Tax Collection in History:
Public Institutions and Institutional Change in the Ottoman Empire

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One of the permanent characteristics of Islamic societies has been strong government. The public sector has generally assumed a central role in economic activity, redistributing income, regulating the private sector, and providing or purchasing a large share of goods and services. Displaying a recent example of this trend, the Ottoman Empire also had a strong government, a characteristic often cited to distinguish it from contemporary European states during its long rule for six centuries until the First World War.

The strength of the public sector has also assumed a central explanatory role in Ottoman historiography. Economic historians have typically taken the importance of this sector as given, attributing to it such key role that the rise and fall of the Empire as a whole was once measured by the changes in the strength of this sector alone. Even the more recent revisionist history has given the public sector a central role in explanations. The longevity of the Ottoman Empire, for example, has recently been attributed primarily to the pragmatism of its rulers and the flexibility of its public sector (Pamuk, 2004).

Little is known, however, about the nature and sources of the strength of the Ottoman public sector. Although recent research has identified some of the institutional constraints that may account for the weakness of the private sector (Kuran, 2004), the sources of the strength of the public sector on the other side of the coin has not been carefully studied. A significant determinant of the power of the public sector is its sources of revenue and the methods of choosing, collecting, and allocating taxes. As part of a larger project on the importance of the tax system for the balance of power between the public and private sectors in Islamic history, this paper will examine the methods of tax collection in the Ottoman Empire.¹

Three objectives guide the study. Given the comparative nature of the larger project, the first objective is to place the Ottoman experience in the larger variety of tax collection practices observed in history and to examine the issue within the general literature on tax collection. Unfortunately, unlike studies of contractual forms in private relationships, the economic literature on the agency relationships in tax collection has been slow to develop. Although there has been a recent resurgence of interest in methods of tax collection, studies have typically had a limited approach to the problem. They have often

¹ For examples of other parts of the project, see Coşgel (2005, 2006a), Coşgel and Miceli (2005), Coşgel and Ahmed (2006).
focused on a particular historical occurrence, restricted analysis to the narrower question
of the choice between public and private agents, or adopted a limited theoretical
framework for explanation. We aim to contribute to this literature by providing a
comprehensive framework that can coherently explain the temporal and spatial variation
in contractual forms. Introducing a simple economic model of tax collection, we specify
the cost and benefits of alternative methods of collection and identify the conditions
under which a government would choose one method over another in order to maximize
the net revenue.

The second objective is to use the model to explain tax collection schemes observed
in history. After examining the applicability of the model to some of the well-known
historical episodes observed in Europe, we use the model to study tax collection in the
Ottoman Empire. We discuss how the methods of collection varied among sources of
taxation and how the chosen methods changed over time corresponding to changes in the
cost and benefits of alternative methods.

The last objective of the paper is to discuss the efficiency and comparative
flexibility of the public sector in the Ottoman Empire. Some of the other contemporary
governments, most notably the English and French governments during the seventeenth
and eighteenth centuries, faced various legal and political restrictions in their ability to
choose methods of tax collection (Johnson, 2005; Johnson and Balla, 2005). But the
Ottoman government for the most part continued to operate free of similar constraints
and maintained its ability to choose the method that maximized its net revenue, easily
altering the choice to suit changing circumstances. The lack of constraints on the
Ottoman government’s ability to maximize tax revenues was one of the factors that
contributed to its overall strength and flexibility.

VARIED TIES OF TAX COLLECTION

Methods of tax collection employed by modern governments may seem dull when
compared to the rich variety observed in history. Whereas most modern governments
typically use salaried agents to collect taxes, various other types of contractual

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2 In a separate part of the project on the balance of power between the public and private sectors, Coşgel
relationships have been observed in history, including governments sharing the tax revenue with collectors at fixed proportions, negotiating a payment scheme based on the tax base, and selling the revenue in exchange for a lump-sum payment determined at an auction. Tax collectors were not always government officials. They were sometimes private individuals collecting taxes on behalf of the government under an agency relationship. Contractual forms could vary by types of taxes or change over time.

To distinguish systematically between the varieties of contractual forms observed in tax collection, we can group them according to the basis for payment between the government and the collectors. Three general categories are possible depending on whether the contract is based on the collected revenue, the tax base, or the tax collector’s labor. The first is the share contract, specifying the proportion at which the government and the collector would share the actual revenue. In the second type of an arrangement, called the rent contract, the collector would pay the government a fixed amount based on the value of the tax base. The third type of arrangement is the wage contract, specifying a fixed wage to be paid to the collector for his labor. There are numerous examples of each type of contract in the history of tax collection.

In a share contract, the government would assign the right to collect taxes to an agent, conditional on dividing the tax revenue according to a ratio determined prior to collection. This type of a scheme was observed only occasionally in history, less frequently than wage or rent contracts. It has been considered anomalous, for example, that the Prussian government used share contracts in the collection of excise taxes (Kiser and Schneider, 1994). The French government also used this type of contracts occasionally before the revolution (White, 2004; Johnson, 2005). Share contracts were also observed at other times and places, such as India, China, and Medieval Egypt (Copland and Godley, 1993; Üozak, 1996). To enforce this type of a contractual form, the government would have to measure the actual tax collected and share that amount with the collector at the prespecified rate.

The second general category is the fixed rent type of a contractual agreement, under which the collector would pay the government a fixed amount (based on the tax base) in exchange for the right to collect the taxes and keep the residual after the taxes are collected. This type of an arrangement has generally been called tax-farming, referring to
the way the government would lease the right to collect taxes to private agents in exchange for a lump sum payment determined prior to collection.

Rent contracts in tax collection can also be further divided into two categories based on the method for determining the amount of the fixed payment. One method is to determine the payment at an auction. Under such an arrangement, the government would award the right to collect the specified set of taxes to the highest bidder in a competitive auction. The collector would pay the bid amount to the government either as a single payment in advance of tax collection or as an initial advance deposit followed by a series of installments paid according to a jointly agreed schedule that may coincide with the period of tax collection. Rent contracts determined by auctions have been commonly observed in tax collection throughout history. Republican Rome began to give out rent contracts for tax collection through auctions as early as the third century B.C. (Levi, 1988: Chapter 4). This type of contract was also observed in the Abbasid Empire, a precedent followed by other Islamic states (Løkkegaard, 1950: Chapter 4). The Ottomans, for example, relied heavily on auction-determined rent contracts for tax collection in the early modern period. France, England, and other European governments also used this type of contract during the same period. More recently, rent contracts have also been observed in today’s Tunisia in the collection of taxes from periodic (mostly weekly) markets (Azabou and Nugent, 1988, 1989).

