

‘It is common ground, therefore, that the Renaissance monarchies of England and France shared important characteristics. But by 1714 they were so different from one another that one might almost call them mirror-images. Herein lies a most profound paradox’.

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S. E. Finer (1999, 1308)

## 1 INTRODUCTION

A growing literature argues that state capacity—the ability of a state to raise tax revenues and to uphold the rule of law—is an important determinant of economic propensity (Besley and Persson, 2011; Fukuyama, 2011; Acemoglu and Robinson, 2012). Much of this research looks at the rise of fiscal institutions that constitute a modern tax state.<sup>1</sup> However, Charles Tilly observed that scholars of state formation face a selection issue. Economists and political scientists study the institutions that have survived. Tilly raises the possibility that institutions that did not survive to the modern era may have been more than ‘the fading features of the old regime, but the *intermediate institutions* which were crucial to the emergence of the states we know’. Hence, studies that focus exclusively on the emergence of modern institutions ‘will tend to misrepresent the developmental process’ (Tilly, 1975, 48).

This paper argues that the intermediate institution of cabal tax farming, which was marked by allocating tax rights to monopsonistic cabals of financiers rather than using competitive markets, was crucial for the rise of the modern state as it encouraged investment in fiscal capacity. Our investigation focuses on the development of two prototypical modern states: England and France during the early modern period (1500–1800). Both of these polities adopted cabal tax farming and both saw dramatic increases in fiscal capacity in the period before the industrial revolution. In England the intermediate institution of cabal tax farming soon gave way to direct collection and the rise of a fiscal bureaucratic state, whereas in France it persisted until the French Revolution. By studying this institutional divergence we shed new light on the rise of modern fiscal and financial institutions.

We develop a model and analytical narrative that explains (i) why, before 1600, European states relied on markets to perform many functions, including tax collection; (ii) why early modern states moved from decentralized, market-based, methods for collecting revenues towards more centralized and eventually more bureaucratic fiscal institutions; (iii) why this

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<sup>1</sup>See for example Tilly (1990); Bonney (1999); Ertman (1997); Bonney (1995); Kiser and Kane (2001); Dincecco (2011); O’Brien (2011); Karaman and Pamuk (2011); Johnson and Koyama (2011); Gennaioli and Voth (2011).

centralization also encouraged investments in fiscal capacity and the standardization of laws and weights and measures; and (iv) why this intermediate institution proved to be self-undermining in the long run.

Our analysis is driven by the two main types of costs facing any early modern ruler. The first was the cost of collecting taxes in economies that were highly heterogeneous and fragmented. High costs to monitoring government agents meant there was embezzlement and corruption. In response, states privatized tax collection. Tax collection was farmed out to private individuals who bid competitively for their positions, paying a fixed fee or rent to the king and were, in return, the residual claimants on whatever was collected.<sup>2</sup>

The second cost was that of borrowing. Since early modern monarchs could not credibly commit to repay debts that they incurred, their ability to borrow money was limited and this made them dependent on personal, or inside, finance. Whereas many city states had developed sophisticated forms of borrowing and public finance during the late middle ages, as late as 1650, the rulers of the major territorial states of Europe like England and France remained reliant on short-term loans from moneylenders, merchants, and tax collectors.<sup>3</sup>

A number of papers study the use of tax farming to overcome the costs of tax collection in the pre-industrial world.<sup>4</sup> However, this is the first paper to build a model that shows how borrowing, tax farming, and investments in state capacity were interconnected. Our model shows that when credit is less important to the ruler, states use competitive markets to allocate fiscal rights, especially when the costs of collection are high. In this equilibrium, the king has little incentive to invest in increases in state capacity that directly lower the cost of tax collection. However, if the ability of the king to borrow from outside sources of finance is limited, then as access to credit becomes more important, there is a strong incentive to abandon competitive tax farming since the decentralized institutions which minimize the cost of collecting taxes are incapable of supporting large amounts of inside lending. Hence the model explains why states might move away from competitive allocation of fiscal rights

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<sup>2</sup>See Aylmer (1961); Prestwich (1966); Thomas (1983); Peck (1993); Allen (2012).

<sup>3</sup>See Stasavage (2011) for an analysis of why city states were able to issue public debt while territorial states were not. See Voth and Drelichmann for analysis of the relationship between the Spanish monarch Philip II and his Genoese creditors (Drelichman and Voth, 2011b,a). See Epstein (2000) on the financial backwardness of early modern England.

<sup>4</sup>See Bonney (1979); Kiser and Schneider (1994); Kiser and Linton (2001); Maurer and Gomberg (2004); White (2004); Allen (2005, 2012); Johnson (2006a,b); Cosgel and Miceli (2009); Balla and Johnson (2009), and there is an extensive literature on how monarchs in early modern Europe struggled to secure access to credit (see North and Weingast, 1989; Drelichman and Voth, 2011a; Stasavage, 2011).

towards monopsonistic allocation and cabal finance.

The move from competitive markets to monopsony grants means that rulers no longer benefit from the information revelation properties of market mechanisms. Under monopsony tax farming, therefore, governments have a greater incentive to lower the transaction costs of directly monitoring the performance of its agents than they do under decentralized, competitive, tax farming. This requires investment in fiscal capacity, and in particular, in investments that reduce the cost of tax collection such as the standardization of laws, regulations, and weights and measures.

Nevertheless, the relationship between the king and the cabal of tax farmers is a fragile one. The model shows how it can break down, and why such a breakdown is more likely in an economy with less heterogeneity and more standardized laws, taxes, and regulations. In this case, the crown may eventually find it least costly to collect taxes through direct collection, thus putting the state on the road to the eventual creation of a tax bureaucracy.

This model explains the evolution of fiscal and financial institutions in England and France during the early modern period. We show that while England and France moved from competitive to cabal tax farming in order to gain access to inside lending after 1600, the Dutch Republic and the Spanish monarchy retained systems of competitive tax farming, in part, because they already had access to other sources of credit. Our framework also explains why cabal tax farming was an equilibrium in England for a much shorter period than in France, where it lasted until the French Revolution. Part of this was due to historical happenstance, but part of the explanation is due to the fact that England was simply a more homogenous political entity than France in the sixteenth century (Heckscher, 1955). This made the intermediate institution of cabal farming less stable in England as it lowered the opportunity cost of defaulting on the tax farmers. Hence, when the switch to cabal finance occurred, the next step to the tax bureaucracy that constituted the ‘sinews of power’ of the English state in the eighteenth century, was relatively smooth (Brewer, 1988). Our analysis thus helps to explain why England was further along in its fiscal and financial revolutions than France by the end of the seventeenth century and sheds light on the reasons why England was the first country to develop modern political and economic institutions.<sup>5</sup>

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<sup>5</sup>There is a large literature on England’s Financial Revolution (see Dickson, 1967; North and Weingast, 1989; Rosevere, 1991; Carruthers, 1996; Quinn, 2001; Stasavage, 2002).

## 2 A MODEL OF TAX FARMING AND INSIDE FINANCE

In 1500 England and France were two of the largest and most powerful states in Europe. Yet their tax systems were undeveloped and neither monarchy had access to credit or financing at low or reliable rates of interest. Tax farming was widely used in both England and France to collect revenue. The most important tax in England was the Customs, comprising the Great Customs on wool, the Petty Customs which were imposed on cloths, silks, and other goods, and tonnage and poundage. Until the introduction of the Excise tax on internal trade in 1643, these remained the most important forms of ordinary revenue (Bonney, 1995; Braddick, 1996). English monarchs alternated between directly supervising collection, appointing local officeholders, and allocating the right to collect the Customs to a farm who paid the king a fixed lease price and retained the residual revenue as profit (see Fryde, 1959; Kaeuper, 1973).

The French king relied on the royal *tailles* and numerous local taxes.<sup>6</sup> The *tailles* were collected either on persons or property, depending on the region involved. The various local taxes basically fell into the category of either a *gabelle* (tax on salt), an *aide* (sales tax), a *traite* (customs duty), or part of the *domaine* taxes. These taxes were farmed by private individuals (Matthews, 1958). In France, the royal *tailles* and the tax farms constituted the greater part of revenues for the crown in 1500 (Clamageran, 1867).

We develop a model to explain the choice of the crown over how to allocate the rights to collect taxes as well as the amount the crown invests in fiscal capacity. There are two types of players: a crown and  $n$  tax farmers. Each tax farmer denoted by  $i \in n$  has a unique marginal cost of collection  $\theta_i$  where  $\theta$  is uniformly distributed between  $\underline{\theta}$  and  $\bar{\theta}$  such that the lowest cost tax collector has cost  $\underline{\theta}$ . The distribution of  $\theta$  has mean  $\mu(\gamma, \rho)$  and variance  $\sigma^2(\gamma, \rho)$  where  $\mu'_1 > 0$  and  $\mu'_2 < 0$  and  $\sigma_1^{2'} > 0$  and  $\sigma_2^{2'} < 0$ .  $\gamma$  represents underlying fiscal heterogeneity which we think of as stemming from geography.  $\rho$  represents investment in fiscal standardization by the crown. Tax farmer  $i$ 's valuation over the fiscal rights embodied by the tax farm lease is decreasing in his marginal cost of collection such that he obtains  $V(\theta_i)$  for leasing the tax farm, where  $V'(\cdot) < 0$  and  $V''(\cdot) < 0$ .

Figure 1 shows the choices available to the crown and the tax farmers, and the order in

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<sup>6</sup>The royal *taille* should not be confused with the 'seigneurial *taille*' which was collected by landholding nobles. The seigneurial *taille* was eliminated by an Ordinance of 1439 which simultaneously made the royal *taille* more legitimate and regular (Picot, 1979, 327–30).

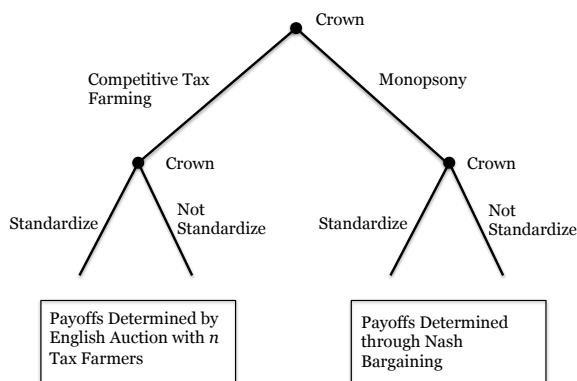


Figure 1: Contract Allocation Game

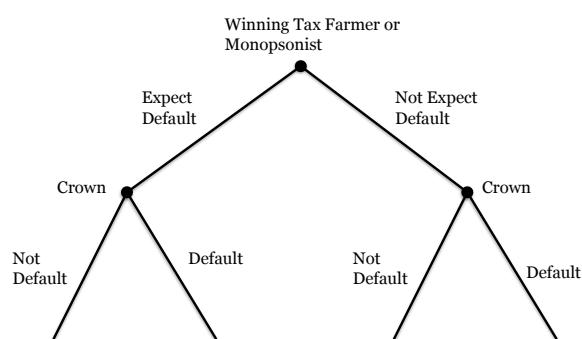


Figure 2: Financial Intermediation Stage Game

which they are made. First, the crown decides how to allocate fiscal rights.<sup>7</sup> The crown can allocate the right to collect taxes competitively, or, decide to give it to a monopsonist. Under competition, the crown offers the contract to the  $n$  farmers and leases out the contract to the farmer who bids the highest for it in an English (ascending bid) auction. Under monopsony, the crown offers the contract to a cabal of tax farmers and payoffs are allocated according to the Nash bargaining solution. If the crown collects the taxes itself, it faces the same marginal cost as the least profitable tax farmer ( $\theta_{crown} = \bar{\theta}$ ).

