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PROPRIETARY PUBLIC FINANCE, POLITICAL COMPETITION, AND REPUTATION

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ABSTRACT

Although tax policy in most historical cases has been barely distinguishable from legalized theft, why have tax and spending policies in a few unusually fortunate communities, such as some of the modern democracies, apparently been, if not welfare maximizing, at least relatively benevolent? We address this question within a general positive analysis of tax and spending policy that focuses on the effects of political competition and its interaction with other constraints on policy choices, especially the constraint that equilibrium policies must be time consistent. The framework for this analysis is a theory of a proprietary fiscal authority whose objective is to extract rents for the political establishment, the proprietor of sovereign power. The analysis shows that, if the political system is sufficiently stable, then a positive amount of political competition can induce the proprietary fiscal authority to behave more like a hypothetically benevolent fiscal authority. But, political competition can lower the equilibrium tax rate only until the time-consistency constraint becomes binding. Moreover, in a reputational equilibrium, the minimum time-consistent tax rate is lower the more concern that the policymaker has for future political rents. Accordingly, because this concern for the future increases with more political stability, the beneficial effect of political competition also increases with the stability of the political system.

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> Until two or three hundred years ago, it was characteristic almost everywhere--and to this day, it is characteristic in the majority of countries and in countries containing the majority of the world's population--that the primary government activity was and is extraction of surpluses from the predominantly agricultural population and use of such surpluses to benefit tiny groups of people in and near the government--Mills [1986], page 134.

Theories of public finance commonly presume that the objective of the fiscal authority is to maximize the welfare of a representative citizen. It is arguable, however, that actual tax and spending policies usually do not conform to the normative prescriptions of this benevolent view of the fiscal authority and, moreover, that such divergences are not entirely attributable to the idiosyncratic ignorance or foolishness of particular policymakers. This observation suggests that a useful positive theory would view the fiscal authority either as self-interested or as the agent of a self-interested group that has political power, rather than as benevolent, but also as subject to economic and political constraints that differ across time and place. Such a model might help us to understand the wide range of actually observed experience of tax and spending policies. Although, as Mills points out, tax policy in most historical cases has been barely distinguishable from legalized theft, why have tax and spending policies in a few unusually fortunate communities, such as some of the modern democracies, apparently been, if not welfare maximizing, at least relatively benevolent?

An appealingly intuitive, but too simplistic, answer is that political competition in democracies provides a useful constraint on tax and spending policies. One complication is that democracy is neither necessary nor sufficient for political competition. More importantly, a high level of political competition in fact does not seem always to produce relatively benevolent tax and spending policies.

The present paper attempts to develop a general positive analysis of tax and spending policy that can clarify the effects of political competition and its complex interaction with other constraints on policy choices, especially the constraint that equilibrium policies must be time consistent. The framework for this analysis is a theory of a proprietary fiscal authority whose objective is to extract rents for the political establishment, the proprietor of sovereign power. [North (1981) refers to the objective of maximizing political rents as "predatory", but it is not clear why this pejorative term is more warranted in describing the proprietor of sovereign power than in referring to the activities of self-interested proprietors of private property.]

Examples of groups that could constitute the political establishment include the professional politicians, the bureaucrats, the royal court, the members and/or supporters of the ruling party, the military, or the clients of any of these groups. This theory assumes that, although the identity of the political establishment is subject to change, it is at any point in time well defined. The theory also assumes that the fiscal authority is an efficient maximizer of the self interest of the political establishment.[1] Accordingly, tax and spending policies in this theory differ a little or a lot from the policies that would maximize the welfare of the representative citizen, not because the fiscal authority is benevolent or selfish, wise or foolish, knowledgeable or ignorant, but rather, as with any self-interested proprietary activity, because of the nature of the constraints, which in this case are both economic and political, that the fiscal authority faces.

In attempting to maximize political rents -- or, more precisely, the sum of current and expected future political rents -- the proprietary fiscal authority is subject to the basic economic constraint that political rents are limited by the output of the producers who are subject to taxation by the fiscal authority. Accordingly, the fiscal authority faces an endemic trade-off between increases in the share of output that goes to political rents and the disincentive effect of increases in the rental share on the tax base. The fiscal authority must take account of the disincentive effects both of high expected tax rates and of niggardly provision of productive public services.

If the maximization of political rents were subject only to this economic incentive constraint, the fiscal authority would set the tax rate at the peak of the Laffer curve and would devote only a fraction of its revenues to providing productive public services. However, the additional constraints associated with political competition and with the requirement of time consistency, both of which derive from the nature of the political and legal system, can cause the equilibrium tax rate and expenditure pattern to diverge from this simple revenue and political rent maximizing policy.

The competitive threat posed by actual or potential rivals to the existing political establishment can operate through established legal processes that are peaceful and democratic or it can involve the extralegal use of force. In either case, to pose an effective competitive threat, rivals must be genuine outsiders, rather than merely parties or cliques, that as in Alesina (1988), alternate in power according to a stationary stochastic process and that cooperate, at least implicitly, in extracting and sharing political rents. If it exists, political competition faces the fiscal authority with a choice between, on the one hand, tax and spending policies that increase political rents but decrease both the expected welfare of the representative citizen and the survival probability of the existing political establishment and, on the other hand, tax and spending policies that sacrifice political rents in order to increase the survival probability of the existing political establishment and its likelihood of being able to receive political rents in the future.[2] A central result of the analysis is that, if the political system is sufficiently stable (in a way defined more precisely below), then a positive amount of political competition induces an equilibrium in which the proprietary fiscal authority sets a lower tax rate than at the peak of the Laffer curve and, despite reduced revenues, spends more on productive public services.

The requirement of time consistency, if it is a binding constraint, influences the equilibrium policy in the opposite direction. The time-consistency constraint reflects the inability of the fiscal authority to use irrevocable commitments to control its own future actions, including its future choice ot the tax rate. This inability to make commitments is a corollary of the sovereign's ability to act without being answerable to a higher legal authority, the power from which the fiscal authority's power to tax and to set the tax rate derives.