Another method for determining the amount of payment in rent contracts is direct bargaining between the government and tax collectors. This type of rent contract has also been observed frequently throughout history. In the eighteenth century, for example, the French government determined the annual rent through negotiations with a syndicate of tax collectors called the General Farms (White, 2004). This type of contract also shared basic properties with other well-known mechanisms for granting rights of tax collection. The Ottoman and Mughal governments, for example, granted tax revenues to groups called jāgīrdārs and sipāḥīs in exchange, not for a monetary payment, but for military

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3 For observed varieties of tax-farming and the difficulties with inconsistent uses of the term tax-farming, see Copland and Godley (1993).
5 For comparative studies of tax collection methods in the Ottoman Empire and other European states during the early modern period, see Copland and Godley (1993), Johnson and Balla (2005), Kiser (1994), Kiser and Kane (2001), Ma (2003), and Priks (2005).
and administrative service provided to the government. Whereas in the auction-determined rent contracts the government would place trust in the auction process to generate a desirable payment amount, in the alternative mechanism of direct negotiation it would have to gain knowledge of the value of the tax base (e.g., with a survey) in order to determine the payment accurately. The knowledge could also come from the outcome of previous auctions (e.g., in an unchanging environment), which we can infer from cases of auction-based contracts giving way to bilateral bargaining (Azabou and Nugent, 1988: 686).

The third general category of contractual agreements in tax collection consists of fixed wage contracts. In this type of a contract, the tax collector would turn over all of the collected revenue to the government and receive a salary that would depend on his labor effort. As a distinct feature of wage contracts in tax collection, the governments would typically assign other supervisory agents to observe the effort of salaried collectors. Throughout history, governments have always employed salaried agents for tax collection, though at varying levels of importance. The Ottoman government, for example, used salaried commissioners to collect taxes from some enterprises in towns and from imperial domains in rural areas. The importance of wage contracts in tax collection has generally grown greatly since the seventeenth century. The English government turned over the collection of customs and excise taxes to salaried agents in the late seventeenth century, a pattern also observed in Sweden, Russia, and other European countries in the eighteenth century (Bonney, 1995: 443). The strong tendency observed since the mid eighteenth century towards using salaried agents has made wage contracts the dominant contractual form in today's systems of tax collection.

Beyond the three general categories of share, rent, and wage contracts, numerous other possibilities were observed within each category. The proportion of the revenue to be turned over to the government in share contracts, for example, could be determined in various ways, such as choosing the highest rate offered in an auction to determine the rate separately for each tax unit, or applying a single rate for all units that would be determined through bilateral bargaining with a syndicate of collectors. In addition to the

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6 For a detailed description of jāğīrdârs and sipāhîs, see Habib (1999: Chapter 7) and Ènalçık (1973: Chapter 13). Despite their similarities with fixed rent type of contracts, these systems for granting tax collection rights clearly have various other interesting properties that deserve separate, systematic analysis.
well-known subcategories of rent contracts described earlier (auction-determined and
negotiated rent), there could be further variations depending on other conditions of the
rental contract such as whether the length of the contract would be limited or last for the
collector’s lifetime. Wage contracts could also have numerous further variations. The
wage rate, for example, could depend on such things as whether the labor market was
competitive and whether the government paid market or efficiency wages.

Moreover, contractual arrangements could vary significantly over time and space.
True, there were some well-known general tendencies observed across countries, such as
the rise of rent contracts in the early modern period and the increasing dominance of
wage contracts after the eighteenth century. There were also similar general tendencies
observed in the choice of contractual forms for the collection of different types of taxes.
Rent contracts, for example, were more likely to be observed in the collection of trade
taxes like customs duties than in collecting personal taxes. But there were also
numerous exceptions to general tendencies and various regional and temporal variations
among observed contractual forms, making it unsatisfactory to explain all cases from
simple generalizations. Despite the general tendency toward the choice of wage contracts
after the eighteenth century, for example, some countries were slower to change than
others. Explanations of tax collection thus need to be sufficiently abstract to identify the
basic factors affecting general tendencies but also flexible enough to account for the rich
diversity and the temporal and spatial variation in methods of tax collection.

PREVIOUS EXPLANATIONS OF TAX COLLECTION

Unlike studies of contractual forms in private relationships, the economic
literature on the agency relationships in tax collection has been slow to develop. The
economist’s fascination with the variety of contractual forms appears to have been
confined to those observed between private parties. Although a significant body of
literature has emerged to explain the contractual forms observed in such agency
relationships as between workers and landlords in agricultural tenancy and between
managers and stockholders in the modern corporation, the agency relationships in tax

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7 See Coşgel (2005) for the Ottoman tax system and examples of personal, production, and trade taxes.
collection has not received the same attention.\textsuperscript{8} Despite the parallels between tax collection and other forms of agency relationships, theoretical developments in the agency theory have not been fully applied to explain the historical variety of contractual forms observed in tax collection.

Previous studies of tax collection have typically had a limited approach to the problem, restricting analysis to particular historical occurrences or focusing solely on the public-private dimension of the contractual arrangements. They have also often adopted incomplete or incoherent theoretical frameworks for explanation. Researchers have often focused on contractual forms observed at a particular time or place, rarely examining all varieties of tax collection comprehensively. Despite the vast literature devoted to systems of tax collection in the Ottoman Empire, for example, few studies have attempted to make comparisons with other Empires, explain the evolution of these systems over time, or reach general conclusions about tax collection.\textsuperscript{9} The same can be said about the studies of tax collection in England and France.\textsuperscript{10} Although there have been several comparative studies of tax collections systems in, for example, Prussia, France, England, Southeast Asia, and the Ottoman Empire, these studies have ultimately maintained a greater interest in identifying the relationship between taxation and economic performance or examining the development of a distinct contractual form observed in one of these places than in explaining the observed temporal and spatial variety in tax collection as a whole.\textsuperscript{11} While each of these lines of research may certainly be justified in its own right, they have nevertheless collectively failed to go beyond case-specific explanations and provide general analytical conclusions about the choice of contractual forms in tax collection.

Studies have also historically limited attention to a single characteristic of tax collection, typically the question of whether the governments used private agents or public officials for collection. Lumping together all varieties of private agents under a single category called tax-farming, researchers have typically sought to identify the

\textsuperscript{8} For examples of recent studies explicitly employing agency theory, see Toma and Toma (1992) and White (2004).

\textsuperscript{9} For examples of exceptions to this trend, see, Berktay (1991), Üzak\Pi a (1996), and Salzman (1993).

\textsuperscript{10} See, for example, Ashton (1956), Johnson (2005), and White (2004).