After deciding how to allocate fiscal rights, the crown then makes a dichotomous decision to invest ( $\rho = 1$ ) or not invest ( $\rho = 0$ ) in standardizing the fiscal system by establishing common weights and measures, making the tax system more uniform, and reducing opportunities for evasion. Standardization reduces both the variance and the mean of the cost of tax collection:  $\frac{\partial \sigma^2(\gamma, \rho)}{\partial \rho} < 0$  and  $\frac{\partial \mu(\gamma, \rho)}{\partial \rho} < 0$ . There is an exogenous cost of investing in standardization  $\kappa$ . Finally, a contract is written that sets the payoffs to the crown and either the winning tax farmer (under competition) or the monopsonist.

The contract runs for two periods and can be renewed. In the first period, the crown receives the contractually agreed upon first period payments plus any loans on second period receipts. These loans were called anticipations as they were in theory future tax revenues: they allowed the king to borrow money now on the understanding that it would be repaid out of future tax revenue. In the second period the crown chooses whether to default on the contract. If there is no default, the tax farmer receives second period receipts. He pays the crown the

<sup>7</sup>Historically, the nature of these rights could vary quite a bit. They included, for example, grants to collect a specific tax at a set rate, monopoly rights to the sale of some product at a set price, or the right to sell licenses. We will often refer to all of these sorts of rights as ‘taxes’.

difference between the contractually agreed upon amount and the anticipations owed him. If the crown chooses to default, then the contract with the original farmer, who receives nothing in the second period, is broken. Under competition, the contract is re-leased to another farmer. Under monopsony, in the event of default, management of the fiscal rights revert to the crown. The game then repeats. Figure 2 depicts the stage game of this repeated interaction.

The model generates the following results. (1) Competitive tax farming is optimal for the crown if the crown does not need to borrow money or if it has access to alternative sources of credit. (2) The crown has a greater incentive to invest in standardization under monopsony than under competitive farming. (3) Monopsony sustains larger amounts of lending than competition. This last result helps explain why rulers in the early modern period initially used competitive tax farming, but then moved away from it towards monopsonistic, or, ‘cabal’ tax farming as the amount of inside finance grew large during the seventeenth century. Finally, the model generates predictions that enable us to explore the long-run sustainability of cabal tax farming as an equilibrium. The cabal of tax farmers will continue to lend to the crown so long as the crown can credibly commit to not defaulting on them. However, (4) if the crown invests in standardization, the ability to sustain lending under monopsony is gradually eroded. The relationship between the crown and the cabal of tax farmers is more likely to be stable in a highly fragmented economy than in an economy with a comparatively high level of standardization.<sup>8</sup>

## 2.1 *Tax Farming without Financial Intermediation*

Suppose the crown does not initially use the tax farmers as financial intermediaries. The sole problem facing the crown in this case is an information asymmetry problem. The solution to this problem is an auction in which tax collectors reveal their type (cost) by bidding on the

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<sup>8</sup>Note that an alternative explanation for reliance on tax farming is based on risk aversion. While this explanation is undoubtedly part of the story, it fails to shed light on some of the most important characteristics of tax collection in the early modern period. According to the risk aversion hypothesis, there is an implied trade-off in which the risk-averse government sacrifices some of its potential income in return for a secure revenue stream. The first problem with this is that it does not shed light on how tax farming is organized, i.e., whether it is competitively organized or centralized. A second problem is that it is inconsistent with the fact that in both England and France farmers were permitted defalcations in the event of war or other shocks. These defalcations meant that the king rarely received a fixed amount and the receipts from the farms often varied considerably. Nor does it make sense to assume that the king was more risk adverse than the tax collectors. Third, there is no reason to suppose that the king of England became more or less risk adverse in 1604, 1671, or 1683.

right to collect the tax. If we create an ordinal ranking of the marginal costs of collection such that  $\theta_1 \leq \theta_2 \leq \dots \theta_n$ , it follows directly from our assumptions that  $V_1 \geq V_2 \geq \dots V_n$ . In other words, the farmer with the lowest marginal cost of investment in the tax will have the highest valuation which we will denote as  $V_1$ .

In sixteenth and early seventeenth century France, tax farms were allocated using ascending bid, or English, auctions. The revenue farms were also allocated competitively in sixteenth century England. In an ascending big auction between bidders with independent, private valuations, the winner will have the highest value for the farm, but will pay the valuation of the second highest bidder.<sup>9</sup> The expected value of the winning bid (which will become the lease price) is then  $B^*(V_1, n) = V_2$ , or, the value of the second highest valuation.

The winning bid allocates the tax farm contract to the collector with the lowest marginal cost of collection. Furthermore,  $\lim_{n \rightarrow \infty} B^*(V_1, n) = V_1$ . Under a uniform distribution, therefore, the winning bid  $B^*(V_1, n)$  approaches  $V(\underline{\theta})$ , the valuation of the lowest cost tax farmer. As bidding for the tax farm becomes more competitive, the winning bid will approach the true valuation of the tax collector with the lowest opportunity cost of collection and the crown expropriates all of the gains from sub-contracting collection.

Alternatively, the crown can give the contract to a monopsony of tax collectors. We call this monopsony the cabal. In this case, the crown and the cabal divide up the total tax revenue according to the Nash bargaining solution. We assume the cabal has the marginal cost of the average tax farmer:  $\hat{\theta}$ .<sup>10</sup> Therefore the value of the tax rights under the cabal is:  $V(\hat{\theta})$ . Let  $\alpha$  represent the share of this received by the cabal and  $(1 - \alpha)$  the share going to the crown. In this case the cabal obtains:  $\alpha V(\hat{\theta})$  and the crown receives:  $(1 - \alpha)V(\hat{\theta})$ . If the crown does not lease the contract to the cabal it obtains  $V(\bar{\theta})$  which is the value of the tax farm under direct collection. The net total surplus which is maximized by the Nash bargaining rule is therefore:

$$[\alpha V(\hat{\theta})] \cdot [(1 - \alpha)(V(\hat{\theta}) - V(\bar{\theta}))]. \quad (1)$$

The Nash bargaining solution maximizes the surplus relative to the status quo. Maximizing equation (1) yields shares for the cabal and the crown respectively equal to:

$$\alpha = \frac{1}{2} \left( 1 - \frac{V(\bar{\theta})}{V(\hat{\theta})} \right) \quad ; \quad (1 - \alpha) = \frac{1}{2} \left( 1 + \frac{V(\bar{\theta})}{V(\hat{\theta})} \right).$$

<sup>9</sup>This relies on the revenue equivalence theorem.

<sup>10</sup>Our results hold so long as  $\theta_{cabal} < \theta_{crown}$ .

Under cabal tax farming, the payoffs for the crown and for the cabal are therefore given by:

$$\text{Crown's payoffs} = \frac{1}{2}(V(\hat{\theta}) + V(\bar{\theta})) ; \quad (2)$$

$$\text{Cabal's payoffs} = \frac{1}{2}(V(\hat{\theta}) - V(\bar{\theta})) . \quad (3)$$

It is straightforward to see that the payoffs to the crown under cabal tax farming are inferior to those under competition, since  $V(\underline{\theta}) > \frac{1}{2}(V(\hat{\theta}) + V(\bar{\theta}))$ . This generates the following proposition:

**Proposition 1** *Competitive tax farming will always be preferred to centralized tax farming if tax farmers are not financial intermediaries.*

Using a competitive auction to allocate fiscal rights is an efficient method for overcoming the transaction costs of collecting tax revenues. The Crown will always prefer to use the market rather than direct collection to manage its fiscal system if financial intermediation is not an issue.

Now that we have established how the crown will allocate tax rights, we can examine whether or not it will invest in standardization. By investing in standardization ( $\rho = 1$ ), the crown reduces both the mean and the variance of the cost of tax collection. In Appendix 2 we establish the following result.

**Proposition 2** *The crown has less incentive to invest in standardization under competitive tax farming relative to both cabal tax farming and direct collection.*

Intuitively, standardization reduces the uncertainty the crown faces over the costs of collection. However, under competition, those costs are already being overcome using the information revelation properties of the auction mechanism. Standardization also reduces the individual comparative advantage of particular tax collectors who were previously able to utilize local and tacit knowledge of the tax system of a given city or region. Thus, standardization is worth less under competition than when using the cabal. In effect, market mechanisms (such as auctions) and standardization are substitutes, not complements.



## 2.2 Tax Farming with Financial Intermediation

We now consider what happens when the crown borrows a portion of second period returns  $x$  from the tax collector in the first period, with the understanding that this loan will be deducted by the collector from second period payments. This borrowing creates a commitment problem since the crown can choose to renege at the beginning of the second period of the contract and re-lease the tax farm to another collector.

We denote a tax collector's valuation for the tax farm using superscripts  $ND$  to represent no default and  $D$  to represent default. As discussed above, the expected value of the winning lease price under no default is  $B^*(V_1^{ND}, n)$  which approaches the winning farmer's true valuation,  $V_1^{ND}$ , as  $n$  becomes large. Tax farmers do not discount between periods. The expected lease payments over the course of the tax farm contract can be decomposed as,  $B^*(V_1^{ND}, n) = B^*(v_{11}^{ND} + v_{12}^{ND}, n) = B^*(v_{11}^{ND}, n) + B^*(v_{12}^{ND}, n)$  where  $v_{1j}$  is the return from a tax farm in period  $j = (1, 2)$ . This allows us the convenience of assuming that the winning tax collector pays his receipts to the crown as he gets them and write these payments as:

$$\begin{aligned} P_1^{ND} &= B^*(v_{11}^{ND}, n) + x; \\ P_2^{ND} &= B^*(v_{12}^{ND}, n) - x, \end{aligned}$$

where  $P_1^{ND}$  is the first payment on the lease, and  $P_2^{ND}$  is the second payment under the assumption that the crown is not defaulting.

If the crown chooses to breach the contract, then he re-releases the farm to the  $n - 1$  remaining tax farmers. The remaining farmers each get a signal as to the value of second period receipts,  $s_j$ . We assume this is a pure common value auction such that,  $v_{12}^D = \sum_{i=1}^{n-1} s_i / (n - 1)$  and knowing all of the signals would give you the correct value for the tax farm. Assuming that the signals are ranked such that  $s_1 > s_2 > s_{n-1}$ , the winning bid will be  $B_D^*(s_2, s_3, \dots, s_{n-1})$  where subscript  $D$  denotes that this is the winning bid in the event of default. The winning bid incorporates all of the  $n - 2$  signals provided by those who dropped out of the auction at a given price. Furthermore, like the private values auction, as the number of bidders, and thus signals, becomes very large, the winning bid will approach the true value of second period receipts from the tax farm. The second period payment to the crown under default is then:  $P_2^* = B^*(s_{22}, s_{23}, \dots, s_{2,n-1})$ . Having calculated the crown's expected payoffs under default and no default, we use backwards induction to find the equilibrium strategies for the

crown and a representative farmer in the stage game.