Without irrevocable commitments, an expectation about future policy can be rational, and an announcement about future policy can be credible, only if this expectation or announcement is time consistent -- that is, only if the fiscal authority will not be able to do better in the future than to validate this expectation or announcement. In general, a time-consistency constraint is potentially binding anytime that a sovereign policymaker might be tempted to take actions that other agents do not expect. In the present context, the time-consistency requirement restricts the equilibrium tax rate to be sufficiently high that the fiscal authority will resist the temptation to set the actual tax rate higher than this expected rate. The time-consistency requirement thus limits the potential effect of political competition on the equilibrium tax rate. Political competition can lower the equilibrium tax rate only until the time-consistency constraint becomes binding.

Recent theories -- see, for example, Grossman & Van Huyck (1986, 1988) and Grossman (1988) -- have emphasized the role of reputational considerations in supporting time-consistent equilibria. In a reputational model, the implication of the time-consistency restriction for equilibrium policy depends in large part on the rate at which the policymaker discounts the future. For example, in the present context, if the fiscal authority is sufficiently concerned about future political rents, then reputation substitutes fully for the inability to make irrevocable commitments and the time-consistency constraint does not bind. Alternatively, the less concern that the fiscal authority has for future political rents the more that a binding time-consistency constraint raises the equilibrium tax rate and reduces spending on productive public services.

An essential aspect of the analysis of reputation and time consistency that follows is that it associates the fiscal authority's discount rate with the survival probability of the existing political establishment. If, for example, the existing political establishment has a high survival probability, then the fiscal authority is greatly concerned about the effects of its current policies on its potential for extracting political rents in the future. In equilibrium, the survival probability depends in turn on the stability of the political system. Accordingly, another central result of the analysis is that the beneficial effect of political competition increases with more high political stability.

1. A Pure Kleptocrat

Consider a simple production economy in which between any dates t and $t+1$ producers divide their time between a non-negative fraction ℓ_t devoted to the production of a marketable good and a non-negative fraction $1-\ell_t$ devoted to production of a nonmarketable good. For simplicity, assume for now that the time of producers is the only productive input. [Section 5 below extends the analysis to consider a productive public service.] Output of the marketable good is a concave function of ℓ_t and arrives in quantity y_{t+1} at date $t+1$. Output of the nonmarketable good is a linear function of $1-\ell_t$ and arrives in quantity z_{t+1} at date $t+1$. Specifically, the assumed technologies, summarized by a single parameter α, are

(1) $$y_{t+1} = \ell_t^{\alpha}, \quad 0 < \alpha < 1, \quad \text{and}$$

$$z_{t+1} = \alpha(1-\ell_t).$$

The analysis also assumes that neither form of output is storable.

The fiscal authority imposes at date $t+1$ a tax on the marketable output at rate x_{t+1}, $0 < x_{t+1} < 1$. The utility that the representative producer receives at date $t+1$, denoted by u_{t+1}, is a linear function of its nonmarketable output and of its marketable output net of taxes -- specifically,

$$u_{t+1} = z_{t+1} + (1-x_{t+1})y_{t+1}.$$

At date t, the representative producer forms an expectation, denoted by x^e_{t+1}, of the tax rate that the fiscal authority will impose at date $t+1$. Using this expectation, the representative producer calculates that its expected utility for date $t+1$, denoted by u^e_{t+1}, is

(2) $$u^e_{t+1} = z_{t+1} + (1-x^e_{t+1})y_{t+1}.$$

Because the analysis abstracts from storage, the representative producer's problem is simply to choose ℓ_t to maximize u^e_{t+1}. Given x^e_{t+1} and the production possibilities specified by equations (1), the solution to this problem is

(3) $$0 < \ell_t = (1-x^e_{t+1})^{\frac{1}{1-\alpha}} < 1.$$

According to equation (3), a high expected tax rate on marketable output causes producers to devote more time to nonmarketable, and hence nontaxable, production. Specifically, ℓ_t is inversely related to x^e_{t+1} and is positive if and only if x^e_{t+1} is less than unity.[3] Substituting equations (1) and (3) into equation (2) reveals that given x^e_{t+1} the maximized value of expected utility is

(4) $$u^e_{t+1} = \alpha + (1-\alpha)\ell_t = \alpha + (1-\alpha)(1-x^e_{t+1})^{\frac{1}{1-\alpha}}.$$

A benevolent fiscal authority would set the tax rate, taking account of the representative producer's behavior, to maximize the representative producer's utility. In the present example, which abstracts from productive public services, a benevolent fiscal authority would set the tax rate equal to zero.

The proprietary fiscal authority's objective is to maximize the sum of the current and expected future rents that it transfers to the political establishment. Moreover, in this simple economy, in any period t+1 political rents, denoted by r_{t+1}, are equivalent to current tax revenues, given by $x_{t+1}y_{t+1}$. Thus, the proprietary fiscal authority acts like a pure kleptocrat. It uses the sovereign power to tax only to exploit the producers.

Because y_{t+1} is a fixed function of ℓ_t and ℓ_t is a fixed function of x^e_{t+1}, the fiscal authority knows exactly how $x_{t+1}y_{t+1}$ depends on x^e_{t+1} and x_{t+1}. The relevant future, however, extends to an horizon, denoted by date $t+h$, $h > 0$, that is a random variable corresponding to the prospective longevity of the survival in power of the existing political establishment. Thus, at any date t, the sum of current and expected future political rents, denoted by R_t, is given by

$$(5) \qquad R_t = r_t + E_t \sum_{\tau=t+1}^{t+h} r_\tau \equiv r_t + E_t R_{t+1},$$

where $r_t = x_t y_t$ and where E_t is an operator that denotes an expectation taken over possible realizations of h conditional on information available at date t. [Equation (5) assumes without loss of generality that the fiscal authority does not discount revenues received either before or at date $t+h$.]

To evaluate the expectation in equation (5), assume that the probability that the existing political establishment, being in power at date t, will not survive to date $t+1$ is $1-\rho_{t+1}$, where $0 < \rho_{t+1} < 1$. Given this stochastic process, and given that h is the only stochastic element in the model, the expectation in equation (5) equals a discounted sum of revenues over an infinite horizon -- namely,

$$(6) \qquad E_t R_{t+1} = \rho_{t+1} r_{t+1} + \rho_{t+1} \rho_{t+2} r_{t+2} + \cdots$$

According to equation (6), the contribution of revenues at any future date to R_t is larger the larger is the probability that the sovereignty will survive to that date.