\textsuperscript{11} See, for example, Bonney (1979), Johnson and Bella (2005), Kiser and Kane (2001), Kiser and Schneider (1994).
circumstances under which governments preferred tax-farmers over public officials. Tax-farming has continued to receive significant attention in the recent literature on tax collection. Recent studies of contractual arrangements observed in France, England, and the Ottoman Empire, for example, have been devoted primarily to explaining who was appointed to collect taxes, rather than how the collectors were paid or which conditions bound their agreement with the government.\(^\text{12}\)

The attention paid to the public-private distinction and the identity of the collector rather than nature of his contractual relationship with the government has led to various complications in the literature. It has, for example, caused researchers to overlook the economic significance of the contractual variations within the public and private categories. Various terminological confusions have emerged. While some researchers have restricted the term tax-farming to rent contracts, others have used it to refer to all forms of agreements (including wage contracts) with private agents (Copland and Godley, 1993). Terminological confusion has also led to various analytical difficulties. Many tax-farmers were previous (or current) soldiers or bureaucrats, making it questionable whether they could be classified as private agents. In the Ottoman Empire, for example, palace servants and members of the military belonging to cavalry forces or standing regiments often entered and sometimes even dominated the auctions (Darling, 1996: Chapter 5). Moreover, it was often the same collectors who continued to collect taxes after a regime change, such as when the tax collector of a unit previously employed by the government would become a private agent by winning the auction following the government’s decision to offer the unit as a tax-farm. There were also private tax collectors hired by the government on wage contracts, such as the collectors of the Ottoman *avarç* tax in the seventeenth century (Demirci, 2002: 163). The variety of contractual arrangements between the government and tax collectors cannot be fully captured by focusing solely on whether the collector was a public or private agent. Although the distinction might be significant for various other social, political, or historical questions, what is more relevant for the economics of tax collection is the

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\(^{12}\) See, for example, Üzümcü (1996), Darling (1996), Johnson and Bella (2005), Kiser and Kane (2001), Ma (2003), Priks (2005), Toma and Toma (1991), and White (2004).
nature of the contractual agreement between the agent and the government, whether the
collection would take place under a share, rent, or wage contract.

The theoretical frameworks adopted in the literature to explain tax collection have
also been limited. Explanations have typically been in the form of finding a market
imperfection that was deemed responsible for an observed method of tax collection.
Consistent with the focus on the use of public versus private agents for collection and
based on the presumption that today’s dominant method of using public officials is the
ideal type, explanations have primarily sought to identify the market imperfection
affecting the choice between public and private collectors and causing the outcome to
deviate from the ideal type. An unintended consequence of the limited focus on the
varieties of tax collection methods has thus been an incomplete explanatory scheme.
Researchers have been content with identifying an imperfection that may seem successful
in explaining the choice between public and private agents observed at a particular
episode in history, even though this type of an explanation may lack a coherent
theoretical framework to account for the variety of contractual forms as a whole and fail
under closer theoretical and empirical scrutiny.

Previous explanations of tax collection can be categorized into three groups
according to the type of market imperfection identified as responsible for why
governments turned to private collectors. The first category consists of explanations that
seek the answer in the imperfections in the capital market and the constraints on the
ability of governments to borrow funds from the private sector. According to this type of
an explanation, a government unable to borrow funds in times of urgent need could
simply sell some tax revenues to private collectors in exchange for an advance payment,
treating the sale proceeds as loans against future income. The borrowing needs of the
public sector has been at the core of some explanations of the rise of rent contracts in the
Ottoman Empire after the late sixteenth century. Darling (1996), for example, has argued
that the significant inflation and the changing military requirements of the late sixteenth
century altered the fiscal priorities and cash needs of the Ottoman government, causing it
to turn to tax-farming in the form of rent contracts as a source of external funds.
Üçerkaş (1996), has similarly studied tax-farming as a system for financing the state in
an Islamic context. This approach to tax-farming has been adopted in most recent
narratives of the Ottoman Empire covering this period, such as those by Imber (2002), Johnson and Balla (2005), and Pamuk (2004). Similar arguments have also been provided to explain the changing contractual forms observed in other parts of the world during the same period. Ashton (1956), for example, used it to explain the rising incidence of rent contracts in England under the Stuarts, and Webber and Wildavsky (1986) generalized the argument to Europe as a whole.

Explanation of rent contracts as loans to governments, however, fail on both theoretical and factual grounds. The explanation suggests a theory of public finance where a government would choose the proceeds from rent contracts over alternative sources of finance because the former was somehow superior to the latter. The problem is that the tax collectors who entered the rent contract with the government typically met their contractual obligation for an advance payment by borrowing from external sources themselves, quite possibly the same sources avoided by the government. This shows a logical inconsistency in the argument. What needs to be explained is why the government would not borrow directly from these sources itself (e.g., by using the expected tax revenue as collateral), resorting instead to intermediation by tax collectors. Known facts about public finance and tax collection are also inconsistent with the argument. The collectors did not always pay the entire sum in a single advance payment, instead negotiating with the government a payment scheme in several installments. These agreements brought little loan benefit to the government. Moreover, as Kiser (1994: 301) has also argued, “loans from tax farmers were not always large or essential to early modern rulers.” Some governments used rent contracts while continuing to borrow at low rates from other sources. There were also governments that did not use rent contracts even though they had definite needs for cheap external funds.13

Explanations in the second category focus on the governments’ desire to shift the risk of volatile tax revenues to collectors in exchange for a certain payment. In the general literature on contracts, risk aversion has often been given as the reason for why one of the parties in a contract would prefer a rent contract over a wage contract because that would allow him to avoid the risk. In a rent contract for tax collection, the

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13 See Kiser (1994: 301) for details and further references. See also Bonney (1979: 21-3) for the differential applicability of the argument between England and France.
government would receive a fixed payment, while the collector would receive the residual and assume the risk of variation in the tax revenue. Assuming governments to be more risk averse than tax collectors, historians have offered various risk-aversion based explanations of observed incidents of rent contracts in tax collection. In one of the early studies of tax farming in France, for example, Matthews (1958) identified risk aversion as a significant reason for its existence. Parker (1974: 563) similarly argued that rent contracts “smoothed out the flow of money into the treasury” in early modern England. Arguing that the Ottoman Government became more risk averse during the same period, Ūzak jóa (1996: 142) claimed that risk aversion took the form of “transferring to the risk-taking entrepreneurs, the tax-farmers, the potential profits in return for a firm commitment of annual payments”.

Risk-aversion based explanations of contractual forms observed in tax collection also suffer from various theoretical and factual shortcomings. A well-known general weakness of this type of an explanation of contractual forms is that they assume an ad hoc dichotomy in the risk preferences of the parties entering the agreement (Allen and Lueck, 1995). In explaining rent contracts in tax collection, they typically assert that the government was more risk-averse than tax collectors, a problematic assumption that cannot be easily observed or verified. One could just as easily, perhaps even more convincingly, assume just the opposite. Given that the government was most likely in a better position to pool the risk by diversifying across tax revenues of different variability (e.g., subject to different sectoral and regional risk), it could be better able and more willing than an individual collector to assume the risk of a particular source of revenue. Even if one accepts the presumption of government being more risk averse than the collector, it is still difficult to explain the temporal, spatial, and sectoral variation in contractual forms simply by the variations in risk or risk aversion. As Johnson (2005: 10) has argued for tax collection in France, the risk-aversion argument “doesn’t jibe well with data.” For example, contrary to the implication of the argument, French rulers rarely received only a fixed payment from the collectors. The risk-aversion argument also fails to explain how the contractual form changed in France in the course of the seventeenth century. It also faces similar factual inconsistencies in explaining tax collection in other

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14 For a similar criticism, see Johnson (2005).
times and places. Suffice it to note that even though a risk-averse ruler may have preferred the expectation of a fixed income from the tax collector in a rent contract over a riskier wage contract, rent contracts always included the more general and perhaps more important risk of default by the tax collector himself.

