Norman Schofield · Gonzalo Caballero · Daniel Kselman *Editors*

Advances in Political Economy

Institutions, Modelling and Empirical Analysis

This book presents latest research in the field of Political Economy, dealing with the integration of economics and politics and the way institutions affect social decisions. The focus is on innovative topics such as an institutional analysis based on case studies; the influence of activists on political decisions; new techniques for analyzing elections, involving game theory and empirical methods.

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Both of these approaches contribute to our understanding of the growth of the fiscal-military state. Military conflicts provide a window for monarchs and governments to negotiate fiscal centralization by making salient the benefits of taxation. The second approach highlights, however, that increases in the benefits of taxation may not translate in fiscal cooperation because of commitment problems. A ruler with more fiscal and coercive powers may have incentives to expropriate elites or renege on its debts.[9] Some monarchs, however, succeeded at increasing fiscal centralization with no institutions of representation in place. The evidence in Dincecco (2011, 27) shows that in many European states fiscal centralization came before the formation of parliaments. Marichal (2007, 51) highlights that colonial Spanish America lacked representative assemblies yet Spanish officials successfully implementated fiscal and military reforms in some regions in the eighteenth century.

In this chapter, I underscore the collective action problem present in fragmented fiscal regimes that impeded the cooperation of the elites with the contribution of men and resources for the defense of the territory. As such, the chapter emphasizes a commitment problem among the fiscally powerful elites, rather than between the elites and the ruler, in the process of fiscal-military state formation.[10] In fragmented regimes, the ruler's fiscal income rested on earmarking benefits to elites. In the face of a threat of military conflict, fiscal fragmentation then led to a collective action problem: each elite group had incentives to free ride on the contributions of others, thereby contributing less than the socially optimal amount to military protection. The elites and the ruler were stuck in a low-contribution and low-public-good-provision equilibrium. I argue that fiscal centralization provided an institutional framework that allowed elites to commit to contribute to military protection by ensuring others were contributing as well.[11]

That collective action problems are inherent to fiscally fragmented states has been well documented. Ertman (1999, 50) notes about the Estates in Germany that: "the structure of the assemblies, divided as they were into separate *curiae* of élite groups each with their own distinct privileges, tended to inhibit cooperation among the *curiae* and lead the nobility, clergy, and the towns to focus on the defense of their narrow group rights." Bates and Lien (1985, 57) quote from Henneman (1971) that "fiscal jealousies led towns to make subsidy grants conditional upon similar grants from other towns" in France. Summerhill (2008, 224–225) notes that because rulers bargained separately with each group, fiscal fragmentation led to free riding and lower fiscal revenues.[12]

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[9]Further, in times of war, the ruler may discount the future more than other citizens (Levi 1988).

[10]Many scholars have emphasized the role of collective action and free-rider problems in preventing the compliance of actors with welfare-enhancing cooperation. See, for instance, Olson (1993), Greif (2006) and Greif et al. (1994).

[11]Emerson (1983) provides a similar insight regarding state formation at an earlier stage in Baltistan. Greif (1998, 2006) also highlights the importance of military threats and the need for elite cooperation in shaping the internal organization of the state.

[12]See also Levi (1988, 56–57).

139   I provide a game-theoretic framework to analyze the conditions under which
140   corporate and local elites gain by surrendering to a central government their power
141   to levy taxes.[13] The analysis shows that an increase in the probability of a threat
142   of external invasion or internal unrest is more likely to cause fiscal centralization
143   when the elites are more dependent on the ruler for future economic rents, and when
144   the prospects of economic activity are higher. To the extent that the stakes from
145   military protection are aligned between the elites and the ruler, and the elites lack
146   alternative ways to commit to cooperate for defense, the elites acquiesce to fiscal
147   capacity centralization.[14]

148   Historical evidence from the increases in fiscal centralization and military build
149   up in seventeenth century England and eighteenth century colonial Mexico provides
150   support for the implications of the theoretical argument. The evidence highlights
151   the importance of the Civil War for England and the Seven Years' War for colonial
152   Mexico, and the lack of standing armies in both regions, in aligning the benefit from
153   military protection between the elites and the ruler.