To model the competitive political threat discussed above, assume that ρ_{t+1}, the survival probability of the existing political establishment from date t to date $t+1$, depends at least in part on its popularity relative to potential rivals. The citizens know, of course, that under any political establishment the fiscal authority would attempt to maximize political rents. Accordingly, the popularity of the existing political establishment at date t reflects the difference between u^e_{t+1}, expected utility at date $t+1$ associated with the existing political establishment, and the equilibrium value of expected utility implied by proprietary public finance, which we denote by u^*. Specifically, the analysis assumes that

$$(7) \qquad \rho_{t+1} = \theta[1-q(u^*-u^e_{t+1})], \quad 0 < \theta < 1, \quad q > 0.$$

From equation (4), u^e_{t+1} depends negatively on x^e_{t+1}, the expectation that the representative producer forms at date t of the tax rate that the fiscal authority will impose at date $t+1$, and u^* depends in the same way on the equilibrium tax rate, which we denote by x^*. (We derive x^* below.)

In equation (7), the parameter θ indexes the stability of the political system and the parameter q indexes the competitiveness of the political system. Specifically, if θ is large and q is small, the political system is stable and not highly competitive. In this case, the survival probability of the existing political establishment is high and depends little on the currently expected tax rate. In contrast, if θ and q are both large, the political system is both stable and highly competitive. In this case, the survival probability is high if and only if the currently expected tax rate is low relative to the equilibrium expected tax rate.

At the other extreme, if θ is low, the political system is unstable. In this case, the survival probability is low whatever the value of q or the currently expected tax rate. Such a situation could reflect either a highly chaotic internal political process or a high level of external threat that is independent of the popularity of the political establishment.

The present analysis treats both q and θ as exogenous structural parameters.[4]

2. An Irrevocable Tax-Rate Commitment

Suppose, hypothetically, that at any date t the fiscal authority could irrevocably commit itself to set a specific preannounced tax rate at date $t+1$. Moreover, assume, for simplicity, that this preannounced tax rate is operative whether or not the existing political establishment survives to date $t+1$. (If the existing political establishment does not survive to date $t+1$, then its replacement receives the tax revenue associated with the preannounced tax rate.) Denoting the preannounced tax rate as ${}_tx_{t+1}$, this tax-rate commitment would imply

$$(8) \qquad x_{t+1} = {}_tx_{t+1},$$

and also would imply that the representative producer's expectation of the tax rate would be

$$(9) \qquad x^e_{t+1} = {}_tx_{t+1}.$$

With an irrevocable tax-rate commitment, current political rents, x_ty_t, are predetermined. Hence, to maximize R_t, the fiscal authority at date t would choose ${}_tx_{t+1}$, as part of a program $\{{}_\tau x_{\tau+1}\}^\infty_{\tau=t}$, to maximize expected future political rents, E_tR_{t+1} as given by equation (6), subject to the constraints given by the production possibilities, equations (1), the behavior of the representative producer, equations (3) and (9), the political process, equation (7), and the tax-rate commitment, equation (8). Moreover, if the existing political establishment survives, the fiscal authority would face the same problem in choosing ${}_{t+1}x_{t+2}$, ${}_{t+2}x_{t+3}$, etc. Thus, the fiscal authority's problem is equivalent to the problem of choosing a constant announced and actual tax rate, denoted x', to maximize

$$(10)\quad ER = \frac{\rho}{1-\rho}\, r,$$

$$\text{where } r = xy, \quad y = \ell^{\alpha} = (1-x)^{\frac{\alpha}{1-\alpha}},$$

$$\rho = \theta[1-q(u^{*}-u^{e})], \quad \text{and}$$

$$u^{e} = \alpha + (1-\alpha)\ell = \alpha + (1-\alpha)(1-x)^{\frac{1}{1-\alpha}}.$$

In solving this problem, the fiscal authority takes u^{*} as given.

The first-order condition for a maximum value of ER is that x' is a value of x such that

$$(11)\qquad \frac{\partial r}{\partial x}\,\frac{\rho}{1-\rho} + \frac{\partial \rho}{\partial x}\,\frac{r}{(1-\rho)^{2}} = 0,$$

where $\dfrac{\partial r}{\partial x} = y\left(1 - \dfrac{\alpha}{1-\alpha}\,\dfrac{x}{1-x}\right)$ and $\dfrac{\partial \rho}{\partial x} = -\dfrac{\theta q \ell}{1-x}$.

The second-order condition for a unique maximum is unambiguously satisfied. Moreover, at both x equals zero and x equals unity, ER equals zero. Thus, x' is in the range $0 < x < 1$. For $0 < x < x'$ ER is an increasing function of x, and for $x' < x < 1$ ER is a decreasing function of x.

The first-order condition given by equation (11) says that the optimal kleptocratic tax rate equates the expected marginal revenue from taxation to the marginal cost of the tax rate in reducing the probability of surviving to collect future political rents. In the simplest case, if q equals zero, and, accordingly, $\partial\rho/\partial x$ equals zero -- that is, if there is no political competition and, accordingly, the survival probability does not depend on the expected tax rate -- then x' equals $1-\alpha$, which is the tax rate that maximizes tax revenue. In the absence of political competition, a proprietary fiscal authority, if it could commit itself to a preannounced tax rate, would set the tax rate at the peak of the Laffer curve.

Alternatively, if q is positive, then $\partial\rho/\partial x$ is negative. Consequently, equation (11) implies that $\partial r/\partial x$ is positive and, accordingly, that x' is less than $1-\alpha$. In other words, if the political system is competitive, then the optimal kleptocratic tax rate is less than the revenue maximizing tax rate.

In equilibrium, u^e equals u^* and, consequently, ρ equals θ. Imposing this equilibrium condition on equation (11) reveals that, if the equilibrium tax rate x^* were equal to x', then x' and x^* would satisfy

(12) $$\frac{1-\theta}{q} = \frac{x'(1-x')^{\frac{\alpha}{1-\alpha}}}{1 - \frac{\alpha}{1-\alpha}\,\frac{x'}{1-x'}}.$$

Because the rhs of equation (12) is an increasing function of x', equation (12) implies that, if q is positive, then the larger are q and θ, the lower is x'. In other words, the equilibrium kleptocratic tax rate would be lower and, hence, closer to the optimal policy of a hypothetical benevolent fiscal authority, the more competitive and the more stable is the political system -- that is, the more that a high survival probability depends on a low expected tax rate, as opposed to being high or low independently of the tax rate. In fact, as q became arbitrarily large, if x' were the equilibrium tax rate, then x' and x^* would approach zero.