Constituting the third type of approach to explaining contractual forms in tax collection, some of the recent studies have applied the tools and concepts of agency theory to the problem. In a leading application of developments from principal-agent models, Toma and Toma (1992) have viewed the ruler as the principal and the tax collector as the agent, examining how the welfare losses associated with monitoring in wage contracts and over-detection of evasion in rent contracts affected the choice between them. Kiser (1994) has similarly examined how the changing control capacities of the rulers affected the observed variation in the choice between wage and rent contracts. More recent approaches have also used agency theory, as can be seen in White’s (2004) explanation of the changes in tax collection practices in France in the eighteenth century and Priks’ (2005) comparative study of tax collection in England and France based on an analytical framework that models how the inefficiency of the auction mechanism and the cost of monitoring collectors affected the government’s choice between rent and wage contracts.

The problem with these explanations is that they provide an incomplete account of the contractual forms observed in history. They have focused exclusively on the choice between rent and wage contracts, omitting further variations within each category and lumping other possibilities (e.g., share contracts) together with either wage or rent contracts. This may have come from their primary concern with explaining the choice between private and public agents in specific historical episodes, particularly the comparative evolution of tax collection in England and France. Moreover, consistent with their focus on the choice between the two alternatives, these studies have typically modeled the problem with a single margin, formulated in terms of the (cost of measuring) agent’s effort. Although this formulation may have proven useful in explaining some

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See Allen and Lueck (1995) for a similar criticism of principal-agent models of agricultural contracts as being based on a single margin. Although Priks (2005) considers “the inefficiencies of the auction mechanism,” these inefficiencies are fixed in his formulation. Moreover, rent contracts in tax collection need not be given out at auctions.
aspects of tax collection in limited contexts, it has failed to consider various other factors that may have also influenced the choice significantly. Depending on the type of contract being employed, the governments may have had to incur cost in measuring the actual tax (after collection), or the government or the collector may have had to measure the tax base (before collection). We consider these possibilities in a simple model of tax collection.

A SIMPLE MODEL OF TAX COLLECTION

Suppose the amount of tax revenue that can be collected over a set period of time is determined by the production function

\[ R = f(e)B, \]  

(1)

where \( e \) is the effort of a risk-neutral tax collector (measured in dollars), \( B \) is the tax base, and \( f'>0, f''<0 \). We assume that \( B \) is unobservable both to the government and the collector, though both know its distribution, and \( e \) is unobservable to the government. The government can, however, learn the values of \( B, R, \) and \( e \) by investing in the appropriate measurement technology. Specifically, it can measure the tax base by incurring a fixed cost \( m \) before the tax is collected (i.e., before the collector chooses \( e \)); it can measure the actual tax by incurring a fixed cost \( k \) after the tax is collected; and it can observe (and hence dictate) the collector’s effort by spending \( s'e \) on monitoring, where \( s>0 \).\(^{16}\)

The government faces a standard principal-agent problem in that it must design an incentive scheme to elicit effort from the collector. The specific characteristics of the scheme will depend on which variables the government decides to measure, as this determines the information on which the parties can contract. (We assume that once the government measures a variable, it becomes public knowledge.) We consider three schemes depending on whether the government measures the actual tax collected (\( R \)), the

\(^{16}\) See Lueck (1995) for a similar specification of monitoring.
tax base \((B)\), or the collector’s effort \((e)\). Each scheme must satisfy the collector’s incentive compatibility and participation constraints. Regarding the latter, we assume that it must be satisfied for all realizations of \(B\) (i.e., in all states of the world). This amounts to assuming that the collector can never be required to turn over more revenue to the government than it actually collects.

1. Measurement of \(R\): Share Contract

We first consider the case where the government measures the actual tax collected and then shares that amount with the collector according to a pre-arranged sharing rule. Specifically, suppose the rule instructs the collector to turn over an amount \(T(R)\) to the government while allowing him to retain the residual \(R–T(R)\) as compensation. At the time he makes his effort choice, the collector’s expected return under this sharing arrangement is

\[
U_C = E[f(e)B – T(f(e)B)] – e, \tag{2}
\]

where the expectation is over \(B\). Incentive compatibility therefore requires the collector to choose effort to maximize this expression, yielding the first-order condition

\[
f'(e)E[B(1–T')] = 1. \tag{3}
\]

Let \(\hat{e}\) denote the resulting level of effort, which is independent of the actual realization of \(B\).

As for the participation constraint, since it must be satisfied in all states (i.e., for all realizations of \(R\)), \(T(R)\) is determined ex post by the condition

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17 Note that measurement of \(R\) represents output monitoring, while measurement of both \(e\) and \(B\) represent input monitoring. For analyses of this choice in other contexts, see Wittman (1977), Eswaran and Kotwol (1985), Maskin and Riley (1985), and Khalil and Lawarree (1995).

18 In this sense, the contracts impose a sort of limited liability on collectors (Sappington, 1983).
\[ T(R) = R - \hat{e} - \bar{U} \]

\[ = f(\hat{e})B - \hat{e} - \bar{U}, \quad (4) \]

where \( \bar{U} \) is the collector’s reservation utility. Note that since (4) is independent of \( e \), any ex post variations in the observed value of \( R \) are entirely due to variations in \( B \). It follows that \( T' = 0 \) (i.e., \( T(R) \) is lump sum with respect to \( e \)), so (3) becomes

\[ f'(e)E[B] = 1. \quad (5) \]

Thus, the collector chooses the efficient level of effort, given the uncertainty about \( B \). The resulting expected return for the government under the share contract is \( T(R) - k \), where, recall, \( k \) is the fixed cost of measuring the tax. In expected terms, this is

\[ V_S = f(\hat{e})E[B] - \hat{e} - k - \bar{U}. \quad (6) \]

2. Measurement of \( B \): Rent Contract

We next consider the case where the government measures \( B \) up-front at cost \( m \) and then conveys that information to the collector. The sharing rule is therefore specified ex ante (i.e., before the tax is collected) as a function of the measured value of \( B \). Specifically, the collector promises to pay the government \( T(B) \), and retains the residual, \( R - T(B) \). As noted earlier, this arrangement has been called tax farming in the literature. Unlike the output sharing arrangement, the amount the collector pays to the government does not depend on the actual tax collected, but is instead determined beforehand.

Once the collector learns \( B \), there is no further uncertainty, so his return,

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19 In this sense, measuring \( R \) amounts to measuring \( B \) ex post. As suggested below, however, this is quite different, and maybe easier, than measuring \( B \) ex ante.