Under what conditions will the crown renege? The crown incurs both a cost and a benefit from engaging in default. The cost is that he must accept a lower bid on second period payments from the  $n - 1$  remaining farmers competing to take over the tax farm. The benefit is that he expropriates from the original tax collector any loans paid in the first period  $x$ . In other words, he will renege if

$$x \geq \Delta B, \quad (4)$$

where  $\Delta B$  is the difference between the original second period lease payment and the expected payment resulting from re-leasing the contract, or,  $B^*(v_{22}^{ND}, n) - B^*(s_{22}, s_{23}, \dots, s_{2,n-1})$ .

As the number of bidders,  $n$ , goes to infinity,  $\Delta B$  goes to zero. The more competitive the auctions for tax farm contracts, the less of a punishment the crown faces for default in the stage game. In the extreme case in which the tax farm auctions are perfectly competitive, the crown will default on any anticipations greater than zero in the stage game.

Finally, we can extend our analysis to allow for the fact that the relationship between the crown and his tax collectors continued for years or even decades by allowing the two-period stage game to be infinitely repeated. In approaching this problem, we draw on the large literature on sovereign lending. One approach, epitomized by the work of Bulow and Rogoff (1989), emphasizes that, in the absence of credible third party enforcement, lending cannot be sustained with more than one lender. External sanctions are required in addition to cutting off credit services to the sovereign in the event of a default. A second approach, which we call the internal enforcement approach, shows how lending can be possible even in an ‘anarchic’ environment through the appropriate use of renegotiation proof punishment strategies.<sup>11</sup>

Even in an infinitely repeated game, it remains impossible for the king to credibly commit to repay the tax farmers so long as tax farming remains competitive. This is because the individual tax farmers cannot sanction the king if he defaults. In contrast, we show that, given a sufficiently high discount factor  $\delta$ , it is possible for a cabal of tax farmers to lend to

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<sup>11</sup>Wright and Kletzer (2000) show how lending can be supported using renegotiation-proof punishment strategies such as temporary payments moratoria. They demonstrate that intertemporal trade can occur even when there are multiple lenders so long as lenders can collude to withhold funds from the sovereign in case of default and use coordinated punishment strategies. This framework has recently been given empirical support by Drelichman and Voth (2011a).

the king. As in Wright and Kletzer (2000), a credit relationship can be sustained between the king and the cabal of tax farmers in the absence of external sanctions if the cabal can impose multilateral punishment on the crown.

Under cabal tax farming, the payoff to the king if he does not renege is equal to the discounted presented value of the revenue he obtains from the cabal. If the king reneges he obtains a one-off payment equal to  $x$  plus the first period revenue from the cabal. For convenience we assume that the farmers play a grim trigger strategy: in all future periods the king obtains the revenue associated with direct collection.<sup>12</sup> In summary, the payoffs to the King from not defaulting and defaulting are, respectively:

$$\mathcal{V}^{\mathcal{ND}}_{\text{cabal}} = \frac{[V(\hat{\theta}) + V(\bar{\theta})]}{2(1 - \delta)} \quad , \quad \mathcal{V}^{\mathcal{D}}_{\text{cabal}} = x + \frac{[V(\hat{\theta}) + V(\bar{\theta})]}{4} + \frac{V(\bar{\theta})}{2} + \frac{\delta}{1 - \delta} V(\bar{\theta}) \quad .$$

There exists an equilibrium such that the king does not default and the farmers do not expect default if  $\mathcal{V}^{\mathcal{ND}} \geq \mathcal{V}^{\mathcal{D}}$  or:

$$\delta^* \geq \frac{x - \Delta V}{x + \Delta V} \quad , \quad (5)$$

where  $\Delta V = \frac{V(\hat{\theta}) - V(\bar{\theta})}{4}$ . This can be satisfied for values of  $\delta < 1$  so long as  $\hat{\theta} < \bar{\theta}$ . This leads to our third proposition:

**Proposition 3** *The amount of lending supported under monopsony, or, cabal tax farming is greater than under competitive tax farming.*<sup>13</sup>

Lending can be sustained under cabal tax farming because the cabal of financiers can impose a multilateral punishment on the crown. Tax collectors require a degree of monopsony power in order to lend to the crown because this increases the opportunity cost faced by the crown of defaulting and, therefore, makes default less likely.

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<sup>12</sup>Note, more generally these grim trigger strategies are not renegotiation proof because the king and the cabal may have incentives to re-contract after a default (see van Damme, 1989). A richer setting might allow the tax farmers to keep more of the tax revenue as ‘punishment’ in the event of a default by the king. In this case, we would observe cycles of default and no borrowing followed by periods of lending as in Wright and Kletzer (2000).

<sup>13</sup>A proof is provided in Appendix 2.

### 2.3 The Sustainability of Cabal Financing

Lending is possible if  $\delta \geq \delta^*$ . However, this condition does not rule out the possibility of defaults. It suggests that defaults will be associated with developments that either affect  $V(\hat{\theta})$  or  $V(\bar{\theta})$  or shocks that increase the weight that the crown places on the present, such as wars or the threat of revolution which reduce  $\delta$ .

This condition also sheds light upon the long-run sustainability of cabal tax farming and financing as an equilibrium. The variables  $V(\hat{\theta})$  and  $V(\bar{\theta})$  depend on the costs of tax collection which in turn are affected by two variables: the extent of underlying heterogeneity  $\gamma$  and investments in standardization  $\rho$ . To see how both of these variables affect the long-run sustainability of cabal tax farming and financing as an equilibrium, we rely on the fact that since  $\theta$  is uniformly distributed and write  $\bar{\theta} = \mu + \sqrt{3} \cdot \sigma$  and  $\underline{\theta} = \mu - \sqrt{3} \cdot \sigma$  and  $\hat{\theta} = \frac{1}{2}(\underline{\theta} + \bar{\theta}) = \mu$ . Less underlying fiscal heterogeneity  $\gamma$  is associated with a lower variance in the costs of tax collection and thus larger payments to the crown. But lower  $\gamma$  also means a smaller difference between  $V(\hat{\theta})$  and  $V(\bar{\theta})$  and therefore according to equation 5 makes insider finance and lending harder to sustain in equilibrium. Similarly, investments in standardizing the fiscal system ( $\rho = 1$ ) reduce the cost and variance of tax collection ( $\mu$  and  $\sigma$ ). This benefits the crown directly but also makes lending harder to support in equilibrium because it reduces the punishment that the king faces if he defaults on the tax farmers. Therefore, as  $\sigma(\gamma, \rho) \rightarrow 0$  lending becomes impossible to sustain for  $\delta < 1$ . This generates our final result:

**Proposition 4** *Cabal tax farming is more sustainable in an economy where standardization is low ( $\sigma(\gamma, \rho)$  is high). Cabal tax farming is less likely to be sustainable in economies which have less underlying fiscal heterogeneity (low  $\gamma$ ) or have invested in standardization (high  $\rho$ ).<sup>14</sup>*

Together, Propositions 2 and 4 allow us to characterize cabal tax farming as an intermediate institution: it encouraged the state to make investments in standardizing the fiscal system that it would not otherwise have made, but in so doing it sowed the seeds of its own destruction. Our approach highlights the fragility of cabal tax farming as an equilibrium. In particular, it also suggests that the tax farmers could have foreseen that investments in fiscal capacity and standardization would lead to their decline and eventual expropriation. As we explain below, in many ways, both the English and the French tax farm farmers did recognize

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<sup>14</sup>We prove this proposition in Appendix 2.

their increasingly fragile positions and tried to protect their status by strengthening their connections with political elites.

### 3 APPLYING THE MODEL TO HISTORY

The model suggests the institutional equilibrium of an early modern state will depend on the following factors: the amount of lending required by the crown from its tax collectors ( $x$ ); the initial amount of fiscal heterogeneity  $\gamma$ ; and the extent to which it invests in fiscal standardization:  $\rho$ .

The French fiscal system was more fragmented (higher  $\gamma$ ) in 1500 than was England's (Fryde, 1991).<sup>15</sup> While lords in England had converted their feudal rights into cash dues in the late middle ages, the seigneurial system remained in place in France: the French nobility continued to extract numerous taxes, fees, licenses, and fines which varied from region to region.<sup>16</sup> The seigneurial tax regime increased overall tax incidence and made resistance to royal tax increases greater. It reduced the ability of the crown to directly collect taxes; and it created greater uncertainty about the collection and assessment of taxes as each local noble had some discretionary authority over the enforcement and exact definition of rules, standards, and taxes.<sup>17</sup>

Figure 3 summarizes the model equilibria as well as illustrating the historical paths taken by England and France through these equilibria between 1500 and 1800. Table 1 outlines some of the key dates in the gradual institutional development in France from competitive tax farming to centralized cabal tax farming. Table 2 gives some of the key dates for England,

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<sup>15</sup>Geographical differences help to explain this variation. Historians have long noted that the compact geography of southern England made precocious state formation and centralization there possible. The French monarchy faced a longer struggle to establish a state. The different geography of the two countries also explains why internal trade barriers and tolls provided an important source of revenue for local rulers in France; in England, sea transport was always more important than inland transport and this reduced the value of local trade barriers and made it more straightforward for the monarchy to take control of local customs taxes (Gras (1912, 123–126), Heckscher (1955, 46)).

<sup>16</sup>For example, most crimes were tried by judges appointed at the seigneurial level. In addition, local lords possessed the right to set the weights and measures within their lands (Renauldon, 1765, 339). This ability could be used by lords in conjunction with more explicit taxes, paid in goods and services, to significantly increase the tax burden on their subjects, for example, by increasing the size of a foot ('pied') (Heckscher, 1955, 112).

<sup>17</sup>Renauldon described the effect of the local tolls and tariffs (the peages) during the sixteenth century as follows: 'One was not able to go up to or down from a region on the major rivers without being stopped to pay considerable seigneurial dues. It was the same by land, at each village, each town, each crossroads, the merchants and their merchandise were inspected and taxed (*rançonnées*)' (Renauldon, 1765, 310-11).

showing how it adopted competitive tax farming later than France and then rapidly moved towards reliance on a cabal of tax farming for access to credit. Fiscal institutions in both countries evolved in accordance with the model's predictions. When both standardization and lending are low (lower left quadrant of Figure 3), competitive tax farming is effective in overcoming the high costs of monitoring tax collectors. Because England had a less heterogeneous fiscal system in 1500 (lower  $\gamma$ ) it was less dependent on competitive tax farming than France. Increased borrowing needs in both countries (higher  $x$ ) made competitive tax farming unsustainable and both England and France moved toward cabal farming (the upper left quadrant).