3. Reputation and Time Consistency

Because it has sovereign power, the fiscal authority in fact cannot irrevocably commit itself to a preannounced tax rate. Moreover, at date t+1, because marketable output y_{t+1} is predetermined, being the result of the producers' choice at date t of ℓ_t, the fiscal authority would maximize its current revenue $x_{t+1}y_{t+1}$ by setting the tax rate x_{t+1} equal to unity. If, however, producers at date t had expected that the tax rate at date t+1 would be unity--that is, that the fiscal authority would confiscate all marketable output--then they would have set the fraction of their time devoted to the production of marketable output equal to zero. Accordingly, for marketable output to be positive and, hence, for potential political rents to be positive, producers at date t must expect that the fiscal authority will resist the temptation to set x_{t+1} opportunistically equal to unity.[5]

This restriction implies that the preannounced tax rate, ${}_t x_{t+1}$, must be less than unity and credible. With credibility, x^e_{t+1}, the tax rate that producers expect, equals ${}_t x_{t+1}$, even though this preannounced tax rate is not an irrevocable commitment. Credibility in turn requires time consistency -- that is, the sum of current and expected future political rents must be at least as large if the fiscal authority honors this preannouncement as it would be if the fiscal authority were to set the tax rate equal to unity.

To analyze the determination of the set of credible preannounced tax rates, we use a simplified version of models of expectations developed in previous analyses of reputational equilibria for monetary and fiscal policy -- see, for example, Grossman (1988) and Grossman & Van Huyck (1986, 1988). Specifically, assume that fiscal authorities always preannounce credible tax rates and follow a rational policy of honoring their preannouncements, except for an infinitesimal fraction, ε, of instances in which they inexplicably lose the rational ability to resist the temptation to set the tax rate equal to unity. A loss of rational restraint could result either from idiosyncratic irrationality or from a breakdown in the process by which the individuals who compose the fiscal authority reach their decisions. Either infirmity, however uncommonly it occurs, is intrinsic and irreversible.

Knowing this pattern of fiscal authority behavior, producers, when dealing with a specific fiscal authority, attach probability $1-\varepsilon$, which equals approximately unity, to rational behavior as long as this fiscal authority has always honored its preannounced tax rate in the past. If, alternatively, this fiscal authority has ever set the tax rate equal to unity, producers would expect such confiscatory behavior in the future. In this case, which occurs with frequency ε, or approximately zero, future marketable output, and hence potential political rents, would be zero. [We can easily extend this analysis to allow producers to ignore an isolated instance of confiscatory taxation or to forget distant past behavior. In Grossman & Van Huyck (1988), memory is a stochastic process.]

Given that the fiscal authority at date τ has a reputation for honoring its preannounced tax rate, these assumptions about producers' expectations imply that

(13) for $t = \tau$, $x^e_{t+1} = {}_t x_{t+1}$ and

for $t > \tau$, either $x^e_{t+1} = {}_t x_{t+1}$

if $x_{t-j} = {}_{t-j-1} x_{t-j}$ for all $j > 0$,

or $x^e_{t+1} = 1$ otherwise.

With expectations evolving according to condition (13), the time-consistency property given the stationary structure of the model, implies that, if ${}_t x_{t+1}$ is less than unity and is credible, then ${}_t x_{t+1}$ satisfies the time-invariant condition

(14) $$\frac{1}{1-\rho} xy > y.$$

The lhs of condition (14) gives the present value at any date $t+1$ of current and expected future political rents if at all dates $\tau > t$ the fiscal authority announces tax rate x for date $\tau+1$ and then honors this announcement at date $\tau+1$. This strategy would yield political rent equal to xy at all dates $\tau+1$ and survival probability ρ from all dates $\tau+1$ to $\tau+2$, where $t+h+1 > \tau+1 > t+1$. The rhs of condition (14) gives the present value at any date $t+1$ of political rents if the fiscal authority has announced tax rate x at date t and were to set the tax rate equal to unity at date $t+1$. This strategy would yield political rents equal to y at date $t+1$, but would mean that at all future dates marketable output and political rents would be zero. Condition (14) simply says that for a tax rate less than unity to be time consistent the value of the strategy of honoring this preannounced tax rate must be at least as large as the value of the confiscatory strategy.

To determine how condition (14) restricts the equilibrium tax rate x^*, recall that in equilibrium, because u^e equals u^*, ρ equals θ. Consequently, after imposing the equilibrium condition that x equals x^*, condition (14) implies that x^* must satisfy

(15) $$x^* > 1-\theta.$$

Condition (15) says that the time-consistency requirement implies a minimum value for the equilibrium tax rate and that this minimum tax rate is lower the more stable is the political system.

More stability, i.e., larger θ, implies a lower value for the minimum equilibrium tax rate because larger θ implies a higher survival probability ρ for the political establishment and thus a higher value for expected future political rents relative to current political rents.

4. Reputational Equilibrium

Given that producers base their expectation about the fiscal authority's tax policy on the fiscal authority's current and past record of honoring preannounced tax rates, a rational fiscal authority considers how its current tax rate affects its reputation for honoring its preannouncements and how its reputation affects its ability to extract political rents in the future. Specifically, taking account of its reputation for rational behavior, the proprietary fiscal authority's problem at date t is to choose the constant announced and actual tax rate x^* to solve the problem of maximizing current and expected future political rents -- the problem given by equation (10) above -- subject to the additional time-consistency constraint given by condition (15). This setup implies that x^* is the tax rate that would provide the largest value of ER subject to the condition that the expectation that the fiscal authority will honor its preannounced tax rate is time consistent. The assumption that the equilibrium corresponds to the best time-consistent expectation is consistent with the fiscal authority's ability to make an active decision to announce the tax rate x^*.