20 This result is consistent with the efficiency of the optimal contract when agents are risk-neutral.
\[ U_C = f(e)B - e - T(B), \] (7)
is non-stochastic. The collector’s optimal effort, \( \hat{e}(B) \), therefore solves

\[ f(e)B = 1, \] (8)

which defines the efficient level of effort for all realizations of \( B \). This represents an important advantage of measuring \( B \) ex ante compared to measuring \( R \) ex post. The likely trade-off, however, is that it may be costlier to measure the tax base accurately compared to measuring the actual tax collected (i.e., in some cases we might expect \( m \) to be larger than \( k \)). Of course, this is ultimately an empirical question that will depend on such factors as the variability of the tax base from year to year, the availability of survey methods to estimate the tax base efficiently, the ability of tax payers to conceal the base, and the ability of tax collectors to conceal the amount of taxes collected.

The collector’s participation constraint in this case implies that \( T(B) \) solves

\[ T(B) = f(\hat{e}(B))B - \hat{e}(B) - U. \] (9)

Note that this meets the requirement that the collector must receive his reservation utility in all states, given that \( T \) is determinate once \( B \) is observed. That is, there is no residual uncertainty to cause variations in the collector’s income. The return to the government under this arrangement is given by \( T(B) - m \), which, in expected terms, is

\[ V_R = E[f(\hat{e}(B))B - \hat{e}(B)] - m - U. \] (10)

An alternative interpretation of this case is that would-be collectors, rather than the government, measure the tax base and then bid for the sole right to collect taxes. If collectors are competitive, then the outcome will be identical to that just described because collectors will compete away any rents associated with their private information. In cases where collectors have an advantage in measuring \( B \), owing, for example, to their
local knowledge, this arrangement would dominate the one in which the government measures \( B \). Offsetting this advantage, however, is the possibility that the collectors might be able to capture some rents if they are not sufficiently competitive.

The alternative interpretation shows the difference between the two sub-varieties of rent contracts discussed earlier. Historically, rent was typically determined either at an auction or by direct bargaining between the government and collectors. The difference corresponds to whether the contractors or the government would measure \( B \). Whereas in the former case the contractors would measure \( B \) and use the information to determine their bids at the auction, the latter would be the case where the government would measure it and share the information with the collector(s). Of course, the model can easily be extended to discuss various other possibilities depending on available methods of measuring the tax base and conveying the information reliably to other parties.

3. Measurement of \( e \): Wage Contract

Finally, we consider the case where the government measures the collector’s effort, \( e \), and pays a wage contingent on that effort, \( w(e) \). Since the government observes \( e \), it can dictate the collector’s effort, so the incentive compatibility constraint is irrelevant in this case. The government’s problem in this case is to choose \( e \) and \( w(e) \) to solve the single-constraint problem

\[
\max_{e, w(e)} f(e)E[B] - se - w(e)
\]

subject to:
\[
w(e) - e \geq U,
\]

where, recall, \( se \) is the cost of monitoring. The first-order conditions imply that the optimal effort level, \( \hat{e}(s) \), solves

\[
f'(e)E[B] = 1+s.
\]
Note that effort is neither state-contingent (since $B$ is unknown) nor efficient (owing to the cost of monitoring). As for the optimal wage, it satisfies the participation constraint

$$ w(\hat{\ell}(s)) = \hat{\ell}(s) + \bar{U} . $$

(13)

Thus, the wage is constant, which again ensures that the collector’s income is independent of the state, as required. The resulting expected return to the government under the wage contract is

$$ V_{W} = f(\hat{\ell}(s))E[B] - \hat{\ell}(s)(1+s) - \bar{U} . $$

(14)

4. Comparison of the Various Tax Collection Contracts

We now compare the various tax collection contracts to determine which yields the highest expected return to the government. This involves choosing the largest of the expressions in (6), (10), and (14). Consider first the comparison between (6) and (14) (the share contract versus the wage contract). In neither case is effort state-contingent, so the comparison depends only on the relevant measurement costs. The nature of the costs differs, however: under the share contract it is fixed and hence non-distortionary, whereas under the wage contract it is proportional to effort and therefore distortionary. In both cases, however, as the measurement cost goes to zero, the expected return converges to the efficient level. Thus, for sufficiently high $k$ the wage contract dominates, while for sufficiently high $s$, the share contract dominates. This is illustrated in Figure 1, where the positively sloped locus in $(k,s)$ space demarcates the relevant regions for the two contracts. Specifically, the wage contract dominates for points above the line (high $k$), and the share contract dominates for points below the line (high $s$).
Now introduce the rent contract. As shown above, this arrangement has the inherent advantage that effort is both state contingent and efficient. Thus, if the up-front cost of measuring the tax base, \( m \), is sufficiently low, the rent contract will dominate both of the other arrangements. This is indicated in Figure 1 by the vertical and horizontal lines, which show that the rent contract dominates for large enough values of \( s \) and \( k \). Further, since only the rent contract induces state-contingent effort, the region where it dominates will tend to expand relative to the other two as the variance of the tax base
increases (i.e., as the value of state-specific effort increases). In contrast, the region where the rent contract dominates will contract as the cost of measuring $B$ increases.\footnote{However, to the extent that an increase in the variability of $B$ also increases measurement costs, the net effect of such a change on the desirability of rent contracts will be ambiguous.}

**TAXES AND THEIR COLLECTION**

To see the applicability of the model to historical reality, consider first a hypothetical case of an invariant tax base (i.e., the standard deviation of $B$, $\sigma$, is zero), where the government can also measure the tax base and tax revenue at no cost ($m = k = 0$) and can observe the collector’s effort perfectly ($s = 0$). This is similar to the case of poll taxes (a fixed amount per person) from an unchanging small population known with certainty. In that case, the Coase theorem would imply that it would not matter which contractual form the government would choose to collect taxes. Any of the three available methods could be used, with identical outcomes for $e$ and $R$. The division of the total tax revenue between the government and the tax collector would also be expected to be the same, because $m = k = s = \sigma = 0$ would imply $T(R) = T(B) = w(e)$. The evidence on Ottoman methods of collecting poll taxes (such as the *cizye*, collected from religious minorities, and the *avarz*, originally an occasional levy that was regularized in the seventeenth century) confirms the expectation of equal substitutability among contracts. The Ottomans used the three methods almost interchangeably, small variations in measurement cost presumably affecting the actual choice.

In reality the tax base would typically be variable for most taxes, and the cost of measuring the collector’s effort, the tax base, and tax revenue would be positive. Depending on the properties of each source of taxation, the government would have to choose a collection method based on which option would bring the highest net revenue. To examine these factors in a concrete setting, consider the operation of the government bureau typically put in charge of overseeing the tax collection. This bureau would employ staff trained in monitoring the collector’s effort and measuring the tax base and revenue. The government’s problem would be to decide for which sources of tax revenue and under which circumstances the bureau would be better off monitoring the effort and for which other cases it would be better off measuring the tax base or the tax revenue. A variety of factors, including geography, production technology, market structure, and
institutional constraints, could affect how the variance of the tax base and the cost of measurement could vary from one context to another.