Under cabal farming, the crown has stronger incentives to invest in standardization ( $\rho$ ) since it no longer benefits from the information revelation properties of competitive markets to reveal the costs of collection of the tax collectors. Hence the institutional trajectory of both countries moved to the right, towards greater standardization (upper right quadrant).

However, as standardization increases, the opportunity cost of reneging on fiscal contracts also decreases. Thus, the equilibrium shifts from cabal farming with inside finance to direct management with outside finance (the lower right quadrant). As English institutions were, from the medieval period onwards, more standardized than those of France, English rulers were never as dependent on competitive tax farming as their French counterparts were. Thus, when English rulers started using cabal farming in order to facilitate inside finance after 1604, this arrangement was much less stable than it was in France. Consequentially, the French fiscal system remained in an equilibrium in which fiscal rights were managed by cabals of wealthy financiers up until the French Revolution. In contrast, English monarchs were eventually unable to credibly commit to these cabals of tax collecting financiers and this led to the demise of this intermediate institution in the second part of seventeenth century, as illustrated in Table 2.

Our model suggests that one of the reasons why cabal tax farming was more stable in France was that country's greater heterogeneity: a legacy of both its geography and its robust seigneurial regime. The demise of cabal tax farming in England led the crown to seek alternative sources of credit and paved the way for Parliamentary-based taxation and the subsequent financial and fiscal revolutions that occurred in England after the Glorious Revolution. In France, the persistence of cabal tax farming through the eighteenth century impeded attempts to reform finances and contributed to the fiscal crisis that triggered the French Revolution.

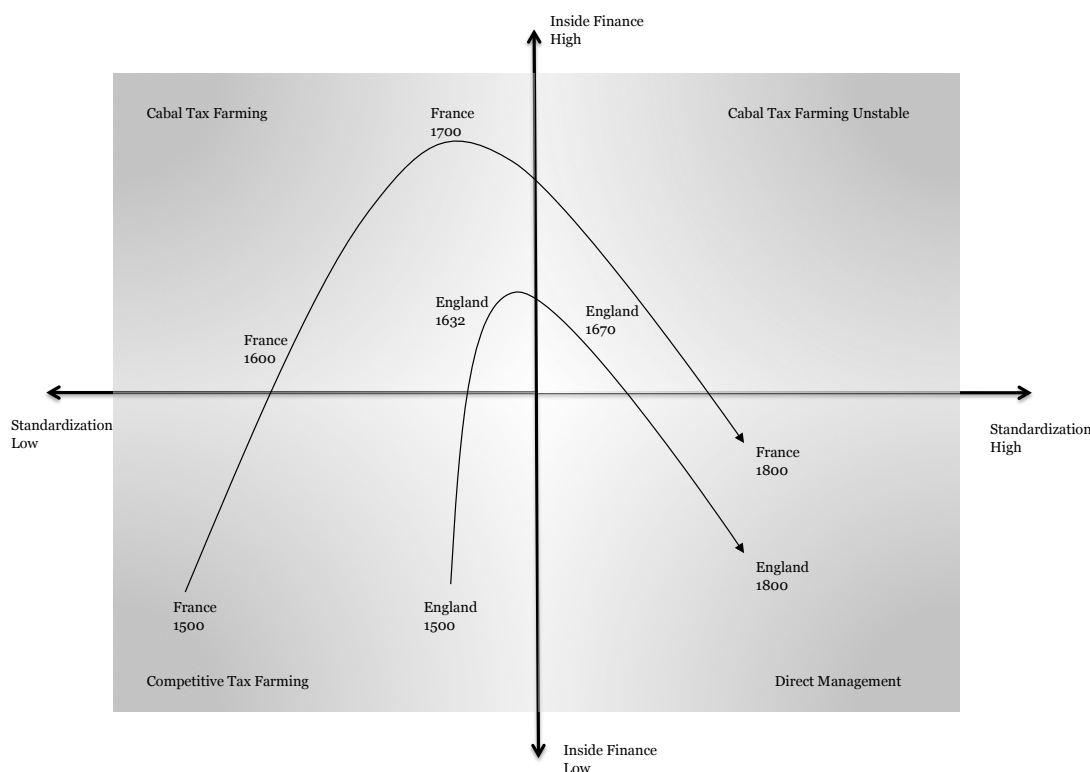


Figure 3: Summary of model equilibria and historical paths of England and France

### 3.1 *Competitive Tax Farming in England and France*

In 1500, the costs of tax collection were high in both England and France. Local knowledge and connections were particularly important in France. A local noble in Bordeaux would find it easier to negotiate local customs and laws in order to manage the tax farm on the wine trade in that region and therefore would value the tax much higher than, say, a noble from Auvergne.

These costs made direct collection prohibitive. As a result, tax farms were competitively farmed out in France throughout the high middle ages (Lyon and Verhulst (1967, 49–52), Strayer (1936), and Johnson (2006a)). Until the early sixteenth century, the farms were leased out at the parish level (Durand, 1971, 50). Although these small farms were subsequently unified, the English auctions used to allocate the farms remained competitive up until the mid-seventeenth century according to evidence on bidding provided by Bayard (1988).

English rulers were less reliant on decentralized methods of tax collection in the middle ages

Year	France
Before Early 1500's	Competitive Tax Farming at the parish level
1527	Jacques de Beaune (Superintendant of Finances for Francis I) executed
1559	Failure of Grand Parti de Lyon (marks the end of 'outside finance')
1578 – 1598	Gabelles (salt taxes) consolidated into single cabal of tax farmers
1598	Traites (customs) consolidated into single cabal of tax farmers
1604	Aides (sales taxes) consolidated into single cabal of tax farmers
1635	France enters the Thirty Years' War (lending through tax farms increases)
1661	Louis XIV and Colbert institute Chambre de Justice
1681	A single cabal of tax farmers, the Company of General Farms, is formed

Table 1: Chronology of tax farming in France: 1500–1700.

Year	England
1568	Competitive farming of the Customs is introduced.
1604	The creation of the General Farm begins the consolidation of the Customs.
1621	Silk farms integrated into the Great Farm.
1632	Petty Customs farms consolidated into the Great Farm.
1641	Customs farmers expropriated by Parliament.
1660	The Restoration of the monarchy. Custom farmers are restored.
1671	Customs farming contract cancelled. Customs are placed under government supervision.
1683	Excise farming contract cancelled. The Excise is placed under government supervision.
1688	The Glorious Revolution.
1694	Foundation of the Bank of England and establishment of the National Debt.

Table 2: Chronology of tax farming in England: 1550–1700.

in part because they remained heavily dependent on revenue from the royal domain until the end of the sixteenth century. When there were moves to modernize the Customs tax regime, however, England copied the example of France. Elizabeth I (1558–1603) wanted to follow 'other princes in like causes' such as the king of France and 'to grant our Customs to farm so as there be sufficient persons that have offered to take them' (quoted in Ramsay, 1952, 147). The Customs were gradually put out to farm from the late 1560s onwards, and the system used to allocate collection rights was competitive and decentralized.<sup>18</sup>

Proposition 1 indicates that competitive tax farming is the most effective way to raise revenue

<sup>18</sup>A letter to William Cecil, Lord Burghley, in 1576 illustrates the competitive nature of the bidding process 'Her Majesty maketh stay in resolving therein until she receive from your Lordship the several rates to the end that she may choose the highest' (quoted in Read, 1925).



when costs of collection are high. As residual claimants, tax farmers were less likely to collude with smugglers than were ‘local officials for whom the temptations to laziness or corruption were considerable’ (Braddick, 1996, 60). Historians agree that the Queen ‘obtained more from the farms she leased to tax farmers, like the celebrated Thomas ‘Farmer’ Smythe, than she had ever obtained from direct collection’ (Read, 1925, 384). Tawney (1958, 91) describes it as ‘one of the few of the Crown’s financial innovations to have been met with a measure of approval’.

### 3.2 *The Rise of Inside Finance and The Move Towards Cabal Tax Farming in France*

The need to borrow large amounts of money at short notice pushed rulers away from the competitive tax farming equilibrium. In France, after 1500, the increased costs of warfare meant that tax collectors came to be used to provide loans, or inside finance, in addition to collecting taxes. While the Spanish monarchy could rely on imports of American silver and a close relationship with Genoese banking families to secure credit, the French monarchy did not have access to outside sources of finance, at least not on the scale required.<sup>19</sup> As tax collectors were increasingly used as credit intermediaries by the crown, the inability of the king to credibly commit gradually became a cost which rivaled that of finding the lowest cost collector.<sup>20</sup>

No French data on lease prices and lending through the tax farms exist for the sixteenth century. We can, nonetheless, trace the increasing importance of the loans provided by the tax farmers by examining time series data on lease prices during the first half of the seventeenth century. During this period, we also have incomplete (and therefore lower-bound) estimates of anticipations that were made through the farms (these correspond to the variable  $x$  from the theory section). Figure 4 shows the real aggregate value of lease prices between 1600 and 1656. Figure 5 shows the value of loans made through the tax farms as a proportion of the lease price between 1614 and 1656.<sup>21</sup> Both figures illustrate the

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<sup>19</sup>French rulers rarely went to the great Italian banking families unless, ironically, they happened to be crossing the Alps to fight in Italy (Wolfe, 1972, 40). It was not until 1540 when the first truly significant foray of the French crown into outside finance was set up under the auspices of the Grand Parti of Lyon (Wolfe, 1972, 68). But this system failed by 1559 and, for the most part, this marked the end of the use of outside finance in France for the next hundred and fifty years (Bayard, 1988, 15).

<sup>20</sup>This inability to commit was epitomized by the execution of Jacques de Beaune, sire de Semblançay, superintendent of finances, in 1527 who had lent money to the king (Wolfe, 1972, 74).

<sup>21</sup>These data are compiled from those provided by Bonney and Bonney (2011) who reproduce the tax records kept by Jean-Roland Malet (c. 1675–1736) as secretary to the Controller General Desmarets (Bonney and Bonney, 1993).

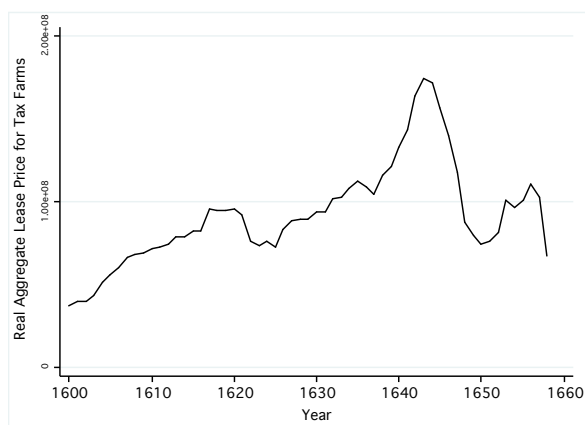


Figure 4: Aggregate Revenues From French Revenue Farms, 1600–1656. Source: See text.



Figure 5: Loans as a Proportion of Lease Prices, 1614–1656. Source: See text.

important role of the tax farms in providing credit to the king. The value of anticipations through the taxes varied between fifty percent and one-hundred and thirty percent of the value of lease prices. Furthermore, it is clear that, at least before 1640, these high ratios were not due to decreases in the value of lease prices as Figure 4 shows a consistent increase in the real aggregate value of lease prices during this period.