The analysis in Section 2 derived the tax rate x' that would produce the highest value of ER given that the fiscal authority honors this preannounced tax rate. If x' is equal to or larger than $1-\theta$, then the preceding analysis implies that condition (15) is not a binding constraint on the choice of x^*. In that case, reputation is a perfect substitute for irrevocable commitments and, accordingly, x^* equals x'.

Alternatively, if x' is smaller than $1-\theta$, then condition (15) is a binding constraint on the choice of x^*. In that case, because, for x such that $x' < x \leq 1$, ER is a decreasing function of x, condition (15) is satisfied as an equality -- that is, x^* equals $1-\theta$. Nevertheless, as long as θ is positive, reputation is an imperfect substitute for irrevocable commitments, and time consistency does not imply confiscatory taxation. In sum, the time-consistent reputational equilibrium satisfies

$$(16) \qquad x^* = \max(x', 1-\theta).$$

Equation (16), together with equation (12), has the following implications. First, if and only if both $\theta > \alpha$ and $q > 0$, then $x^* < 1-\alpha$. Second, if and only if either $\theta = \alpha$ or $q = 0$, then $x^* = 1-\alpha$. Third, if and only if $\theta < \alpha$, then $x^* > 1-\alpha$.

Figure 1 illustrates these implications of equations (12) and (16). In this figure, the boundary labelled $x' = 1-\theta$ divides (q,θ) space into the region above $x' = 1-\theta$ in which the time-consistency constraint given by condition (15) is not binding and in which $x^* = x' > 1-\theta$ and the region below $x' = 1-\theta$ in which the time-consistency constraint is binding and in which $x^* = 1-\theta > x'$. From equation (12), the $x' = 1-\theta$ boundary satisfies the equality

$$(17) \qquad q = \left(1 - \frac{\alpha}{1-\alpha}\,\frac{1-\theta}{\theta}\right)\theta^{\frac{-\alpha}{1-\alpha}}.$$

Equation (17) implies that this boundary is positively sloped, intersects the $q = 0$ axis at $\theta = \alpha$, and approaches $q = 1$ as θ approaches unity.

In the region above $x' = 1-\theta$, iso-tax-rate loci depict combinations of θ and q derived from equation (12) that imply

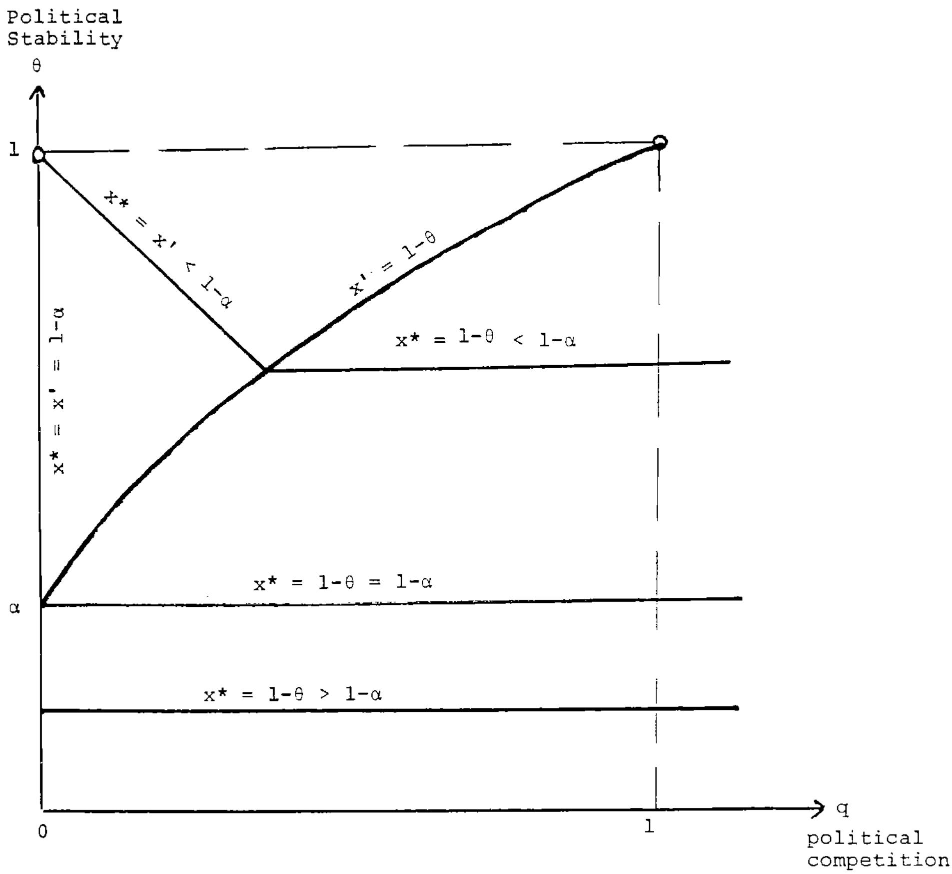

Figure 1

Reputational Equilibrium

the same value of x^*, where $x^* = x'$. The iso-tax-rate locus for $x^* = x' = 1-\alpha$, the revenue maximizing tax rate, coincides with the segment $\alpha < \theta < 1$ of the $q = 0$ boundary. All of the other iso-tax-rate loci above $x' = 1-\theta$ lie inside the $q = 0$ boundary, are negatively sloped, and have $x^* = x' < 1-\alpha$. In this subregion, political competition, i.e., $q > 0$, makes the optimal kleptocratic tax rate lower than the revenue-maximizing tax rate.

In the region below the $x' = 1-\theta$ boundary, iso-tax-rate loci depict combinations of θ and q that imply the same value of x^*, where $x^* = 1-\theta$. All of these iso-tax-rate loci are horizontal. Starting at the $x' = 1-\theta$ boundary and moving through the region below $x' = 1-\theta$ towards smaller values of θ we are initially in the subregion between the boundary $x' = 1-\theta$ and the iso-tax-rate locus for $x^* = 1-\theta = 1-\alpha$. In this subregion, the iso-tax-rate loci have $x^* = 1-\theta < 1-\alpha$ -- that is, although the time-consistency constraint is binding, the equilibrium tax rate is less than the revenue-maximizing tax rate. Eventually, as we continue moving towards smaller values of θ, we cross the iso-tax-rate locus for $x^* = 1-\theta = 1-\alpha$. Now we are in the subregion in which the iso-tax-rate loci have $x^* = 1-\theta > 1-\alpha$ -- that is, the time-consistency constraint forces the equilibrium tax rate above the revenue-maximizing tax rate. Here we continue to cross higher iso-tax-rate loci until finally we reach the iso-tax-rate locus for $x^* = 1-\theta = 1$, which coincides with the $\theta = 0$ boundary.