The problem clearly involves other types of agency problems which we have omitted here. For example, it can make a great difference for the work incentives of the bureau’s own staff whether they operate under a wage, rent, or share contract in performing their duties. Although the government can attempt to solve the problem by also monitoring the effort of the bureau staff, the problem can clearly end up in an infinite regress. In agency literature this is the well-known problem of how to monitor the monitor. We are justified to ignore this problem here and focus instead on the principal-agent relationship between the collectors and the government at the first level because these bureaus have typically employed salaried staff (the reasons for which would certainly be important to study elsewhere). The Ottoman government, for example, assigned salaried commissioners to monitor the activities of tax collectors, including those operating under rent contracts. Their choice of effort was thus independent of the government’s tax revenue and identical across the three types of contracts implemented between the government and tax collectors. The independence between their income and the government’s tax revenue suggests that their effort incentives did not affect the choice among wage, rent, or share contracts in tax collection.

Returning to the question of how the tax collection model explains the observed variety of contractual forms, consider first the incidence of share contracts. Recall that the model would predict the government to choose share contracts over others if the cost of measuring the tax revenue after collection was lower than the cost of measuring the tax base or the collector’s effort, all else being the same. This type of a contract was typically not observed in the collection of production taxes in rural areas because the cost of measuring and dividing the tax revenue could be very high for agricultural products. The bureau’s staff would have to incur significant cost in ascertaining the value of the tax revenue for agricultural products, especially for those collected in kind (possibly varying in shape, size, and ripeness), to determine the share of the government. Sometimes the local units used to measure the output of agricultural products also varied significantly.

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22 For the influence of measurement cost on the selection of share contracts in agriculture, see Allen and Lueck (1993). The importance of assessment difficulties in tax collection have also been noted, for example, by Kiser (1994: 292-3) and Hoffman (1994).
among regions, further increasing the cost of measuring the tax revenue in standard units. The government could thus increase the net revenue by choosing wage or rent contracts over share contracts in the collection of agricultural taxes.

The cost of measuring the revenue could also be high for urban taxes if the collection process was somehow subject to corruption by the bureau staff. This could be true for services or manufacturing enterprises for which the tax revenue was difficult to observe or confirm independently. By underreporting the total tax revenue and dividing the reduction in government’s share with a corrupt bureau staff, the collector could benefit himself at the expense of the government. Although the government could try to prevent this type of corruption by assigning additional bureau staff or supervisors to monitor those in charge of measuring the revenue after collection, this would clearly increase the cost significantly. If it was cheaper for the bureau staff to measure the tax base \((k > m)\), the government’s net revenue would be greater under rent contracts than share contracts for the collection of taxes from this type of services and enterprises.

A well-known case of share contracts that has attracted considerable scholarly attention is the collection of excise taxes in Prussia. Starting from the 1680s the Prussian government collected excise taxes by state officials compensated by share contracts. This was unique because other contemporary European governments were using rent contracts for the collection of excise tax revenue. As another unique characteristic of the Prussian case, the excise was collected there only in the cities. To explain why the Prussian rulers chose share contracts while others adopted rent contracts, Kiser and Schneider (1994: 198) argue that “the main reason is that the monitoring of officials collecting indirect taxes was much better in Prussia.” The problem with this argument is that it restricts explanation to a single dimension, variation in the cost of monitoring officials’ effort. They consider share contracts a “mixed solution” along this dimension, somewhere between the high cost wage contracts and zero cost rent contracts. By omitting the cost of measuring the tax base and the tax revenue, however, they provide an incomplete explanation that fails to account satisfactorily for why similarly semi-strong bureaucracies at other times and places did not adopt share contracts, why share contracts were not observed for the collection of other urban taxes in Prussia, and why it was at some point abolished for excise taxes as well.
By identifying the distinct costs and benefits of each of these contracts along other dimensions, our model provides a more complete explanation of this phenomenon. Share contracts were observed for the collection of excise taxes in Prussia not necessarily because the bureaucracy was able to monitor the tax collector’s effort easily, but because it could measure the tax revenue cheaply. For reasons explained above, the measurement would have been costlier for excise taxes collected in the countryside or for other types of taxes. The Prussian case becomes less anomalous once we consider the cost of not just monitoring effort but also measuring the tax base and tax revenue.

Our explanation of rent contracts is consistent with some of the previous explanations offered in the literature. Recall that rent contracts were more likely to be chosen over wage or share contracts if the cost of measuring the tax base was low and the variance of the tax base and the cost of measuring effort and tax revenue were high. When it was prohibitively costly to measure the tax revenue, the government was left with a choice between wage and rent contracts in collecting taxes. A common explanation of rent contracts offered in the literature is that they were preferred over wage contracts when the cost of measuring the collector’s effort was too high. This type of an explanation has been commonly given for the observed incidence of rent contracts in France, England, and Tunisia, among other places.\textsuperscript{23}

While agreeing with explanations of rent contracts emphasizing the high cost of measuring the collector’s effort, we also identify other parameters of the government’s decision problem that have been overlooked in the literature. One of these is the cost of measuring the tax base. Before a rent contract could be implemented, the government or the tax collector had to measure the tax base to be able to agree (or bid) on the amount of rent. Variations in the cost of measuring the tax base explain why among the tax sources with a high cost of measuring effort only some were collected by rent contracts and not others. For example, the cost could be lower for large enterprises, such as customs and salt mines with established systems of accounting and record-keeping, than for small ones like blacksmiths and small shops which could require substantial cost to measure their tax base. Even though the cost of monitoring the collector would probably be the same (in proportion to total effort) in both types of enterprises, rent contracts were more

\textsuperscript{23} See, for example, Azobou and Nugent (1988, 1989), Priks (2005), and White (2004).
likely to be observed in the former than the latter. The difference in the cost of measuring the tax base also explains why rent contracts were more likely in urban than rural sources of tax, all else being the same.

The variance of the tax base was also an important reason why rent contracts were chosen over others in some cases. For example, as noted earlier, rent contracts were more likely to be observed for the collection of customs revenues than excise taxes. The primary reason for this was that the variance of the tax base for customs revenues was likely to be higher in the more volatile environment of international trade than regional markets because of greater fluctuations in prices, exchange rates, international supply and demand, and political and military stability. Governments preferred rent contracts over share contracts in the collection of customs dues because the collector’s effort would be state contingent, giving it an advantage over other types of contracts.

Changes in the variance of the tax base also explain the rise of rent contracts in the late sixteenth and seventeenth centuries. Historians have tried to explain this phenomenon by changes in the risk aversion, monitoring capacity, or the fiscal and military needs and priorities of governments.²⁴ Unless they make ad hoc assumptions about the changing preferences and capabilities of governments, however, such explanations leave it unclear why rent contracts rose significantly during this period and not others. This was generally a period of significant rise in population, inflation, urbanization, and political turmoil around the world. The immediate impact of these changes on tax collection was through the significant rise in the variance of tax bases. Whereas governments may have previously preferred to collect some taxes by wage contracts, they now found it more advantageous to switch to rent contracts under the new, more volatile conditions. They did so not necessarily because they became more risk averse or less solvent but because changing to rent contracts allowed them to maximize the net tax revenue by benefiting from the state–contingent effort associated with this type of contracts.