The increasing reliance on inside finance by the crown resulted in two developments. First, as predicted by equation (5), the competitive allocation of the tax farms became inconsistent with lending. Johnson (2006a), Bonney (1979), and Bayard (1988) show that during the late sixteenth century and first half of the seventeenth century, contracts on the tax farms were frequently breached. For example, between 1598 and 1655, only a third of tax farm leases went for their entire contracted length. Twenty percent had their leases broken over forty percent of the time (Bayard, 1988, 123).<sup>22</sup>

The second development was the shift away from competitive tax farming and towards cabal tax farming. This supports Proposition 3. There were two big waves of consolidation. The first occurred in the aftermath of the failure of the Grand Parti de Lyon in 1559 and culminated in the unification of the gabelles taxes in 1578 and then again in 1598 so that by the middle of the seventeenth century there was a single salt tax for the vast center of the country known as the Cinq Grosses Fermes. Similarly the royal customs taxes (*traites*) were also consolidated for the Cinq Grosses Fermes in 1598 and the same thing was done for

<sup>22</sup>Heumann (1938) tells the story of the tax farmer Antoine Feydeau who controlled most of the aides and gabelles tax farms between 1619 and 1623. He also made significant loans to the king. After the crown ‘renegotiated’ his loans, Feydeau was forced to abandon his tax farm leases and, ultimately flee the country.

sales taxes (the aides) in 1604 (Bonney, 1979). By the first half of the seventeenth century, the tax farms had become more consolidated and, as a consequence, competitive auctions of the contracts played less of a role in their allocation. For example, between 1600 and 1656 the single largest tax farm accounted for one-third of the revenues from the whole tax farm system. The two largest farms accounted for fifty percent of revenues (Johnson, 2006a, 7).

A further wave of consolidations came after 1661, instigated by the Finance Minister of Louis XIV (1643–1715), Jean-Baptiste Colbert. Taking advantage of a recent financial scandal surrounding his predecessor, Nicolas Fouquet, Colbert revoked the leases of the previous tax farmers and began laying the ground-work for the unification of all the farms into a single monopsony that would become known as the Company of General Farms (Ferme Générale).<sup>23</sup> Colbert negotiated a lease unifying the aides in 1663 and the gabelles and the traites in 1664. Then, in 1668, he succeeded in unifying all the major farms. Colbert followed up his creation of a unified ‘General Farms’ by issuing ordinances in May 1680, May 1681, and June 1681 which gave legal basis for the operation of the new tax farm monopsony and granted it status as a legal person (Jourdan et al., 30, May 1681).<sup>24</sup> With a brief interlude caused by the John Law affair, the monopsony of tax farmers represented by the Company of General Farms managed all the king’s tax farm revenues up until the Revolution. The tax farms did not provide the majority of government revenue but they were an important part of the French fiscal system throughout this period.<sup>25</sup> The equilibrium in France shifted from the lower-left quadrant of Figure 3 to the upper-left quadrant. As we will now see, a parallel development occurred in England during the first half of the seventeenth century.

### 3.3 *The Rise of the Great Farm of the Customs in England*

England’s isolation from the Continent initially allowed it to avoid the increased financial burdens associated with the Military Revolution. However, despite this, the crown’s need for revenue began to increase after 1600. Elizabeth’s successor James I (1603–1625) was in the words of one historian, ‘a super-borrower’, whose demands could not be met by the

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<sup>23</sup>On the trial of Fouquet and the farmers, see Dessert (1984). For the outline of the unification of the farms after 1661, see Dessert and Journet (1975) and Johnson (2006a).

<sup>24</sup>See Matthews (1958) and Johnson (2006a) for more detail on the inner working of the Company of General Farms.

<sup>25</sup>According to Durand (1971, 75) between 1662 and 1773, tax farms constituted 45% of ordinary revenue. This is likely to be an upper bound on the importance of the tax farms.

commercial money market in London (Tawney, 1958, xv).<sup>26</sup>

This exogenous increase in borrowing ( $x$ ) shifted England towards the upper-left quadrant of Figure 3. As in France, this was accompanied by a move from competitive to cabal tax farming (Proposition 3). In 1604, the Great Customs were consolidated into a single farm. This centralization should be understood in terms of providing the means for a cabal of financiers to provide credit to the king: the ‘right to farm the Customs was the reward of those who were prepared to meet the Crown’s demand for loan; the ability to do this could be found only in *syndicates* of business men’ (Ashton, 1957, 313, emphasis added). This syndicate of tax farmers became prominent bankers to James I and Charles I (1625–1649).

Figures 6 and 7 plot data collected by Ashton (1957, 1960). Figure 6 plots the annual lease price, or rent, for the Great Farm. The annual lease price for the first farm was £112,400; by 1638 this had risen to £172,500 and in 1640, together with the lease price of the petty farms (£60,000) it represented thirty-seven percent the king’s total revenue.<sup>27</sup> More significant was the increased use of anticipations during the 1620s and 1630s (Figure 7). Under James I, it was typical to anticipate in advance that year’s rent or the rent for the subsequent year. During the reign of Charles I, the crown began to anticipate the rent for the Great Farm for several years in advance (Thomas, 1983, 121). Ashton notes that the crown did not attempt to raise the lease price in order to maximize revenue in the understanding that this was the ‘price which it chose to pay for the new services performed by the farmers’ (Ashton, 1956, 16).

The tax farmers played a vital role in enabling Charles to rule without calling Parliament (Sharpe, 1992, 124–130). As the king’s other sources of credit dried up and attempts to increase his prerogative incomes met resistance, he became increasingly reliant on the Customs farmers. Loans became longer-term and more secure (Thomas, 1983). By 1640, on the eve of the English Civil War (1642–1648), three additional Customs farms: the petty farms on French and Rhenish wines, sweet wines, and currants had been consolidated and were now

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<sup>26</sup>Elizabeth I limited her expenditures and relied on feudal income and the sale of domain lands. Her successor could not continue the latter policy, and had no inclination to attempt the former one (see Thomas (1983), Wilson (1984), and Cramsie (2000)). As a Scot, James’s position was less secure than Elizabeth’s so he had to distribute patronage more generously, and he had a large royal family to support (each of the royal children required their own household and court).

<sup>27</sup>The receipts from the Great Farm (£150,000) and petty farms (£60,000) alone accounted for more than twice the revenue the obtained from all the crown lands. Hence Sharpe notes ‘the monarchy was now funded by trade rather than estates’ (Sharpe, 1992, 128). A separate overdraft facility allowed the tax farmers to lend more to the king (van der Wer, 1977, 382).



Figure 6: Nominal rents of the Great Farm of the Customs in England. Source: Ashton (1957, 1960).



Figure 7: Anticipations over rents of the Great Farm of the Customs in England. Source: Ashton (1957, 1960).

held by the syndicate of the Great Farm (Ashton, 1960, 105). In both England and France, therefore, the increased demand for inside finance was associated with a move away from competitive, and towards, cabal tax farming.

## 4 CABAL TAX FARMING AS AN INTERMEDIATE INSTITUTION

### 4.1 Investments in Standardization in France

The model suggests that states should have shifted away from competitive tax farming towards cabal tax farming as the inside finance became more important (Proposition 1) and that this shift should have been accompanied by an increase in investments in fiscal capacity (Proposition 2). We can now provide evidence for Proposition 2 by studying investments in standardization in France.

In order to show the relationship between the move to cabal farming in France and increased investment in standardization ( $\rho$ ) we examine the crown's attempts to eliminate the seigneurial system. We compile a list of the edicts issued by the monarchy with regards to five key seigneurial institutions.<sup>28</sup> The five institutions we focus on are the terrier, seigneurial

<sup>28</sup>The table is reproduced in Appendix 1 as Table A1. We rely on Renaudon's *Historical and Practical Treatise on Seigneurial Rights* to compile the arrêts and edicts. Traditionally, arrêts concerned a single change to a law; edicts dealt with multiple changes. We count each separate rule change in an edict as equivalent to one arrêt. Renaudon was a seigneur himself and wrote his book in the mid-eighteenth century as an aid to his contemporaries who were confronting the increasing encroachment of royal power on their traditional rights. As such, if anything, the alterations to the rules mentioned by Renaudon should be biased against rulings knocking down traditional rights.

justice, peages, corvée labor, and weights and measures. The terrier was a type of land register kept by the seigneurie as a record of the obligations of serfs and freemen to the seigneur as well as a document on which to base the collection of the taille and other taxes. Beginning in 1659 a series of arrêts were issued that defined the rights of an independent third party, a notary, to perform the survey on which the terrier was based. These arrêts reduced the discretionary authority of the local nobility by either making it easier for the seigneur's subjects to dispute the terrier, or harder for the seigneur to alter or manipulate the terrier (for instance, by preventing the replacement of a notary).

Seigneurial justice was the backbone of the old regime system of justice. The early arrêts issued by the crown were mostly concerned with requiring that the local lord provide justice (e.g., the rules of 1565 and 1600). However, as the tax system became more centralized, arrêts were issued that weakened the rights of local judges and the nobles who appointed them. Thus, an arrêt of 1668 allowed an agent of the crown (the intendant) to remove a judge from office with permission from the king. An arrêt of 1702 forbade the seigneur from appointing officers of justice without permission of the crown. An arrêt of 1716 forbids tenants of the seigneur from being appointed judges, and one in 1737 allowed the local lord to be tried in his own court.

The peages consisted of the local tolls and tariffs collected by the seigneurs. Through the arrêts we can observe the monarchy's attempts to eliminate as many of these as possible. Unable to simply revoke this particular seigneurial right across all of France, the crown adopted the strategy of requiring that the nobles provide written proof of their right to levy a specific tax.<sup>29</sup> Other arrêts outright revoked rights to levy peages in certain areas.<sup>30</sup>

The corvée represented the right of local lords to extract labor services from their serfs. The severity of the corvée across different regions of France varied greatly and many of the arrêts issued by the crown were concerned with defining the bounds of this right. For example, the arrêts of 1551 and 1666 limited the number of oxen the noble could require his serf to bring along during his labor service. Other arrêts restricted the cases in which children could be subject to the corvée (e.g., 1594 and 1608). The crown attempted to restrict the corvée where possible by requiring nobles to prove that they had 'precise title' to it (e.g., 1666).

The last category of seigneurial right addressed weights and measures. After 1660, Colbert

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<sup>29</sup>For example, the arrêts of 1579, 1663, 1666, 1665, 1669, 1668, 1683, 1693, 1711, and 1714.

<sup>30</sup>For instance, 1432, 1559, 1570, 1577, and 1680.