The subregion of $x^* = 1-\theta > 1-\alpha$ accords with the idea of Buchanan & Lee (1982) that "a short political time horizon" could result in an equilibrium tax rate that is on the wrong side of the Laffer curve. The present analysis formalizes the concept of a short political time horizon in terms of a model in which an unstable political structure implies a low equilibrium survival probability for the political establishment. In the subregion of $x^* = 1-\theta > 1-\alpha$, political rent would be larger if the fiscal authority were able to create the expectation of a lower tax rate and were to validate this expectation. The announcement of a lower tax rate, however, would not be credible because a lower tax rate would not be time consistent. In this model, the fiscal authority can be on the wrong side of the Laffer curve not because it is stupid, but because it is in a time-consistency trap. In the most extreme possibility, in which the index of political stability θ is zero, producers would expect confiscatory taxation and the proprietary fiscal authority would extract zero political rents.

Most importantly, Figure 1 illustrates that the equilibrium kleptocratic tax rate x^* is lowest, and, hence, closest to the zero tax rate of a benevolent fiscal authority, if both the index of political stability, θ, and the index of political competition, q, are large. But, Figure 1 also illustrates that a larger q implies a lower equilibrium tax rate if and only if θ is large enough and q is small enough that the time-consistency constraint is not binding. Thus, the effect of q on x^* is limited. Moreover, the smaller is θ, the smaller is the range of values of q over which a larger q implies a lower x^*. If θ is small enough or if q is large enough that the time consistency constraint is binding, then x^* depends on θ but not on q.

5. Functional Kleptocracy

To generalize the preceding analysis, assume now that the production of the marketable good requires combining the time of producers with a productive public service. At date t, the fiscal authority provides this public service in amount g_t, $g_t > 0$. Specifically, in place of equations (1), the assumed technologies, now summarized by the parameters α and β, are

$$(18) \quad y_{t+1} = \ell_t^{\alpha} g_t^{\beta}, \ \alpha > 0, \ \beta > 0, \ \alpha + \beta < 1 \text{ and}$$

$$z_{t+1} = \alpha(1-\ell_t).$$

According to equations (18), producers' time and public services have positive and diminishing marginal products and are complementary inputs both of which are essential for production of the marketable good. Also, returns to scale are diminishing.

Allowing for a productive public service provides a useful social function for the proprietor of sovereign power and an associated rationale for why the producers willingly subject themselves to the sovereign power to tax. With the amount of marketable output, which provides the tax base, depending on the provision of an essential productive public service, the proprietary fiscal authority's objective of maximizing political rents requires it to use some of its tax revenues to provide this productive public service. Accordingly, the use of the sovereign power to tax is not purely exploitive. In this extended model, we can characterize the proprietary fiscal authority as a functional kleptocrat. [For simplicity, the analysis treats productive expenditures and political rents as distinct, although in practice particular budgeted expenditures can have both productive components and rent components, which outsiders probably are unable to distinguish.]

The representative producer's problem still is to choose ℓ_t to maximize u^e_{t+1}, as given by equation (2). Given x^e_{t+1}, g_t, and the production possibilities specified by equations (18), the solution to this problem, in place of equation (3), now is

$$(19) \quad 0 < \ell_t = [(1-x^e_{t+1})g_t^{\beta}]^{\frac{1}{1-\alpha}} < 1.$$

According to equation (19), ℓ_t is positive if and only if the expected tax rate is less than unity and the amount of public services is positive. Moreover, ℓ_t is larger the lower is x^e_{t+1} and the larger is g_t. [We ignore the possibility that x^e_{t+1} would be sufficiently small and g_t sufficiently large to make equation (19) inconsistent with the condition $\ell_t < 1$. In that event, ℓ_t would equal unity.] Substituting equations (18) and (19) into equation (2) reveals that the maximized value of expected utility is still given by equation (4).

To finance the provision of g_t, the fiscal authority issues tax-anticipation notes that mature at date t+1, when it redeems these notes with the tax revenue from the marketable output that g_t has enhanced. For simplicity, assume that these notes are fully collateralized and that the interest rate is zero. Thus, the fiscal authority must choose x_{t+1} to satisfy the budget constraint $x_{t+1} y_{t+1} > g_t$. [See Grossman & Van Huyck (1988) for a complementary reputational model of sovereign debt that emphasizes the possibility of debt repudiation.]

A benevolent fiscal authority in this extended model would face the standard problem in normative public finance of choosing a socially optimal amount of public expenditure that has to be financed by distortionary taxation. Given the preferences and behavior of the representative producer, this problem reduces to the problem of choosing, subject to the fiscal authority's budget constraint and to $x^e_{t+1} = x_{t+1}$, g_t and x^e_{t+1} to maximize ℓ_t, as given by equation (19), thereby maximizing u^e_{t+1}, as given by equation (4). The time-invariant solution for this problem, denoted by $\tilde{g}$ and $\tilde{x}$, equates the marginal product of public services to unity, thereby maximizing the net contribution of public services to marketable output, and satisfies the fiscal authority's budget constraint as an equality. Specifically, $\tilde{g}$ and $\tilde{x}$ satisfy

(20) $\beta \ell^{\alpha} g^{\beta-1} = 1$ or, equivalently, $g = \beta y$, and

(21) $xy = g$.

Equations (20) and (21) together imply that $\tilde{x}$ equals β.

Equations (19) and (20) together also imply that the optimal values of g and x are inversely related. Specifically,

(22) $$g = [\beta^{1-\alpha}(1-x)^{\alpha}]^{\frac{1}{1-\alpha-\beta}} .$$

This inverse relation obtains because a lower value of x implies a larger value of ℓ and, hence, a higher marginal product of public services.