The model also explains successfully when wage contracts were observed in history. It predicts that governments would choose wage contracts over others when the cost of measuring the tax base or the actual revenue were high and the variance of the tax

²⁴ See, for example, Öez mak (1996), Darling (1996), and Kiser (1994).
base and the cost of measuring the collector’s effort were low. We thus agree with the previous literature that the observed general correlation between strong bureaucracies and wage contracts was due to the lower cost of monitoring the tax collectors in those states (Kiser, 1994). This is also consistent with the argument commonly made to explain the eventual dominance of wage contracts around the world, a phenomenon attributed to the general rise in the ability of modern states to monitor government officials that lowered the cost of measurement.25

In addition to the falling cost of measuring effort, however, there were other factors affecting the choice of wage contracts by making the alternatives less attractive. One of these factors was the rising costs of measuring the tax base and revenue. Together with urbanization and industrialization, production and exchange was becoming more sophisticated during this period, raising the cost of measuring the value of economic activities that were previously subject to taxes collected under rent contracts. At the same time, a variety of new activities were emerging that needed to be systematically incorporated into the tax system. Because the past was little guide to determining the value of these activities, and because the government, tax collectors, and taxpayers possessed asymmetric information about them, it was costly for the government and the collectors to measure the value of their tax base.

Another factor for some activities was the falling variance of the tax base. Improvements in agricultural technology reduced the risk of crop failure caused by natural disasters, lowering the variance of expected return from these products. Industrialization similarly reduced the effect of natural risks on production and exchange in general. Greater integration of markets reduced the effect of sector-specific influences on revenue, lowering the variance of the tax base. These factors together reduced the value of state-contingent effort that previously made rent contracts beneficial and allowed governments to increase net revenue by switching to wage contracts.

25 See, for example, Copland and Godley (1993), Kiser and Kane (2001), Priks (2005), and White (2004).
TAX COLLECTION IN THE OTTOMAN EMPIRE

The incidence of tax collection contracts observed in the Ottoman Empire were consistent with the implications of the model from available evidence and also the incidence of contracts observed in other parts of the world. Share contracts were rarely observed in the collection of taxes from agricultural products because the cost of measuring and dividing the tax revenue between the collectors and the government would have been too high. Some of the observed fee-based collection schemes, such as compensating the collectors of poll taxes in some cases with a fixed payment per taxed person, had common principles with share contracts, in the sense that the government had to measure the tax revenue to be able to receive its net share. Similar to the rare incidence of share contracts in other places, this type of a contract was rarely observed in the Ottoman Empire.

Wage contracts were observed primarily in the collection of revenues from Imperial domains and lands belonging to central treasury, particularly before the seventeenth century (Akdağ, 1959, Vol. II: 230-71). Efficient monitoring of tax collectors during this period was made possible by a highly developed Ottoman bureaucracy in the capital and the provinces. The collectors of avârız and nizul levies in the seventeenth century also operated under wage contracts, receiving a daily payment (mübaşriye) for their services (Demirci, 2005). This type of contracts was also occasionally used in the collection of taxes in vassal states or remote provinces, such as in Egypt in the sixteenth century (Shaw, 1962: 31). An effective central or provincial administration reduced the cost of monitoring so that the government expected higher net revenue under wage contracts than other alternatives.

Before the nineteenth century a majority of Ottoman revenues were collected by rent contracts. In rural areas this was done primarily under the timar system, in which appointed cavalrymen collected taxes on behalf of the government in exchange for their military and administrative services. A similar system was used to support garrison troops and other military officials stationed in the provinces and a variety of other recipients including religious and administrative personnel. A portion of the tax revenues

26 For examples of rent contracts in Ottoman tax collection, see Çizakça (1996), Ergenç (1988), Gökbilgin (1952), and Murphey (1987).
collected by rent contracts in such cases was assigned directly to recipients, rather than being returned to the central treasury. As the common principle in this type of tax collection schemes, the government assigned the right to collect taxes in exchange for a fixed rent in the form of a service or monetary payment. Some of the revenues from Imperial domains and treasury lands were also collected by rent contracts.

In each case, the tax base was carefully measured. Before the seventeenth century, the government systematically surveyed the tax base of these sources, recording the expected tax revenue in registers called *tahrir defterleri* (Coşgel, 2004). In the economically and demographically stable environment of the fifteenth and sixteenth centuries, this was an efficient method of measurement. The surveys could be conducted at remote intervals (about 20-30 years), the information in each survey remaining fairly current for a long period of time and the annual cost of measurement being low. But the well-known socio-economic and demographic changes that took place at the end of the sixteenth century required more frequent surveys to keep the information current, raising the cost of this method significantly. Although other factors (see below) caused the Ottoman government to continue to prefer rent contracts over others in most cases, the task of measurement shifted onto the tax collectors. Given the asymmetric information about the value of the tax base between collectors and the government, auctions became the primary mechanism to determine rents and allocate contracts.

Consistent with the observed incidence of contracts in other parts of the World, urban revenues in the Ottoman Empire were more likely than rural revenues to be collected by rent contracts. Among urban revenues, large sources of revenue were more likely than those from small shops and enterprises to be collected by this type of contracts. For example, the revenues from customs, mines, mints, and similar large enterprises with a higher likelihood of established systems of accounting and record-keeping were collected under rent contracts. We believe these observations can be explained by the sectoral and size differences in the cost of measuring the tax base.

The variance of the tax base was also a significant factor in determining which revenues were collected by rent contracts. Research on the allocation of tax revenues

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27 See Murphey (1987) for examples. See also Sahillioğlu (1963) for a description of how the allocation was recorded in tax farm registers.
provides quantitative support for the importance of variance. In a recent quantitative study, we have found that in the sixteenth century the sources of revenue allocated to timars were more likely than those allocated to the provincial and central treasury to include a higher proportion of variable taxes (Coşgel and Miceli, 2005). Clearly, tax bases with a higher proportion of variable taxes also have a higher variance. Given that wage contracts were observed primarily on provincial and central treasury domains, the result suggests a positive correlation between the variance of the tax base and rent contracts.

Significant changes in the variance of tax bases explain systematic shifts among contracts over time. For example, consistent with parallel developments in other parts of the world, the significant demographic and socio-economic transformations that took place in the Ottoman Empire during the sixteenth century systematically increased the variance of tax bases, causing the government to increasingly choose rent contracts over wage contracts. Once again, contrary to previous explanations that attributed this switch to such things as changing risk attitudes and increasing financial difficulties, our explanation rests on the advantage of rent contracts in providing efficient levels of effort for all realizations of the tax base. As the variance of the tax base rose, rent contracts became more advantageous because they offered state-contingent effort.