154   I present the formal argument in Sect. 1. Section 2 confronts the theoretical ar-
155   gument with evidence from English and colonial Mexican history. The final section
156   concludes with a discussion of the implications and further avenues for research.

1 Formal Model

160   This section provides a theoretical framework to explain why fiscal-military state
161   building is more likely when the probability of a threat of unrest or invasion in-
162   creases. The focus is on the conditions under which corporate and local elites have
163   incentives to surrender their power to levy taxes to a central government.

1.1 The Game

168   A central government, henceforth referred to as a ruler, R, interacts with n economic
169   corporations, indexed by $i = 1, \ldots, n$. These corporations are composed of agents
170   that are able to make agreements binding on all their members.[15]

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173   [13]This theoretical framework is built on the history of eighteenth-century colonial Mexico. Arias
174   (2012) provides a detailed historical analysis of the successful increase in fiscal centralization and
      military reorganization in colonial Mexico after the Seven Years' War.

175   [14]Besley and Persson (2009) and Besley and Persson (2011) study the joint development of fiscal
176   capacity and market-supporting institutions. They also emphasize the salience of a public good for
177   increases in fiscal capacity. Their analysis, however, does not incorporate the role of a powerful
178   elite in blocking fiscal changes. In their comparative study of state finance in Britain and France,
179   Hoffman and Rosenthal (1997) and Rosenthal (1998) illustrate the importance of the difference in
180   preferences for war between crown and elite when fiscal power is decentralized. They do not seek
181   to explain transitions between fiscal regimes but only the impact of regimes on the number of wars
      fought.

182   [15]Historically, the corporations were represented by local authorities (e.g. majors) or heads of
183   economic corporations or guilds (e.g. aristocrats, merchants or ecclesiasts). Many scholars have

The ruler is threatened with an invasion (or unrest) with probability θ. A public good (G)—military defense—is necessary to defeat the invaders (or the unruly). In order to provide military defense, the ruler depends on the contributions of the corporations because initially fiscal capacity is fragmented. That is, the ruler depends on the corporations for the enforcement and collection of fiscal monies. The corporations levy taxes and transfer some of the proceeds to the ruler.

The ruler is able to enforce bilateral contracts with the individual corporations, and by means of these private contracts the corporations transfer part of their fiscal proceeds to the ruler. Each bilateral contract is observed only by the parties to the contract. A contract with corporation i specifies the amount $x_i \geq 0$ of good i that the ruler provides to corporation i in exchange for a payment $\tau_i \geq 0$.[16] Let $(x, \tau) = ((x_1, \tau_1), \ldots, (x_n, \tau_n))$ be the profile of the ruler's unilateral offers to each corporation.

Under fragmented capacity, the corporations make contributions to the public good, $g_i \geq 0$, that result in a level of the public good $G = f(g)$, where $g = (g_1, \ldots, g_n)$, f is (strictly) increasing in g and $f_{g_i g_j} > 0$ for $i \neq j$. These contributions are voluntary because the ruler is unable to enforce them under fragmented fiscal capacity.

The ruler can propose to the corporations an increase in fiscal centralization, whereby the corporations surrender to the ruler the power to levy taxes. The increase costs F to the ruler. Under centralization, the ruler publicly announces and enforces uniform tax payments $t \geq 0$ from each i.

1.1.1 Timing

There are two periods. In the first period, all players observe θ. The ruler then chooses whether to propose an increase in fiscal centralization or to keep fiscal capacity fragmented.[17] If proposing an increase in fiscal centralization, the ruler proposes a policy profile $\{t, x, G\}$ consisting of tax payments, a vector of private goods, and a level of the public good. If not proposing centralization, the ruler proposes a "fragmented" policy profile $\{\tau, x, g\}$, which includes a vector of payments, private goods, and contributions to the public good. Each corporation accepts or rejects the policy profile proposed by the ruler.

In the second period, if the ruler proposed an increase in fiscal centralization and at least $\bar{n} \leq n$ corporations accept, the ruler invests in a fiscal-military state

stressed the importance of corporate forms in the development of tax systems. For instance, Strayer (1970), Henneman (1971), Prestwich (1972), Bates and Lien (1985), and Levi (1988).

