jennifer Alexander. 2012. Farewell to Tocqueville’s Dream: A Case Study of Trade Associations and Advocacy. *Public Admin. Q* 36, 429–461.

Nugent, Jeffrey B., & Grigor Sukiassyan. 2009. Alternative Strategies for Firms in Oppressive and Corrupt States: Informality or Formality via Associations? *Contem. Econ. Policy* 27, 423–439.

Ogilvie, Sheilagh. 2011. *Institutions and European Trade. Merchant Guilds 1000-1800*. Cambridge, UK: Cambridge University Press.

Olson, Mancur. 1982. *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities*, 49–51. New Haven, CT: Yale University Press.

———. 1993. Dictatorship, Democracy, and Development. *Am. Polit. Sci. Rev.* 87, 567–576.

———. 2000. *Power and Prosperity*. New York: Basic Books.
Prüfer, Jens. 2016. Business Associations and Private Ordering. *J. L. Econ. Organ.* forthcoming.

Puga, Diego, & Daniel Trefler. 2012. International Trade and Institutional Change: Medieval Venice’s Response to Globalization, CEPR Discussion Paper No. 9076.

Pyle, William. 2005. Contractual Disputes and the Channels for Interfirm Communication. *J. L. Econ. Organ.* 21, 547–575.

———. 2006. Resolutions, Recoveries and Relationships: The Evolution of Payment Disputes in Central and Eastern Europe. *J. Comp. Econ.* 34, 317–337.

———. 2011. Organized Business, Political Competition, and Property Rights: Evidence from the Russian Federation. *J. L. Econ. Organ.* 7, 2–31.

Tirole, Jean. 1996. A Theory of Collective Reputations (with Applications to the Persistence of Corruption and to Firm Quality). *Rev. Econ. Stud.* 63, 1–22.

Tucker, Andrew. 2008. Trade Associations as Industry Reputation Agents: A Model of Reputational Trust. *Bus. Polit.* 10, article 4.

Vives, Xavier. 1990. Trade Association Disclosure Rules, Incentives to Share Information, and Welfare. *RAND J. Econ.* 21, 409–430.

Volckart, Oliver, & Antje Mangels. 1999. Are the Roots of the Modern Lex Mercatoria Really Medieval? *Southern Econ. J.* 65, 427–450.

Williamson, Oliver E. 2005. The Economics of Governance. *Am. Econ. Rev.* 95, 1–18.