Although the Ottoman Empire did not follow the European experience temporally closely in later developments toward the increasing dominance of wage contracts after the late seventeenth century, the differential timeline was still consistent with the implications of the model. Whereas rent contracts were being abolished in England and France in the seventeenth and eighteenth centuries, it was not until late in the nineteenth century, following the mid-century reform movement called the Tanzimat, that the Ottoman Empire was able to follow this trend.28 Until then, the circumstances continued to favor rent contracts over wage contracts for most taxes because the variance of their bases and the cost of measuring the collectors’ effort continued to be high as a result of

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28 For the changes in the tax system during the Tanzimat, see Shaw (1975). Another significant departure from the European experience was the awarding of lifetime tenure to recipients of rent contracts at the end of the seventeenth century. Although this is clearly an economically important question, it is separable from the question of how wage, rent, and share contracts systematically differed. We leave it to further research to explore the nature and causes of the introduction of lifetime tenure in rent contracts. For the economic importance and pioneering analysis of this phenomenon, see Genç (2000).
the late arrival of industrialization and various technological and institutional changes that had already taken place in Europe.

**CONSTRAINTS ON INSTITUTIONAL CHANGE IN TAX COLLECTION**

A significant exception to the parallels between Europe and the Ottoman Empire in tax collection was in the constraints the rulers faced in their decisions. Our argument has proceeded thus far as though the rulers were able to freely choose the method of tax collection that maximized net revenue, subject only to measurement technologies and constraints imposed by the behavior of taxpayers and collectors. While this may have been a reasonable simplification in most cases, it was not always an accurate reflection of historical reality. As long as the rulers faced similar institutional constraints, they displayed similar patterns of tax collection. But, particularly from the seventeenth century onward, they faced different institutional constraints and chose different types of contracts for collection. In addition to satisfying the collector’s incentive compatibility and participation constraints and being constrained by available technologies for the measurement of effort, tax base and tax revenue, they increasingly faced a variety of legal, political, and other institutional constraints on choice. Whereas the European powers faced these constraints in the seventeenth century, the Ottoman rulers for the most part continued to operate without significant internal restrictions to their autonomy in taxation until late in the nineteenth century.

Perhaps the best known constraints were those faced by the English and French governments. Two of these constraints were particularly binding in their decisions regarding tax collection. The first was the emergence of a single cartel of tax farmers out of collectors previously operating under individual rent contracts. In England the process started in 1604 with the development of the Great Farm of the customs, which soon incorporated various other tax revenues. Although the French had briefly experimented with the consolidation of tax collection in the sixteenth century, the process resumed at a larger scale in the late seventeenth century, eventually leading to the largest tax farm in Europe, known as the General Farm (Ferme Générale). Although these cartels may have initially helped the English and French governments by lowering the costs of collection
and raising their net revenue, the enormous power of these organizations eventually became a significant constraint in the freedom of these governments to tax and collect as they wished. In addition to giving up power in negotiating with tax collectors, they lost some of their options in making fundamental changes in the system and in choosing the form or setting the parameters of tax collection contracts to maximize the net revenue.  

The second set of constraints were the restrictions imposed on the tax collection activities of the British and French governments during the administrative reforms surrounding the Glorious Revolution in 1688 and the French Revolution a century later. An important component of these reforms was the elimination of rent contracts in tax collection. Although, as Kiser and Kane (2001: 218) note, “the relationship between revolution and bureaucratization is complex,” these developments nevertheless amounted to reducing the options available to these governments. Leaving aside the even more complex relationship between constraining governments and achieving long term growth, we simply note the existence of these constraints in England and France in reducing state power.  

The ability of the Ottoman Empire to choose methods of taxation stands in sharp contrast to the experience of England and France at least until the late nineteenth century. No comparable cartel of tax collectors was ever established, and rent contracts continued to be available even beyond the Tanzimat reforms of the mid nineteenth century. If the government decided that it became more advantageous to switch from wage to rent contract to collect the revenue from a certain source because of changing circumstances (e.g., changing cost of measuring effort versus the tax base), no significant constraints stood in its way to auction off collection rights under rent contracts, and vice versa if the circumstances changed in favor of wage contracts. Although the Tanzimat reforms included a ban on rent contracts in the mid nineteenth century, these efforts reflected more the influence and example of Europe than the government’s compromise against internal pressure. As yet another testimony of the powerful motivation of maximizing tax

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29 For the history and implications of these developments, see Ashton (1956), Hoffman and Norberg (1994), Johnson (2005), Kiser and Kane (2001), and White (2004).  
30 See North and Weingast (1989) and North (2005) for discussions of the relationship between constraints on governments and long term growth.  
31 Johnson and Balla (2005) attribute the differential evolution of French and Ottoman trajectories to the absence of a cartel constraining the ruler in the Ottoman case.
revenue and also a sign of the Ottoman government’s relative freedom from even its own constraints, they were able to reintroduce rent contracts soon afterwards. Although the government followed the reforms by using wage contracts in the collection of newly introduced urban taxes, it soon saw a need for rent contracts in the collection of some of the agricultural taxes (where the cost of monitoring was still high) and felt free to disregard its own reforms and award them under rent contracts as long as the circumstances continued to favor rent contracts over wage contracts for the maximization of net revenue. They did, however, reduce the length of these contracts as necessary in order to maintain a tight control over the incentives of the collectors (Shaw, 1975: 426).

The Ottomans did not face any legal constraints in choosing methods of tax collection either. Islamic law did not explicitly ban any of the three forms of contracts or prescribe one type of contract over the other. Neither did the legal scholars make specific recommendations based on an abstract legal, economic, or moral principle. There were, of course, various occasional movements within the scholarly community challenging Orthodox interpretations of the law in a variety of other matters, such as the approval of certain economic practices deemed inconsistent with Islamic principles. But no significant clash occurred in matters of tax collection. Turkish states had traditionally adopted a dual legal system, incorporating religious and customary laws, in public administration and finance that allowed the ruler to adopt customary tax collection practices in areas that were left open by the Islamic law. Moreover, the economic interests of scholars were aligned with those of the rulers when it came to taxation, reducing the possibility of continual inherent conflict. The legal system or the scholarly community did not present a significant constraint on the tax collection decisions of the ruler.

The only binding constraints were the behavioral responses of the taxpayers and tax collectors. Given the incentives of the tax payers to maximize their own incomes, for example, they would naturally consider the tax rates and collection methods implemented by the ruler in deciding what to produce and in what quantities. The tax collectors

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32 A well-known example is the Kadızadeliler movement of the seventeenth century (Zilfi, 1987)
33 İnalçık (1969).
34 For the response of taxpayers to tax rates in the Palestine, Southern Syria, and Transjordan region under the Ottoman rule, see Cosgel (2005).
would also choose different levels of effort under different collections schemes, as
discussed formally in the model. Although the government could not dictate the choices
of taxpayers and collectors, it could consider these behavioral responses in choosing
methods of tax collection. Given that all governments faced these constraints universally,
our argument in this paper has been that the lack of other types of constraints gave the
Ottoman government a unique advantage in its ability to freely choose among available
methods that generated desirable responses and maximum net revenue.
**References**