[16]Examples of publicly provided private goods include royal monopolies (e.g. exclusive access to trade between specific regions), value added to commodities (e.g. mint silver coins), or the provision of local defense (convoys for merchants, fleets for miners). The collection of specific taxes by corporations also guaranteed loans between rulers and the lending corporations.

[17]Historical evidence supports giving the ruler agenda-setting power. Monarchs and public officials typically played an important role in coordinating economic elites and raising the elite's awareness about the need to negotiate fiscal-military building.

and implements the policy agreed to in the first period.[18] If less than $\bar{n}$ corporations accept, fiscal capacity remains fragmented, the ruler proposes a "fragmented" policy profile $\{\tau, x, g\}$, and the corporations accept or reject the ruler's proposal. If the ruler did not propose an increase in fiscal centralization, the ruler implements the "fragmented" policy profile agreed to in the first period.

1.1.2 Payoffs

A corporation's payoff depends on the amounts of the private good, x_i, and the public good, G, and on (exogenous) overall economic activity, $\bar{y}$. Some corporations benefit more from military protection than others. A corporation is vulnerable to the threat (of an invasion or unrest) to the extent that the corporation depends on the survival of the ruler for future rents and protection. Let $\alpha_i \geq 0$ parametrize the degree to which corporation i benefits from the public good (G). A higher α_i implies greater dependence on the ruler and therefore a higher benefit from G.[19] The (expected) payoff of each corporation (when fiscal capacity is fragmented) is:

$$u_i^F(x_i, G) = v(x_i, \bar{y}) + \theta \alpha_i y \big(f(g_i, g_{-i}), \bar{y}\big) - g_i - \tau_i - e_i.$$

where v and y are the values of the private and public goods, respectively, at a given level of economic activity, θ is the probability of a threat, τ_i is corporation i's payment to the ruler, and $e_i > 0$ is corporation i's cost to collect taxes.[20] The function v is increasing and concave in x and $\bar{y}$, $v_{x_i \bar{y}} > 0$ for all i, and $v(0, \bar{y}) = 0$. Accordingly, y is increasing and concave in G and $\bar{y}$, $y_{G\bar{y}} > 0$, and $y(0, \bar{y}) = 0$. Recall that $G = f(g_i, g_{-i})$, where g_i is corporation i's contribution to G. Each corporation's payoff is a function of its individual exchange with the ruler if $\theta = 0$. If, by contrast, $\theta > 0$, the corporation's payoff is also a function of the public good. The more a corporation depends on the ruler for economic rents (α_i), the higher the benefit from the public good.[21] Finally, for any θ, an increase in economic activity increases the payoff of each corporation.

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[18]This framework does not explicitly incorporate the ruler's commitment problem regarding t. Once a ruler invests in centralization, the ruler could renege on the agreement in period 1 and forcibly collect tax payments higher than those agreed to (see e.g. North and Weingast 1989). If fiscal capacity is fragmented, this commitment problem between the corporations and the ruler is not an issue. Reputation ensures commitment from both corporations and ruler because exchanges under fragmented capacity rely on private contracts. A threat of reversion to fragmentation from the elite may not be credible, however, after the ruler has increased fiscal centralization. I discuss the commitment problem between ruler and corporations in the conclusion.

[19]For instance, some corporations may be able to keep their economic rents even in the case of a British takeover of Spanish colonial territory, say, or they may have their own defense against internal uprisings.

[20]This cost captures the effort to assess, collect, enforce, and dispatch taxes locally.

[21]The ruler and the corporations could also differ in their perception of the probability of a threat (θ). This can be incorporated in the parameter α_i.