Returning to the proprietary fiscal authority, consider first the policy of the functional kleptocrat in the case in which the time-consistency constraint is not binding. In this case, the equilibrium amount of public services, denoted by g', and the equilibrium announced and actual tax rate, again denoted by x', solve the problem of maximizing

(23) $$ER = \frac{\rho}{1-\rho} r,$$

where $r = xy - g$, $y = \ell^{\alpha} g^{\beta} = [(1-x)g^{\beta}]^{\frac{\alpha}{1-\alpha}} g^{\beta}$.

$$\rho = \theta[1-q(u^{*}-u^{e})], \text{ and}$$

$$u^{e} = \alpha + (1-\alpha)\ell = \alpha + (1-\alpha)[(1-x)g^{\beta}]^{\frac{1}{1-\alpha}} .$$

The differences between the problem given by equation (23) for the functional kleptocrat and the problem given by equation (10) above for the pure kleptocrat are that in equation (23) both the current amount of political rents and the expected utility of the representative producer, and, hence, the survival probability of the political establishment, depend on the amount of public services that the fiscal authority provides as well as on the tax rate.

The first-order conditions for a maximum value of ER are that the derivatives of ER with respect to x and with respect to g equal zero. Thus, x' and g' satisfy

$$(24)\qquad \frac{\partial r}{\partial x}\frac{\rho}{1-\rho} + \frac{\partial \rho}{\partial x}\frac{r}{(1-\rho)^2} = 0,$$

where $\frac{\partial r}{\partial x} = y(1 - \frac{\alpha}{1-\alpha}\frac{x}{1-x})$ and $\frac{\partial \rho}{\partial x} = -\frac{\theta q \ell}{1-x}$,

and

$$(25)\qquad \frac{\partial r}{\partial g}\frac{\rho}{1-\rho} + \frac{\partial \rho}{\partial g}\frac{r}{(1-\rho)^2} = 0\ ,$$

where $\frac{\partial r}{\partial g} = \frac{\beta x y}{(1-\alpha)g} - 1$ and $\frac{\partial \rho}{\partial g} = \theta q \beta \ell / g$.

Equation (24) like equation (11) above, says that the optimal proprietary policy equates the expected marginal revenue from taxation to the marginal cost of the tax rate in reducing the probability of surviving to collect future political rents, except that the marginal revenue from taxation and the marginal cost of taxation now depend on the amount of public services as well as on the tax rate itself. Equation (25) says that the optimal proprietary policy also equates the expected marginal cost of public services in reducing current poltical rents to the marginal benefit of public services in increasing the survival probability.

Equations (24) and (25) together imply that g' and x' also satisfy equations (20) and (22). This result says that, given the tax rate, the functional kleptocrat, like the hypothetically benevolent fiscal authority, would spend a sufficient amount on productive public services to maximize the net contribution of public services to marketable output. For a given tax rate, this spending policy maximizes both the tax base and expected political rents.

The functional kleptocrat, however, does not choose the same tax rate as would a benevolent fiscal authority. For example, if q equals zero, then equation (24), like equation (11) above, implies that x' equals $1-\alpha$. In other words, if the time-consistency constraint is not binding, then the functional kleptocrat, like a pure kleptocrat, in the absence of political competition would set the tax rate to maximize tax revenue.

The assumption of diminishing returns to scale means that $1-\alpha$ is larger than β. Thus, if q equals zero, then x' is larger than $\tilde{x}$ and, consequently, equation (22) implies that g' is smaller than $\tilde{g}$. In other words, if the time-consistency constraint is not binding, the proprietary fiscal authority in the absence of political competition would set a higher tax rate and would provide a smaller amount of public services than would a benevolent fiscal authority. Accordingly, the proprietary policy would result in a smaller production of marketable output and a lower level of utility for the representative producer than would a benevolent policy.

These differences, however, would be smaller the larger are α and β. Specifically, as the sum of α and β approaches unity -- that is, as the technology approaches constant returns to scale -- g' approaches $\tilde{g}$, x' approaches $\tilde{x}$, and the maximum amount of rent that the political establishment can collect approaches zero.

Analysis of equation (24) and (25) also reveals that, if the time-consistency constraint is not binding, the effects of political competition q and political stability θ on the functional kleptocrat are a straightforward extension of the effects on a pure kleptocrat. Specifically, if q is positive, then x' is smaller, g' is larger, and the amount of political rent is smaller than with q equal to zero. Political competition causes the proprietary fiscal authority both to set a lower tax rate and to provide a larger amount of public services in order to enhance the survival probability of the political establishment. Moreover, as with the pure kleptocrat, if q is positive, then x' is lower and g' is larger the larger are q and θ. Thus, the optimal policy of the functional kleptocrat is closer to the optimal policy of the hypothetically benevolent fiscal authority the more competitive and the more stable is the political system.

Now consider the policy of the functional kleptocrat in the case in which the time-consistency constraint is binding. In place of condition (14), this constraint for the functional kleptocrat is that, if the equilibrium tax rate x^* is less than unity, then x^* and the equilibrium amount of public services, denoted by g^*, satisfy the condition

$$(26) \qquad \frac{1}{1-\rho}(xy - g) > y - g$$

The ℓhs of condition (26) gives the present value at date t+1 of current and expected future political rents if at all dates $\tau > t$ the fiscal authority provides public services in amount g and announces tax rate x for date $\tau+1$ and then honors this announcement at date t+1. The rhs of condition (26) gives the present value at date t+1 of political rents if the fiscal authority has provided public services in amount g and has announced tax rate x at date t and were to set the tax rate equal to unity at date t+1.