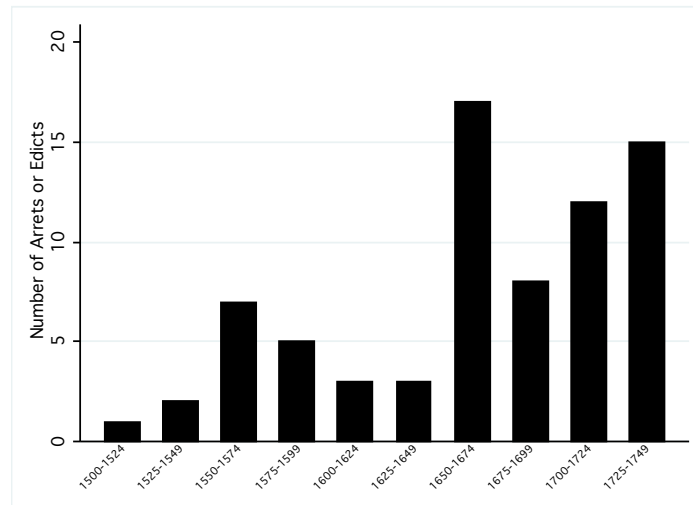


Figure 8: Number of standardizing arrêts issued by French monarchy, 1500–1749. Source: Renaudon (1765).

made a determined effort to standardize these. A letter in 1665 to the king concerns his great project to ‘bring the whole of His Majesty’s kingdom within the same statutes and within the same system of weights and measures, an undertaking very worthy of our great King’ (Colbert, 1869, 14f). Among Colbert’s achievements was the publication of Jacques Savary’s compendium of weights and measures throughout the kingdom, *Le parfait négociant* (Savary, 1675). In 1667 Louis XIV also forbade the use of the unit of currency known as the parisis. From then on, all commerce was handled using the livre tournois (Heckscher, 1955, 120).

Figure 8 shows the frequency of the arrêts recorded in Table A1. The timing of the arrêts corresponds closely with the periods during which the tax farms were being unified. There are two jumps in legislative activity in Figure 8. The first jump corresponds to the period when the Grand Parti de Lyon failed (1559), thus leading to the end of the use of outside finance and a significant shift towards inside finance. Along with this shift, there was increasing consolidation of the major tax farms, culminating in the creation of single cabal farms for the Gabelles in 1578, the Aides in 1598, and the Traites in 1604. The second spike in arrêts occurred after 1661 when Colbert was in the process of consolidating the tax farms into a single monopoly, the Company of General Farms.

Figure 8 suggests the activity of the crown in consolidating and standardizing rules at the seigneurial level. It does not give a full sense for all the standardizing reforms that were

implemented during the second half of the seventeenth century. For example, Colbert and his uncle, Pussort, codified in two great statutes civil and criminal law for all sovereign law courts (Heckscher, 1955, 126). Industrial law in France was placed under state jurisdiction (rather than handled individually by each city) by ordinances of 1667 and 1699 creating lieutenants généraux de police. Local guild rights disappeared at about the same time (Heckscher, 1955, 139). The same Jacques Savary who wrote the *Parfait négociant* also wrote much of a 1673 Ordinance in which accounting standards were laid out in detail for the first time for all French merchants. Among its requirements, the 1673 Ordinance obligated merchants to keep a book of account which, in the event of bankruptcy, they had to present to the court, under penalty of death. The rules in Savary's Ordinance, minus the death penalty, were largely adopted by the Napoleonic code of commerce in 1807 (Howard, 1932).

#### 4.2 *The Collapse of Cabal Tax Farming in England*

Proposition 4 states that an equilibrium comprising cabal tax farming and inside finance will be more fragile in a more standardized economy. We provided evidence for this proposition by examining the eventual collapse of cabal tax farming in England after 1670.

The relationship between the crown and the farmers described by equation 5 is vulnerable to exogenous shocks, such as war. Indeed, the English custom farmers were expropriated by Parliament during the Civil War (Brenner, 1993, 432).<sup>31</sup> Nevertheless, their expropriation did not represent the end of cabal tax farming; Parliament continued to rely on both tax farming and inside finance during the Interregnum.<sup>32</sup>

In 1660, the surviving tax farmers were restored to their positions and given a new contract

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<sup>31</sup>In May 1641, the custom farmers lost their leases, and Parliament refused to honor the debts the king held with them. Subsequently they were fined £150,000 'for their complicity in raising 'illegal taxes.' (Harper, 1929, 63). A bill to confiscate their estates was even prepared, although never tabled (Ashton, 1960, 111).

<sup>32</sup>Parliament experimented with both farming and direct collection for both the Customs and for the Excise tax which was introduced in 1643 and became a major source of revenue. The Excise was put out to farm in 1650. Parliament borrowed against the Customs as James I and Charles had done. Even under the Republic, established in 1649, the state's credit was little better than it had been under Charles I, and as late as 1657 it was said that 'the Public Faith [i.e., credit] of the nation is now become a public despair' (Rosevere, 1991, 11). As our model would predict, this was often unsuccessful. In 1641, the Long Parliament dismissed three London aldermen from their posts as commissioners of the Customs because of 'their inability or unwillingness to advance an additional £70,000 on security of future Customs receipts' (Coffman, 2008, 93–94).



in 1662. The restored monarchy remained financially backwards and dependent on inside finance.<sup>33</sup> Consequently, the farmers again became prominent as lenders to Charles II (1660–1685) as they had been to his father.

Our model suggests that one of the reasons why cabal tax farming was less stable in England was that the English king was never as dependent on the tax farmers. For this very reason an eventual breakdown in the relationship between the king and the farmers of the Great Farm became increasingly likely from the 1660s onwards. The difference between what the cabal was willing and able to pay for the farms and the crown's outside option of direct collection (closely related to  $\Delta V$ ) was shrinking as the investments in the Customs administration made under cabal tax farming in England made it more likely that the crown would eventually shift to direct collection. Moreover, the king's need for borrowing was reaching a level that was exceeding the capability of the farmers. In the late 1660s there were attempts to reform the Treasury which 'aimed at eliminating the crown's dependence on the Goldsmith bankers and tax farmers' (van der Wer, 1977, 383). By the end of the decade, it was possible to foresee a time when the king would have alternative, outside, sources of finance (Ashworth, 2003; Rosevere, 1991, 1969).

Historians suggest several reasons for the cancellation of the contract for the Great Farm including a personal disagreement between the Lord Treasurer, Lord Clifford, and the head of the new farming syndicate, William Bucknall, as well as the costs of the Dutch War and the king's profligacy (Chandaman (1975, 26–28), Tomlinson (1979), and Cassidy (1983)). But our model suggests that the low opportunity cost of abandoning cabal tax farming for direct collection made a break with the tax farmers inevitable. The cost to the king of predated on loans from the cabal was lower in England than in France. The Customs reverted to direct collection by default, and the new commissioners were granted salaries (Braddick, 1996).

Through the 1670s, the king's ministers tried to strike a new deal with the tax farmers. Thomas Osborne, Lord Treasurer between 1673 and 1678, 'strongly favoured the farming method as providing a firmer basis of credit' (Chandaman, 1975, 33).<sup>34</sup> But, for the reasons we have outlined, it was no longer possible for the crown to credibly commit to the farmers

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<sup>33</sup>Charles's chief minister, Edward Hyde, the Earl of Clarendon (1609–1674) emphasized the personal character of the king's finances in the first part of the 1660s, observing that '[a]s soon as an act of parliament was passed, the king sent for these bankers, (for there was never any contact made with them but in his majesty's presence)' (Hyde, 1760, 597).

<sup>34</sup>Danby held that 'It would be disastrous for the government to abandon tax farming until some other credit arrangement could be devised to offset the loss of the farmers' advance loans' (Nichols, 1971, 93).

in the way that had been possible in the 1630s. Tax farming continued to be used to collect the excise tax with the excise farmers continuing to provide credit to the king, advancing £250,000 on their receipts in 1677 (Nichols, 1971, 94). But in 1683 the excise too was brought under direct collection.

These developments occurred prior to the Glorious Revolution—so often taken as marking an institutional breakpoint in the development of the modern English state. In fact, many important institutional changes occurred prior to the Glorious Revolution (O'Brien, 2001; Rosevere, 1991; Braddick, 1996; Ashworth, 2003). Nevertheless, the Glorious Revolution was important in securing access to outside credit. After 1688, the English state borrowed on a new scale; Parliament gained control of expenditure and, from 1693 onwards, guaranteed loan repayment; the Bank of England, formed in 1694, began to issue long-term loans which now comprised a national debt (North and Weingast, 1989); and a secondary market grew up that securitized this new debt (Quinn, 2001). The formation of political parties in parliament secured lenders a commitment that parliament would not default on the new debt (Stasavage, 2002); and the establishment of ministerial responsibility curtailed the king's ability to enter into costly wars that parliament disapproved of (Cox, 2011). Access to outside finance on this scale made cabal tax farming irrelevant. Hence the Glorious Revolution marks a point of no return in the institutional development of the fiscal state in England.<sup>35</sup> After 1688, while there was some discussion of farming out the customs or excise, there was no chance of returning to the old cabal tax farming equilibrium.

#### *4.3 The Persistence of Cabal Tax Farming in France*

Proposition 4 suggests that cabal farming is easier to sustain as an institutional equilibrium in a country like France with greater underlying heterogeneity. The history of the Company of General Farms after its consolidation in 1681 illustrates how the underlying complexity of the fiscal system raised the cost of default and made the crown dependent on the tax farmers.

In 1716, John Law, the Scotsman appointed to manage the debts inherited from Louis XIV's wars, attempted to reform Royal finances by introducing a central bank based on stock floated on his Mississippi Company. Law appointed thirty farmers from the Company of General Farms to administer the direct collection of taxes. He also attempted to standardize the

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<sup>35</sup>This is consistent with the most recent assessment of the Glorious Revolution (Pincus and Robinson, 2011).

tax system. Management of taxes was grouped into new *bureaus* with different boundaries than the current *généralités*. Redundant taxes were consolidated and attempts were made to standardize and rationalize methods of collection. Obsolete taxes such as those on playing cards, paper, wood, and pit coal were reduced. The aim was to fully combine all taxes in France under one unified framework (Matthews, 1958, 69–71).

Ultimately, however, Law's System failed when the public lost confidence in the solvency of his new institutions. In June and July 1720 the value of notes issued on the credit of Law's bank suffered serious declines. By the end of 1720 the System had collapsed. And, in the aftermath of the Law fiasco, the only group considered competent enough to take over the tax farms and unwind the damage caused by Law's reforms were the original members of the Company of General Farms. By 1723 the Company was back to managing the farms as a full-fledged cabal (a *régie intéressée*).

Consistent with Proposition 4 from our model, as standardization of the fiscal system increased during the eighteenth century, there was increasing pressure on the position of the tax farm cabal. As the crown gained increasing amounts of information about the operations of the tax farms, they were also increasingly willing to default on loans and to take over management of taxation from the cabal (Matthews, 1958; White, 2004). In response to the unraveling of the equilibrium we describe in equation (5), the members of the Company of General Farms sought to preserve their interests by integrating themselves into the political system. In the words of Matthews (1958, 240), 'They sought to entrench themselves and their families in the Company by reducing changes in membership to the minimum required.' Under the ministry of Cardinal Fleury and his successor, Orry (1726–1745), this practice was particularly successful since these men valued 'above all else the friendship which the financiers bore him.' The integration of the Company into political life was so great that people were scandalized when Turgot published the list of investors (*croupiers*) in the Farms in 1776. It included family of the Royal Controller General Terray, M<sup>me</sup> de Pompadour, M<sup>me</sup> du Barry, and the king himself. Among the reasons the Company managed to persist until the Revolution was because much of the royal court owned stock in it.