If corporation i rejects the ruler's fragmented policy proposal, $x_i = 0$ and corporation i receives payoff $u_0 = v(0, \bar{y}) + \theta \alpha_i y(f(0, g_{-i}), \bar{y})$, where g_{-i} denotes the contributions of all other corporations given that corporation i is not contributing. There are positive externalities on those that do not contribute to building an army because f is increasing in g_{-i} for all i. That is, if $\theta > 0$, all groups with $\alpha_i > 0$ benefit and cannot be excluded from the military protection.[22]

When fiscal centralization is implemented, the (expected) payoff of each corporation is:

$$u_i^C(x_i, G) = v(x_i, \bar{y}) + \theta \alpha_i y(G, \bar{y}) - t,$$

where t is corporation i's tax payment. (Recall the ruler sets $t_i = t$ for all i when centralizing tax collection.) Because the ruler collects and enforces taxes under fiscal centralization, $e_i = 0$ for all i.

The ruler's payoff is the revenue obtained from corporations' payments. Let $c(x, G)$ be the cost of providing private and public goods in both fiscal regimes. Assume c is increasing and convex in x and G, and $c_{x_i x_j} = 0$ and $c_{x_i G} = 0$ for all i. Then, the ruler's payoffs under fragmented and centralized fiscal capacities are, respectively:

$$u_R^F(x, G) = \sum_{i=1}^{n} (\tau_i + g_i) - c(x, G),$$

$$u_R^C(x, G) = nt - c(x, G) - F.$$

1.2 Equilibrium

I solve for the pure-strategy subgame-perfect Nash equilibria (SPNE) of the game preferred by the ruler.[23] By backward induction, I first study the choice of payments and private and public goods proposed by the ruler under fiscal fragmentation.

If fiscal capacity is fragmented, corporation i accepts policy profile $\{x_i, \tau_i, G\}$ if and only if:

$$v(x_i, \bar{y}) + \theta \alpha_i y(f(g_i, g_{-i}), \bar{y}) - g_i - \tau_i - e_i \geq \theta \alpha_i y(f(0, g_{-i}), \bar{y}). \quad (1)$$

[22]This non-exclusion assumption distinguishes defensive warfare from predatory warfare. The former is a pure public good, whereas the latter is a private good. The spoils of a war can be promised to only some groups, while others are excluded. For more on the distinction between defensive and predatory warfare see Emerson (1983).

[23]I assume the corporations accept the ruler's proposal when indifferent. This allows me to rule out trivial equilibria. Also, the ruler makes a take-it-or-leave-it offer and so extracts all of the surplus from the corporations. Giving a higher share of the surplus to the corporations makes a transition to centralization more likely as long as the corporations receiving a large share of the surplus benefit from the public good (high α_i).

In the SPNE, the participation constraint in (1) binds for all i. Otherwise, the ruler would be able to increase his payoff by increasing the payment for some corporations. By solving for τ_i from each i's binding participation constraint, we obtain the equilibrium payment $\hat{\tau}_i$ for each corporation. Substituting each $\hat{\tau}_i$ in the ruler's objective function, the ruler's set of profit-maximizing policies is:

$$(\hat{x}, \hat{G}) \in \arg\max_{x,g \in \mathbb{R}^n} \ \sum_{i=1}^{n} v(x_i, \bar{y}) + \sum_{i=1}^{n} \theta\alpha_i \big[y\big(f(g_i, g_{-i}), \bar{y}\big) - y\big(f(0, g_{-i}), \bar{y}\big) \big]$$

$$- \sum_{i=1}^{n} e_i - c(x, G). \qquad (2)$$

Solving we obtain the unique $\hat{x}$ and $\hat{g}$ the ruler proposes to the corporations under fragmented fiscal capacity. Notice that the equilibrium amount of private goods is the same for all corporations because the choice of x is independent from α_i and g. The proposal $\hat{x}$ is also equal to the socially optimal amount x^* such that $x^* \in \arg\max_{x \in \mathbb{R}^n} \sum_{i=1}^{n} v(x_i, \bar{y}) - c(x, G)$.

Lemma 1 *The equilibrium level of public good provision under fragmented fiscal capacity is lower than the socially optimal:* $\hat{G} < G^*$.