To determine how condition (26) restricts x^* and g^*, define $\bar{x}$ and $\bar{g}$ to be the tax rate and amount of public services that maximize ER, as given by equations (23), subject to the constraint given by equation (26) being satisfied as an equality. Thus, $\bar{x}$ and $\bar{y}$ satisfy the first-order conditions

$$(27)\qquad \frac{\partial r}{\partial x}\frac{\rho}{1-\rho} + \frac{\partial \rho}{\partial x}\frac{r}{(1-\rho)^2} + \lambda\left[\frac{\partial r}{\partial x}\frac{1}{1-\rho} + \frac{\partial \rho}{\partial x}\frac{r}{(1-\rho)^2} - \frac{\partial y}{\partial x}\right] = 0 \text{ and}$$

$$(28)\qquad \frac{\partial r}{\partial g}\frac{\rho}{1-\rho} + \frac{\partial \rho}{\partial g}\frac{r}{(1-\rho)^2} + \lambda\left[\frac{\partial r}{\partial g}\frac{1}{1-\rho} + \frac{\partial \rho}{\partial g}\frac{r}{(1-\rho)^2} - \frac{\partial y}{\partial g} + 1\right] = 0,$$

where $\frac{\partial y}{\partial x} = -\frac{\alpha}{1-\alpha}\frac{y}{1-x}$, $\frac{\partial y}{\partial g} = \frac{\beta}{1-\alpha}\frac{y}{g}$,

$\frac{\partial r}{\partial x}$, $\frac{\partial \rho}{\partial x}$, $\frac{\partial r}{\partial g}$, $\frac{\partial \rho}{\partial g}$ are as in equations (24) and (25) above, and where λ is a positive Lagrange multiplier.

These first-order conditions imply that the effects of the time-consistency constraint on the functional kleptocrat are also a straightforward extension of the effects on a pure kleptocrat. Specifically, equations (27) and (28) together imply that $\bar{g}$ and $\bar{x}$ also satisfy equations (20) and (22). Even if the time consistency constraint is binding, the functional kleptocrat provides productive public services in the quantity that, given the tax rate, maximizes the net contribution of public services to marketable output.

Given that in equilibrium ρ equals θ, after imposing the equilibrium condition that $\bar{x}$ equals x^* and $\bar{g}$ equals g^*, condition (26) together with equation (20) imply that

$$(29)\qquad \bar{x} = (1-\theta)(1-\beta) + \beta.$$

Moreover, the time-consistent reputational equilibrium for the functional kleptocrat in general satisfies

$$(30)\qquad x^* = \max\,(x', \bar{x}) \text{ and}$$

$$(31)\qquad g^* = \min\,(g', \bar{g}),$$

where g' and x' and $\bar{g}$ and $\bar{x}$ are related according to equation (22). Equation (30) has the same form as equation (16) that applied to the pure kleptocrat, although x' and $\bar{x}$ for a functional kleptocrat are generally not equal to x' and $1-\theta$ for a pure kleptocrat. Nevertheless, Figure 1 with $\bar{x}$ replacing $1-\theta$ also summarizes the qualitative properties of the reputational equilibrium for the functional kleptocrat. The $x' = \bar{x}$ boundary intersects the $q = 0$ boundary at $\theta = \alpha/(1-\beta)$.

6. Summary

The analysis, as summarized by Figure 1, shows that, if the political system is sufficiently stable, a more competitive political system is better up to a point. As long as the time-consistency constraint is not binding, more political competition, like more political stability, implies a lower tax rate and more spending on productive public services. In this case, the proprietary fiscal authority, in order to enhance the survival probability of the political establishment, behaves more like a hypothetically benevolent fiscal authority.

Political competition, however, can lower the equilibrium tax rate and increase the equilibrium spending on productive public services only until the time-consistency constraint becomes binding. Consequently, the beneficial effect of political competition increases with the stability of the political system. Regardless of the amount of political competition, a political system that is insufficiently stable can cause the fiscal authority to be trapped on the wrong side of the Laffer curve and to provide little in the way of productive public services.

Why then, as we asked in the introduction, have tax and spending policies in some of the modern democracies apparently been, if not welfare maximizing, at least more benevolent than in the typical kleptocracy? The theory of proprietary public finance developed here suggests that the fiscal authorities in these modern democracies are not necessarily relatively uninterested in maximizing political rents or relatively wise or knowledgable. Instead, the theory suggests not that they do not share the objectives of other kleptocrats, but rather that they face economic and political constraints that induce them to follow policies that are closer to the policies of a hypothetically benevolent fiscal authority. The theory suggests, specifically, that the essential characteristic of these modern democracies is that their political systems combine a high degree of political stability with a positive amount of effective political competition.

FOOTNOTES

1. The analysis abstracts from the process of forming the political establishment and from the related agency problem that North stresses in his discussion of the extraction of political rents. We implicitly assume that the process by which the political establishment appoints and removes individual policymakers insures that the fiscal authority faithfully translates the political establishment's preferences into policy.
2. This analysis would extend in a more general framework to the more basic policy choice emphasized by North between a structure of property rights that facilitates the extraction of political rents and a structure that enhances the welfare of the representative citizen. The specific models developed below implicitly take as given the structure of property rights and exchange and other determinants of the economy's production possibilities, except for provision of productive public services. Moreover, the analysis does not consider the possible use of police powers to increase the survival probability of the existing political establishment by suppressing dissent. The analysis also takes the fiscal jurisdiction as given--see Friedman (1977) for a relevant analysis--and abstracts from the threat of secession, a possibility analyzed by Buchanan & Faith (1987).
3. In an extended model, this inverse relation between ℓ_t and x^e_{t+1} also could involve the relocation of taxable activity outside the jurisdiction of this fiscal authority, a possibility analyzed in the literature stemming from the work of Tiebout (1956) and also emphasized by Friedman (1977) and by North.

4. In this setup, ρ_{t+1} does not depend on x_{t+1}, the actual tax rate imposed at date t+1. In other words, the political establishment's survival to date t+1 is determined before x_{t+1} is imposed. An alternative formulation, which would complicate the analysis of the reputational equilibrium, would have ρ_{t+1} depend on x_{t+1}, rather than on x^e_{t+1}, with survival in power to date t+1--that is, the ability to collect political rents at date t+1--determined after the fiscal authority attempts to impose x_{t+1}.

5. If, as suggested in the preceding footnote, ρ_{t+1} depended on x_{t+1} rather than on x^e_{t+1}, the fiscal authority would be tempted to set x_{t+1} to maximize $\rho_{t+1}x_{t+1}y_{t+1}$ rather than to maximize $x_{t+1}y_{t+1}$. The implied tax rate, although higher than x', would be less than unity if q is positive. Moreover, although the present model focuses on a simple proportionate income tax, a similar time-consistency constraint would apply to any tax that the fiscal authority would be tempted to impose at a higher rate than expected. See Grossman & Van Huyck (1986) for an analysis of a time-consistent reputational equilibrium for seigniorage, in which case inflation is the tax.

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