By the middle of the eighteenth century the relationship between the tax farm cabal and the crown evolved into one that resembled an equilibrium based on 'debt as a contingent claim' (Grossman and Van Huyck, 1988). Under this equilibrium, the lender distinguishes between defaults by the borrower due to unavoidable shocks from nature and true defaults due to

lack of credibility.<sup>36</sup> Between 1750 and 1768 the long-term debt of the crown was about 872 million livres tournois, of which the Company held about a quarter (Roux, 1916, Appendix 1). In 1759, 1761, and 1770 the crown defaulted but, because of the generally recognized difficult economic circumstances, the Company did not choose to punish by withholding future credit. However, circumstances were different in October 1783 when Louis XVI's finance minister D'Ormesson abrogated the Company's lease in an attempt to break their monopsony control over the collection of indirect taxes. Immediately following the move by D'Ormesson, private holders of 30 million livres tournois of *billets des fermes* demanded repayment on their credit. At the same time, the members of the Company of General Farms demanded, and received, an audience with the king. They explained to the monarch the chasm into which royal finances would fall if the Company chose to default on the *billets des fermes*. Interest payments would be missed and the credibility of the crown would be so damaged that credit would become even harder to secure. Within days, Louis XVI dismissed D'Ormesson and the Company's lease was reinstated (Mollien and Gomel, 1898).

All attempts to remove the tax farming cabal from power failed. In the long-run, however, the equilibrium of cabal tax farming in France set in motion two mutually inconsistent forces. On the one hand, as we have seen, investment in standardization accompanied the shift from competitive allocation to cabal tax collection. On the other hand, these investments were not in the interests of the cabal itself, which relied on its comparative advantage in managing the fiscal system in order to maintain a threat against the crown in case of default. This tension between the objectives of the crown and those of the cabal is what made cabal finance an intermediate institution. It was finally the Revolution and the guillotine that resolved these internal contradictions: the Company of the General Farm was suppressed in 1790 and 28 tax farmers executed in 1794.

#### 4.4 Tax Farming in Spain and the Netherlands

Tax farming was an ubiquitous institution in early modern Europe. Both the Dutch Republic and the Spanish monarchy employed tax farmers. However, neither of these states developed the institution of cabal tax farming. Our analysis sheds light upon one reason why they did not do so.

The Dutch Republic comprised the seven northern provinces that broke away from Spanish

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<sup>36</sup>The material for the remainder of this section is drawn from Johnson (2006b).

rule in 1579. The largest and richest province, Holland possessed a comparatively centralized tax system. The fiscal system of the Republic as a whole, however, remained decentralized (Tracy, 1985; Fritschy, 2003). Each province introduced a province-wide tax called the common means, which included an indirect excise tax charged on almost all commodities (Hart, 1997). And, on the basis of this tax, the provinces of the Republic were able to borrow large amounts at low rates of interest from external (non-tax collector) sources. Loans were raised at a provincial level and typically linked to revenues. It was a system of credit that had evolved out of medieval practices and, reliant as it was on local supervision and monitoring, made a virtue out of the decentralized character of the Dutch Republic (Gelderblom and Jonker, 2011).<sup>37</sup>

The Dutch Republic thus did not need to move to a system of cabal tax farming. Instead, and consistent with Proposition 1, it could harness the informational advantages associated with decentralized, competitive, tax farming. Its principal tax—the common means—which included all excises and duties on agriculture, was competitively farmed out: the farms were small and ‘[m]ost contracts lasted for six months or a year and for a specified district only’ (Hart, 1997, 28). The differences between the system of tax farming employed in the Netherlands and that which emerged in England and France are clearcut. Unlike ‘in France, tax farms in Holland were not very large, and taxes were farmed out in open competition and under the supervision of representatives of other cities to prevent fraud. This makes it likely that, particularly during the seventeenth century, profit margins for tax farmers would not have been very great’ (Fritschy, 2009, 63).

Tax collection in Spain also remained decentralized. Taxes were collected at a local, usually urban level, and farmed out competitively. Regina Grafe describes the market for tax farms and other offices as ‘competitive’ and ‘entirely drive by supply and demand’ (Grafe, 2012, 31). This is consistent with our model. Since the Spanish monarchy relied on Genoese bankers for access to financial markets it did not need to develop a system of cabal tax farming (Drelichman and Voth, 2011b). As a result, tax farming in Spain did not resemble tax farming in France or England: ‘the much-criticized reliance on tax farming, often seen as an indicator of the advance of patrimonialism in Spain, had little to do with that. For many Peninsular municipalities outsourcing the administration of fragmented taxes was likely the

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<sup>37</sup>‘The secret of Holland’s seventeenth-century fiscal system lay in its mediated structure. Urban public finance facilities dating back to the Middle Ages were made to serve provincial needs through careful grafting which, because the cities held power in the Estates, helped to inspire confidence that financial demands remained reasonable, the money well spent, and payments met promptly’ (Gelderblom and Jonker, 2011, 3).

most efficient way of collection given their large role in the fiscal system' (Grafe, 2012, 175).

The practice of tax farming was closely related to the assessment of lump sum taxes on cities, common in many parts of early modern Europe. In Castile, while the *cortes* decided upon the amount of taxes that each city had to pay, all decisions about how to collect or allocate the tax were taken by members of town council. This method had many of the advantages that we have claimed for competitive tax farming because it utilized local knowledge, and we would expect it to be more efficient in a static sense than the top-down assessment and collection of taxes by a centralized bureaucracy. However, Grafe (2012) has shown that the proliferation of different indirect taxes that this system entailed was itself a major impediment to market development in Spain as it resulted in jurisdictional fragmentation. This is consistent with Proposition 2 which indicates that a state that relies on competitive tax farming has little incentive to invest in standardization.

The Dutch Republic also made few attempts to further standardize its fiscal system in the early modern period. This lack of standardization was of little consequence in the seventeenth century when the fiscal system of the Republic remained more effective than that of any of other European state. But historians suggest it had the consequence of keeping the 'financial revolution . . . strictly a provincial affair in the Netherlands' whereas 'the financial revolution of England of the 1690s proved much more flexible, as it was based upon nationwide, centrally controlled taxes' (Hart, 1997, 22). The Dutch Republic did not go down the path of cabal tax farming as England and France did, but equally it did not develop a modern fiscal state.

## 5 CONCLUDING COMMENTS

The modern state emerged slowly in Europe over the course of several centuries, and the process of state formation was neither smooth, nor linear (see Ertman, 1997; Bonney, 1995; Gennaioli and Voth, 2011). The development of modern institutions: central banks, public debts and bureaucratic systems of taxation did not happen rapidly. Instead, numerous intermediate institutions played a critical role in providing the pre-conditions for these political and economic developments.

This paper has studied the rise and fall of one of most significant of these intermediate institutions: monopsony or cabal tax farming. The Great Farm of the Customs in England and the Company of General Farms in France were two of most important fiscal institutions in their respective countries. Historians have studied these institutions previously, but they

have not focused on the puzzle of why early modern governments would forego the obvious benefits of competitive allocation of fiscal rights in favor of ceding these rights to monopolies. The fiscal systems of both England, and particularly France, were highly fragmented at the close of the middle ages. Given this fragmentation, and the significant information costs imposed by geographic and institutional heterogeneity, it made sense for monarchs in both countries to rely on decentralized and competitive mechanisms for raising taxes.

Our model and historical analysis demonstrate that it was demand for inside finance in England and France that first drove rulers to shift away from competitive, decentralized, tax farming. States with access to outside finance, such as the Dutch Republic and Spain, retained competitive tax farming.

We also explain why this shift away from competitive tax farming was associated with increased investments in state capacity. Under the system of market allocation of fiscal rights, there was little need to invest in state capacity. However, under cabal tax farming there were increased incentives for rulers to invest in standardization and in fiscal capacity. This intermediate institution therefore helped lay the foundations for the subsequent rise of the modern state in both countries. It paved the way for the fiscal and financial revolutions that transformed England after 1688 and France after 1789.

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# ONLINE APPENDIX 1: EDICTS AND ARRÊTS ENCOURAGING STANDARDIZATION IN FRANCE

Terrier	Juges and Justice	Peages	Corvee	Weights & Measures
1659, 1666, 1703, 1736: Arrêts establishing and regulating the rights of notaries in surveying a noble's terrier	February 1564, August 1586, September 1639: A gardien of a lord in his minority may not revoke a judge's position they tax.	1287: Seigneurs required to indemnify merchants robbed on roads	June 1507: That a corveable is not obligated to rent working stock (betail) to fulfill his duties.	864: Ordonnance of Charles the Bald that all measures of greater than the royal measures be reduced.
January 1675: a censitaire on the terrier of the king, also owes the cens to a Seigneur pariaiger.	May 1565, January 1600: Requires Seigneurs to name Officers of Justice	1432, 1559, 1570, 1577: All tolls on Loire and its tributaries eliminated.	September 1543: That in certain circumstances the Seigneur must house and feed the corveable.	1540: Francis I orders the unit of length "l'aulne de roi" be used throughout kingdom.
1678 and 1711: That a terrier signed by a Notary is legitimate even if not signed by Seigneur.	February 1615: Law allowing for the assignment of judges by Lord every three years within pareage.	1579 Ordonnance of Blois, art 282: Abolished all internal tolls not legitimate. Those that exist must maintain roads etc.... And that they only tax what they're allowed.	1551 and 1666: Limiting the number of beasts required from the corveable to two oxen.	1558 and 1570: Ordonnances requiring weights & measures be brought in line to those of Paris.
June 1721: A censitaire may request the Seigneur re-do the terrier if he suspects Notary of making mistake.	July 1625: A Judge's office may be sold but not divided by the Seigneur	January 1633: All peages on Seine and its tributaries (up to Rouen) abolished. Reimbursed owners of eliminated tolls. Created new Aides taxes to pay for this.	1582 and 1750: That the corveable can convert labor due into cash payment.	1675: Publication of Savery's "Parfait Negociant" at the request of Colbert.
June 1728: Seigneur is allowed to choose the Notary to make the terrier.	1693, 1701, 1736, 1745: Edict declaring judiciary offices revocable, even if purchased, for just compensation.	January 1666: Forbids collecting a toll without Royal permission.	1594 and 1608: Restricting the cases in which children are subject to the corvee.	August 1716: Arret prohibiting charging for the use of measures established by Seigneur.