Proof The socially optimal level of public good provision solves:

$$G^* \in \arg\max_{g \in \mathbb{R}^n} \ \sum_{i=1}^{n} \theta\alpha_i \, y\big(f(g_i, g_{-i}), \bar{y}\big) - c(x, G). \qquad (3)$$

The first order conditions: $\theta \sum_i \alpha_i \partial y/\partial G \cdot \partial f/\partial g_i = \partial c/\partial G \cdot \partial f/\partial g_i$ for $i = 1, \ldots, n$, characterize G^*. From (2), the first order conditions: $\theta \sum_i \alpha_i \partial y/\partial G \cdot \partial f/\partial g_i - \theta \sum_{j \neq i} \alpha_j \partial y/\partial G \cdot \partial f/\partial g_i = \partial c/\partial G \cdot \partial f/\partial g_i$ for $i = 1, \ldots, n$, characterize $\hat{G}$. The result follows because f is increasing in g. (The solution is interior because of the assumptions on y and c.) □

Under fragmented fiscal capacity, each corporation has incentives to transfer resources to the ruler only to the extent that it receives x_i. The corporations free ride on others in their contributions to the public good, and the ruler has no means of enforcing these contributions. Internalizing the lower contribution of each corporation, the ruler's choice of G is lower than the socially optimal.

Lemma 1 allows us to define the social cost due to free riding as the increase in the aggregate value from public good provision if the corporations were able to commit to pay: $Y(G^*, \bar{y}) - Y(\hat{G}, \bar{y}) > 0$, where $Y(G, \bar{y}) = \sum_{i=1}^{n} y(G, \bar{y}) = ny(G, \bar{y})$. If the groups were able to coordinate and police themselves to commit to pay, there would be no cost from the free riding problem. The difference $Y(G^*, \bar{y}) - Y(\hat{G}, \bar{y})$ increases when the groups interact only with the ruler and are unable to solve the collective action problem among themselves.

1.3 Investment in fiscal centralization

First, notice that when fiscal capacity is centralized the ruler maximizes fiscal transfers by choosing the socially optimal amount G^*. Each corporation faces the following participation constraint when the ruler proposes centralization:

$$v(x_i, \bar{y}) + \theta\alpha_i y(G, \bar{y}) - t \geq v(\hat{x}_i, \bar{y}) + \theta\alpha_i y\big(f(\hat{g}), \bar{y}\big) - \hat{g}_i - \hat{\tau}_i - e_i. \quad (4)$$

The right hand side of (4) is constant and given by the equilibrium policy profile $\{\hat{\tau}, \hat{x}, \hat{g}\}$. The corporations can refuse centralization and force the ruler to keep fiscal capacity fragmented. Summing over n and solving for t, we obtain $nt \leq \sum_i [v(x_i, \bar{y}) + \theta\alpha_i y(G, \bar{y})] - C$, where C is a constant. It follows that $u_R^C(x, G) \leq \sum_i [v(x_i, \bar{y}) + \theta\alpha_i y(G, \bar{y})] - C - c(x, G) - F$. Therefore, the ruler sets the maximum upper bound on net fiscal transfers by choosing G^* as defined in (3).

Two conditions must hold for fiscal centralization to occur. First, the participation constraint in (4) must hold for at least $\bar{n}$ corporations. The corporations can refuse centralization and the ruler has no credible threat but to preserve fiscal fragmentation. Second, the ruler's payoff must be higher under centralization than under fragmentation. If the ruler's payoff given the tax payment necessary to obtain compliance from $\bar{n}$ corporations is less than the payoff from $\{\hat{\tau}, \hat{x}, \hat{g}\}$, the ruler does not propose centralization.

Substituting in (4) for $(\hat{\tau}_i, \hat{x}_i, \hat{g})$ and solving for t we obtain the maximum tax payment that each corporation is willing to pay in exchange for the optimal level of the public good:

$$t_i^M \leq v(x_i, \bar{y}) + \theta\alpha_i \big[y\big(G^*, \bar{y}\big) - y\big(f(0, g_{-i}), \bar{y}\big)\big], \quad \text{for } i = 1, \ldots, n. \quad (5)$$

A couple remarks about this maximum tax payment are in order. First, the ruler obtains higher maximum payments from those corporations who benefit more from the public good (α_i). Second, the ruler can obtain compliance from corporation i at a tax payment higher than the maximum in (5) by compensating with private goods (a higher x_i) or if the prospects of economic activity increase.

I first obtain the SPNE assuming the ruler can collect corporation-specific tax payments and provides the socially optimal amount of private goods x^*. The constraints in (5) bind for all i, otherwise the ruler would be able to increase his payoff by increasing the tax payment for some corporations. Let $t_i^* \equiv v(x_i, \bar{y}) + \theta\alpha_i[y(G^*, \bar{y}) - y(f(0, g_{-i}), \bar{y})]$ be the binding constraint in (5) for i. The following proposition gives the condition under which policy profile $\{t^*, x^*, G^*\}$ is an equilibrium for $\bar{n} = n$, where $t^* = (t_1^*, \ldots, t_n^*)$.

Proposition 1 *At the SPNE, the ruler proposes policy profile* $\{t^*, x^*, G^*\}$, *all corporations accept and the ruler increases fiscal centralization if the probability of a threat is such that*:

$$\theta \geq \frac{F + c(x^*, G^*) - [\sum_i e_i + c(x^*, \hat{G})]}{[Y(G^*, \bar{y}) - Y(\hat{G}, \bar{y})] \sum_i \alpha_i / n}. \quad (6)$$

Proof The ruler proposes a transition if and only if $\sum_i t_i^* - c(x^*, G^*) - F \geq u_R^F(\hat{\tau}, \hat{x}, \hat{G})$. Substituting in for t_i^* and $\hat{\tau}_i$, and solving for θ gives condition (6). Note that by Lemma 1 and since y is increasing, $Y(G^*, \bar{y}) - Y(\hat{G}, \bar{y}) > 0$.   □

Condition (6) shows that an increase in fiscal centralization depends on the cost increase to the ruler from providing the optimal amount of public good and on the corporations' overall gain from overcoming free riding, relative to the probability of a threat. Notice that the lower the average corporation's dependence on the ruler $(\sum_i \alpha_i / n)$, the higher the probability of a threat needs to be for the ruler to propose centralization. That is, fiscal centralization occurs for smaller values of the probability of a threat, the smaller the divergence between the corporations' and the ruler's benefit from military protection. Also, centralization occurs for smaller values of θ if the prospects of economic activity $(\bar{y})$ increase, because the stakes of all parties increase. If condition (6) does not hold, the ruler proposes a fragmented policy profile and fiscal capacity remains fragmented.

The tax policy $t^* = (t_1^*, \ldots, t_n^*)$ is not an equilibrium strategy if $\bar{n} < n$.[24] For $\bar{n} < n$, the ruler optimizes by setting a tax policy such that constraint (5) binds for exactly $\bar{n}$ corporations. Under fiscal centralization, the ruler can use its monitoring and enforcing capacity to oblige the remaining $n - \bar{n}$ corporations to pay a tax rate higher than their maximum tax rate. I derive below the SPNE when the ruler sets a uniform tax payment for all corporations under centralization and $\bar{n} < n$.

Definition 1 For some t proposed by the ruler, corporation i is **pivotal** if $t_i^* \geq t$ and $m(i) + 1 = \bar{n}$, where $m(i) \equiv \#\{j | t_j^* > t_i^*\}$ is the number of corporations whose maximum payment exceeds i's maximum payment.

When proposing centralization, the ruler maximizes his payoff and ensures compliance from $\bar{n}$ corporations by proposing the tax payment of the pivotal corporation for a given (x, G). Let corporation p, with corresponding t_p^*, be the pivotal corporation when the ruler proposes (x^*, G^*).[25] The following result gives the condition under which the policy profile $\{t_p^*, x^*, G^*\}$ yields centralization in equilibrium. I assume a corporation accepts if indifferent.

Proposition 2 *At the SPNE, $\bar{n}$ corporations accept policy profile $\{t_p^*, x^*, G^*\}$ and the ruler invests in a centralized fiscal administration if the probability of a threat of invasion or unrest is such that*:

$$\theta \geq \frac{F + c(x^*, G^*) - [\sum_i e_i + c(x^*, \hat{G})]}{\alpha_p Y(G^*, \bar{y}) - Y(\hat{G}, \bar{y})[\sum_i \alpha_i / n]}. \tag{7}$$

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[24]It is an equilibrium for $\bar{n} < n$, trivially, if all corporations are identical ($\alpha_i = \alpha$ for all i).