Terrier	Juges and Justice	Peages	Corvee	Weights & Measures
May 1752: Regulation describing the official procedure for requesting information from the censitaire for the terrier.	April 1668: Intendants not allowed to revoke an officer of justice assigned by local lord unless they have permission from King.	January 1663: Eliminates illegitimate peages under pain of confiscation of "corps et de fief". Required all existing tolls to be officially registered.	January 1666: Prohibiting Seigneur from requiring corvee without "precise title"	1766: Ordonnance on standardization of weights & measures.
August 1759: Restricting the ability of Seigneur to replace the notary creating the terrier.	August 1702: Seigneur not allowed to create a Lieutenant without permission from King.	January 1665: Arret stating that tolls in existence for at least 40 years are legitimate.	September 1667: Regulating the conditions of corvee.	
	August 1716: Forbids tenants of the Lord to be judges.	January 1666 and 1669: Cour des Grands Jours orders registration and/or suppression of peages in Auvergne, Bourbonnois, La Marche, Combraille, Lyonnois, Forez, Beaujolois, Maconnnois.	August 1668: Sets the times that a subject can be obligated to perform corvee.	
	August 1724, August 1743: Forbids Seigneural judges from being Judges of waters and forests.	April 1668: All owners of peages, bacs, bateaux, ponts, and other rights must prove they had legitimate right for at least 100 years.	January 1674: Regulates the number and nature of corvees.	
	August 1737: Establishing the competence of Local Judges to hear cases involving Seigneural Agents	August 1680: Ordonnance on Gabelles prohibits any local taxes on salt.	July 1675: Requiring silver payment for missed corvee.	

Terrier	Juges and Justice	Peages	Corvee	Weights & Measures
	August 1737: In pecuniary matters (matiere reelle) the Seigneur can be brought to trial in his own court.	1683 & 1693: Edicts requiring written confirmation of request in Edict of 1668.	August 1689: Prohibitions on the maltreatment of corveables.	
	August 1738: Disallows Seigneurial judges from judging crimes in committed in community woods.	1711 and 1714: All peages on Loire and Cher rivers suppressed unless royal titles presented to Intendant within 3 months under penalty of 3,000 livre fine.	July 1734: Corvees in good title are imprescriptible.	
		1724: Commission on peages suppresses "1,200" throughout kingdom under orders of Louis XV. (p 315, Renaudon).	July 1726: That is the corveable is in one noble's jurisdiction but his ox in another, he still needs to bring the ox.	
		1724, 1725: Orders that peages must be renewed with each change in crown.	July 1734: Regulating the appropriate titles necessary to invoke the corvee.	
		December 1731: That a peage payable in goods is also payable in silver.	August 1735: That notaries are exempt from the corvee.	

## ONLINE APPENDIX 2:

### *Proof of Proposition 2*

Proposition 2 states: *The crown has less incentive to invest in standardization under competitive tax farming relative to both cabal tax farming and direct collection.*

We define an increase in standardization in Section 2 as an arbitrary decrease in both the mean ( $\mu$ ) and standard deviation ( $\sigma$ ) of the distribution of costs of collection of tax collectors faced by the crown.

To prove Proposition 2, we will show that the payoffs to the crown of increasing standardization (decreasing either  $\mu$  or  $\sigma$ ) are greater under either direct collection or cabal collection, than under competitive allocation. We begin by investigating the effect on equilibrium payoffs to the crown of a decrease in  $\sigma$ .

Recall that the crown's payoff from competitively auctioning the tax farm is  $V(\underline{\theta})$ . The crown's payoff from directly administering the tax farm is  $V(\bar{\theta})$ . And the payoff to the crown from leasing the farm out to the cabal is  $\frac{1}{2}(V(\hat{\theta}) + V(\bar{\theta}))$ . Since  $\theta$  is uniformly distributed, we can write the expected value of  $\hat{\theta}$  as  $\frac{1}{2}(\underline{\theta} + \bar{\theta}) = \mu$ . Similarly,  $\bar{\theta} = \mu + \sqrt{3} \cdot \sigma$  and  $\underline{\theta} = \mu - \sqrt{3} \cdot \sigma$ . Substituting these last two expressions for  $\underline{\theta}$  and  $\bar{\theta}$  into the payoff functions for the crown yields:

$$\begin{aligned} \text{Crown's payoff under competitive tax farming} &= \Pi_{comp} = V(\mu - \sqrt{3} \cdot \sigma); \\ \text{Crown's payoffs under cabal tax farming} &= \Pi_{cabal} = \frac{1}{2}(V(\mu) + V(\mu + \sqrt{3} \cdot \sigma)); \\ \text{Crown's payoffs under direct collection} &= \Pi_{direct} = V(\mu + \sqrt{3} \cdot \sigma). \end{aligned}$$

Since  $V'(\cdot) < 0$ , it is clear that the crown's payoff under competitive tax farming falls as  $\sigma$  falls (holding  $\mu$  constant), while the payoffs to the crown under cabal financing and direct collection increase as  $\sigma$  is reduced.<sup>38</sup> Specifically,  $\frac{\partial \Pi_{comp}}{\partial \sigma} > \frac{\partial \Pi_{cabal}}{\partial \sigma} > \frac{\partial \Pi_{direct}}{\partial \sigma}$ .

The effect of decreasing  $\mu$  on the crown's payoffs is less transparent. The marginal effects of a decrease in  $\mu$  on each payoff are given by:

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<sup>38</sup>The reason for this is that standardization reduces the value of local knowledge while at the same time imposing one-size-fits all rules across all regions. For example, Francis I requiring government documents to be written in French (langue d'oeil) rather than in the local patois (i.e., langue d'oc) in 1539. Since everyone in southern France speaks langue d'oc and few speak langue d'oeil, the costs of administering the tax system there could very reasonably increase for those who have invested in the knowledge of langue d'oeil and those who transact in it.



$$\begin{aligned}
\frac{\partial \Pi_{comp}}{\partial \mu} &= \frac{\partial V(\underline{\theta})}{\partial \underline{\theta}} \cdot \frac{\partial \underline{\theta}}{\partial \mu}; \\
\frac{\partial \Pi_{cabal}}{\partial \mu} &= \frac{1}{2} \cdot \frac{\partial V(\hat{\theta})}{\partial \hat{\theta}} \cdot \frac{\partial \hat{\theta}}{\partial \mu} + \frac{1}{2} \cdot \frac{\partial V(\bar{\theta})}{\partial \bar{\theta}} \cdot \frac{\partial \bar{\theta}}{\partial \mu}; \\
\frac{\partial \Pi_{direct}}{\partial \mu} &= \frac{\partial V(\bar{\theta})}{\partial \bar{\theta}} \cdot \frac{\partial \bar{\theta}}{\partial \mu};
\end{aligned}$$

Since  $V''(\cdot) < 0$  and  $V(\bar{\theta}) < V(\hat{\theta}) < V(\underline{\theta})$  it follows that  $\frac{\partial V(\bar{\theta})}{\partial \bar{\theta}} > \frac{\partial V(\hat{\theta})}{\partial \hat{\theta}} > \frac{\partial V(\underline{\theta})}{\partial \underline{\theta}}$ . Also, since  $\bar{\theta}$ ,  $\hat{\theta}$ , and  $\underline{\theta}$  are uniform, then  $\frac{\partial \bar{\theta}}{\partial \mu} = \frac{\partial \hat{\theta}}{\partial \mu} = \frac{\partial \underline{\theta}}{\partial \mu} = 1$ . Equations (12), (13), and (14) can thus be rewritten as,

$$\frac{\partial \Pi_{comp}}{\partial \mu} = \frac{\partial V(\underline{\theta})}{\partial \underline{\theta}} > \frac{\partial \Pi_{cabal}}{\partial \mu} = \frac{1}{2} \left[ \frac{\partial V(\hat{\theta})}{\partial \hat{\theta}} + \frac{\partial V(\bar{\theta})}{\partial \bar{\theta}} \right] > \frac{\partial \Pi_{direct}}{\partial \mu} = \frac{\partial V(\bar{\theta})}{\partial \bar{\theta}} \quad (6)$$

Thus, the benefits to the crown of decreases in  $\sigma$  and  $\mu$  are both greatest under direct management, second greatest under cabal management, and lowest under competitive allocation.

*Propositions 3 and 4*

Proposition 3 states: *The amount of lending supported under monopsony, or, cabal tax farming is greater than under competitive tax farming.*

Under competitive tax farming, the payoff to the king for not reneging on a tax farmer is:

$$\mathcal{V}^{\mathcal{ND}}_{comp} = 2 \frac{B_{ND}^*}{1 - \delta}$$

As defined in the text,  $B_{ND}^*$  is equal to the payment in each period of the two period tax farm contract under no default. If the king reneges he obtains a one-off payment of  $x$  and loses the difference between the valuation of the best and the second best tax farmer in the second half of the lease and in all future periods:

$$\mathcal{V}^{\mathcal{D}}_{comp} = x + 2B_{ND}^* - \Delta B + \frac{\delta}{1 - \delta} 2(B_{ND}^* - \Delta B),$$

where  $\Delta B$  is defined in the text to equal the difference in receipts between the lowest cost and the second lowest cost tax farmer. Therefore for  $\mathcal{V}^{\mathcal{ND}}_{comp} \geq \mathcal{V}^{\mathcal{D}}_{comp}$  we require:

$$\delta^* \geq \frac{x - \Delta B}{x + \Delta B} . \quad (7)$$

As  $n$  goes to infinitely we have already noted that  $\Delta B$  goes to zero. This means that it is impossible for the king to credibly commit to repay any loan from the tax farmers.

In contrast, lending can be sustained under cabal tax farming. To derive equation 5, note that  $\mathcal{V}^{\mathcal{N}\mathcal{D}}_{cabal} \geq \mathcal{V}^{\mathcal{D}}_{cabal}$  requires:

$$\frac{[V(\hat{\theta}) + V(\bar{\theta})]}{2(1 - \delta)} \geq x + \frac{1}{4}[V(\hat{\theta}) + V(\bar{\theta})] + \frac{1}{2}V(\bar{\theta}) + \frac{\delta}{1 - \delta}V(\bar{\theta}) .$$

Multiplying both sides by  $(1 - \delta)$  and rearranging yields:

$$\frac{1}{4}(V(\hat{\theta}) + V(\bar{\theta})) \geq x - \delta x - \frac{1}{4}\delta(V(\hat{\theta}) + V(\bar{\theta})) + \frac{1}{2}V(\bar{\theta}) - \frac{\delta}{2}V(\bar{\theta}) + \delta V(\bar{\theta}) .$$

which can be rearranged to obtain equation 5:

$$\delta^* \geq \frac{x - \Delta V}{x + \Delta V} .$$

where  $\Delta V = \frac{V(\hat{\theta}) - V(\bar{\theta})}{4}$ .

Proposition 4 states: *Cabal tax farming is more sustainable in an economy where standardization is low ( $\sigma(\gamma, \rho)$  is high). Cabal tax farming is less likely to be sustainable in economies which have less underlying fiscal heterogeneity (low  $\gamma$ ) or have invested in standardization (high  $\rho$ ).*

This requires us to simply substitute the values for  $\theta$  from the uniform distribution into equation 5:

$$\delta^* = \frac{x - \frac{1}{4}[V(\mu) - V(\mu + \sqrt{3} \cdot \sigma)]}{x + \frac{1}{4}[V(\mu + \sqrt{3} \cdot \sigma) - V(\mu)]} . \quad (8)$$

It follows from a simple application of the quotient rule that  $d\delta^*/d\sigma < 0$  which is what is required for Proposition 4.