[25]From condition (4), the ruler maximizes by choosing the socially optimal level of private good.

Proof The ruler proposes a transition if and only if $nt_p^* \geq u_R^F(\hat{\tau}, \hat{x}, \hat{G})$. Substituting in for t_p^* and $\hat{\tau}_i$, and solving for θ gives condition (7). □

The gain from providing the optimal amount of military protection is now weighted by the vulnerability to a threat of each corporation relative to that of the pivotal corporation. If the pivotal corporation has a degree of vulnerability higher than the average, the transition to centralization occurs for a lower probability of the threat than in Proposition 1, all else constant.[26] However, if the pivotal corporation has a lower benefit from the public good than the average corporation, the condition in Proposition 2 does not hold and the ruler does not propose centralization even though it is socially optimal. This occurs because the ruler endures a loss in fiscal revenue from requesting a uniform transfer rather than discriminating across corporations according to their benefit from the public good.

1.4 Implications

Both Propositions 1 and 2 highlight the main implication from the analysis. An increase in the probability of a threat is more likely to cause an increase in fiscal centralization and military build-up, the higher the corporations' stakes on the survival of the ruler for their economic future. The higher the corporations' dependence on the ruler for future rents, the higher is the benefit from the provision of the optimal military protection, and the more that the corporations are willing to transfer under centralization. Also, all else equal, a higher level of economic activity facilitates centralization by increasing the maximum a corporation is willing to pay under centralization and by increasing the social gain from overcoming free riding. A fiscal regime may therefore remain fragmented because the alignment between the benefits to the ruler and the corporate elites from military protection is small, or the ruler's cost of investing in centralization is too high.

Proposition 2 shows in addition that if the ruler is unable to collect corporation-specific payments (and is thus unable to extract all the corporations' benefits from the public good), an increase in fiscal centralization depends on the size of the 'accepting' coalition ($\bar{n}$). In particular, we may not observe centralization when it is socially optimal, if the pivotal corporation has a lower benefit from the public good than the average corporation.

Finally, a couple remarks about the theoretical framework are in order. First, the analysis emphasizes that unless the ruler has the support of some of the corporations, the increase in fiscal centralization and military build up are not feasible. The

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[26]This can be seen clearly by rewriting the denominator in condition (7) as follows and comparing it with the denominator in condition (6):

$$\alpha_p Y(G^*, \bar{y}) - Y(\hat{G}, \bar{y}) \sum_i \frac{\alpha_i}{n} = \left[Y(G^*, \bar{y}) - Y(\hat{G}, \bar{y}) \right] \sum_i \frac{\alpha_i}{n} - Y(G^*, \bar{y}) \sum_i \frac{\alpha_i - \alpha_p}{n}.$$

507 corporations can refuse centralization and the ruler has no credible threat except
508 to preserve fiscal fragmentation. If, however, the ruler has alternative or external
509 sources of revenue to finance an army or impose centralization, negotiation with the
510 corporations may not play such an important role.

511   Second, the setup implicitly assumes the ruler has the authority and the ability to
512 propose and implement centralization. For the results to hold, the ruler must have
513 legal authority and the corporations must believe the ruler can credibly monitor and
514 enforce tax collection. Lacking a central actor with legal authority or the credible
515 ability to monitor and sanction, an increase in the probability of internal or external
516 threat will not lead to an increase in fiscal centralization.

2 Historical Evidence

522 To provide support for the theoretical argument, this section discusses historical ev-
523 idence from the transition to a fiscal-military state in seventeenth-century England
524 and eighteenth-century colonial Mexico.[27] I organize the evidence around the two
525 main factors highlighted by the theoretical analysis leading to a fiscal-military re-
526 form: (1) military vulnerability and the alignment between the corporate elites' and
527 the ruler's benefit from military protection, and (2) the need for rulers to negotiate
528 with the corporate elites to obtain their compliance. Section 2.1 presents evidence
529 for England while Sect. 2.2 discusses the evidence for colonial Mexico.

530   The cases of England and Mexico are pertinent because they allow us to isolate
531 the public good nature of military protection. When an army is created with preda-
532 tory goals and the spoils of war exclusively assigned to specific groups, military
533 protection confounds both a private and a public good nature. The objectives (at
534 least initially) of the build up of a fiscal-military state in seventeenth-century Eng-
535 land and eighteenth-century Mexico were defensive. The historical evidence below
536 shows that they both lacked armies and had enjoyed relatively long periods of no
537 military involvement prior to the increase in the probability of a threat.

538   Also, the cases of England and colonial Mexico corroborate the importance of a
539 ruler or central government with the credible authority and ability to implement the
540 fiscal-military reforms. Brewer (1989) notes the importance of the British crown's
541 recognized authority and infrastructure in the administration of justice for their suc-
542 cess in building a fiscal-military state. In colonial Mexico, the wars of independence

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544 [27] Many scholars have documented the important changes in fiscal administration and enforce-
545 ment, and in military capacity, that colonial Mexico and England underwent in the second half of
546 the eighteenth century and the mid-seventeenth century, respectively. For colonial Mexico's fis-
547 cal, administrative, and financial reforms, see for instance Fonseca and Urrutia (1791), Brading
548 (1973, 1987), Elliott (1987), Klein (1998), Jáuregui (1999), Coatsworth (1990), Knight (2002),
     Stein and Stein (2003), and Marichal (2007). Regarding colonial Mexico's military reorganiza-
549 tion, see McAlister (1953), Gutiérrez-Santos (1961), Fisher (1982), Marichal and Souto Mantecón
550 (1994), Kuethe (1986), Archer (1981, 1978) and Elliott (2006). The main sources for England are
551 O'Brien (1988, 2011), Brewer (1989) and Brewer and Hellmuth (1999).

(1810–1821) and resulting political instability provide an example of the importance of legal authority. The internal and external threats faced by the elites in different regions in the aftermath of independence from Spain did not lead to centralization. It took almost fifty years for the region to stabilize its newly minted state. Centeno (2002) argues that this was a result of the authority void left by the Spanish crown: no group was superior to the rest.

2.1 England

In contrast to other European nations, England lacked a standing army from the late fifteenth to the late seventeenth centuries. Its landed aristocrats were also effectively demilitarized; by the 1640s "four out of five aristocrats had no military experience at all" (Brewer 1989, 12). This was partly a result of England's non-involvement with major international conflicts during that time-period. According to Brewer (1989, 12), "England was sheltered not just by her insular position but by the scale of war in early modern Europe." The large increase in army sizes and number of troops deployed made an invasion of England complicated, and an English invasion of the continent difficult. English naval power only began to be established in the second half of the seventeenth century. Castilian and French fleets managed to seize and sack various English ports during the Hundred Years war. Further, prior to the seventeenth century, the navy depended heavily on private support and armed merchantmen ships.[28]

The Civil War (1642–1651) marked a turning point for the need to secure the state against domestic rivalries. An interregnum of civil warfare and challenges to hierarchy created the conditions for a watershed in England's fiscal and military history. Importantly, the succession of events "forged a political consensus among England's wealthy elites for an altogether stronger and more centralized state, above all to maintain order and political stability, but also to afford greater protection for the economy's growing commercial interests overseas" (O'Brien 2011, 426). The threat of internal political stability together with the lack of military protection provided the conditions for an alignment of the executive's and the elite's benefit from creating a standing army and strengthening the navy.

The important role played by Parliament in fiscal matters gives evidence of the need to negotiate and obtain cooperation from the wealthy elites. Parliament decided on the selection of the levels and types of taxes, the rules for their assessment and collection, and had control over the state departments in charge of implementing those rules.[29] In fact, the landed elites set the terms for cooperation by initially avoiding direct taxes on land. It was not until 1799 that Pitt managed to introduce

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[28]This paragraph summarizes Brewer (1989, 8–13).

[29]Horowitz (1977) and O'Brien (2011).