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Laffer paradox, Leviathan, and political contest

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[Abstract]

This paper considers a political contest model wherein self-interested politicians seek rents from the public budget, while general voters make political efforts to protest against politicians' rent seeking directly (for example, through voting in referendums such as the passage of Proposition 13) or indirectly (for example, through donating money to organized groups such as the National Taxpayer Union). We show that the political contest may ironically lead to the Laffer paradox; that is, rent-seeking politicians may intend to set the tax rate higher than the revenue-maximizing rate. For taming Leviathans, political protests may not be as effective as competition among governments.

JEL classification: D72; F20; H41; H71

Key words: Laffer paradox, Leviathan, Political contest, Revenue-maximizing rate

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1. Introduction

Leviathan-type governments without constitutional constraints impose taxes at a rate that maximizes the tax revenue. This rate is higher than the rate that maximizes social welfare in the standard framework wherein social welfare depends on useful public goods but not on wasteful spending or rent. It is widely known that a strong constraint can be set by the constitution to limit the tax rate. However, other constraints are required when constitutional constraints are not available. Plausible candidates include competition among governments (as an exit) and pressure by voters (as a voice).

Institutional competition among governments may take the form of an “exit” such as tax competition, which is popular in theory and practice.¹ Brennan and Buchanan (1980), among others, showed that because of institutional competition among governments, revenue-seeking governments in a federation will end up on the upward-sloping part of the Laffer curve. On the contrary, Apolte (2001) indicated that such a taming effect can only be expected if a certain rule of competition among several decentralized governments is applied. He suggested that federalism is not necessarily a substitute for constitutional limits to Leviathans.

In addition to institutional competition, it is important to examine the role of political pressure by general voters because the amount of rent seeking is usually affected by the voters’ “voice,” as pointed out by Hoyt (1999).² See also Cheikobossian (2008), Edwards and Keen (1999), and Besley and Smart (2007).

Suppose that there are two types of public spending: wasteful spending and useful spending. A rent-seeking government would prefer to increase the share of wasteful spending by conducting its political activities. On the other hand, the voters also have an incentive to perform their political activities or make efforts to reduce the share of wasteful spending and increase that of useful spending. The actual distribution of tax revenue between useful and wasteful spending is determined as the outcome of political contests between the rent-seeking government and the voters.

In this paper, we consider a simple formulation of a political contest. In our approach, the rent-seeking politicians and the general voters engage in a political contest in terms of resources. The greater the amount of political effort by the voters (rent seekers), the greater is the share of useful spending (wasteful spending) at the

given level of total tax revenue. This political contest can result in a compromise. In reality, voters make some political efforts to influence budgetary outcomes through voting, writing articles, lobbies, and protests, while politicians make such efforts through campaigns, logrolling, bribery, and corruption.

Buchanan (1980) suggested a property right perspective on rent seeking wherein rent-seeking activities may be viewed as attempts to redefine property rights. Our political contest model adopts this approach. More specifically, the voters may have property rights over the tax revenue collected nominally. However, these rights are not secure, since they can be altered or reallocated as a result of theft or rent seeking by the politicians. Offense creates a demand for defense, and hence, as first pointed out by Wenders (1987), rent seeking self-generates rent defending. Instead of remaining idle and awaiting the outcome of politicians' rent seeking, the voters may intend to protest against such activities. As a parallel to campaigns, logrolling, bribery, and corruption by politicians aiming to exploit budgetary rents, voting, writing articles, lobbies, and protests by voters against exploitation by politicians can be observed in the real world.

A natural conjecture about the outcome of a political contest is that the equilibrium tax rate will be set on the upward slope of the Laffer curve since the political effort by general voters imposes some degree of political constraints on rent-seeking behavior. Contrary to this conjecture, we show that the rent-seeking politicians may intend to set the tax rate higher than the revenue-maximizing rate. This is mainly because an increase in the tax rate will engender a negative income effect on the political efforts of voters.

The inclusion of a political contest leads to two main effects if the tax rate is raised. First, the corresponding increase in the tax revenue, if any, will stimulate both the rent-seeking behavior of politicians and the rent-reducing behavior of voters in the political contest. However, this tax revenue effect is nil at the revenue-maximizing tax rate because the tax revenue will not marginally change at this rate. Second, an increase in the tax rate at the revenue-maximizing point will undermine the political efforts of voters by reducing their disposable income. This negative income effect is beneficial to the rent seeker in the political contest as it, other things being equal, raises the relative share of tax revenue allocated to him/her. The second effect dominates the first effect at the top of the Laffer curve,

thereby leading to the Laffer paradox. The main message conveyed by our paper is that the “voice” of the general public may not be as effective as competition among governments at curbing politicians’ rent seeking.

We also consider an extended model in which politicians exhibit neither completely self-interested nor completely benevolent behavior. We show that if the degree of a politician’s rent seeking is not very high, the Laffer paradox does not occur. It occurs only if the degree of politicians’ rent seeking exceeds some threshold.

Shughart II and Tollison (1991) and Wrede (1996, 1999), among others, showed that in the case of tax source sharing, revenue-seeking governments in a federation will end up on the downward-sloping part of the Laffer curve.³ In the present framework, we assume away tax source sharing but incorporate the cost of obtaining rent. Interestingly, politicians still intend to set the tax rate at a level higher than the revenue-maximizing rate.

The rest of the paper is organized as follows. Section 2 presents the analytical framework. Section 3 considers the political contest model where the politician is a rent seeker, while Section 4 examines a more general version of the model in which the politician maximizes the weighted sum of his/her rent and the welfare of voters. Finally, Section 5 concludes the paper.

2. Basic model

2.1. Analytical framework

We develop a simple budgetary model in which the rent-seeking politicians (RPs) and the general voters (VTs) interact in a small open economy.

The government not only provides useful public goods G but also engages in wasteful spending S . Public good G is beneficial to the voters, whereas wasteful spending S is beneficial to the rent-seeking politicians. Following the tradition of Leviathan models of government, as in Brennan and Buchanan (1980) and others, politicians prefer wasteful public spending (S), which provides them with opportunities to enhance their personal welfare.

The relative price of public and private goods is set to unity for simplicity. Let τ denote the tax rate, Y , the total income, and τY , the total tax revenue. The government budget constraint is given as follows:

$$G + \widehat{S} = \tau Y, \quad (1)$$

where \widehat{S} denotes the gross wasteful spending or gross rent of RP. With regard to the budget constraint of politicians, we have

$$\widehat{S} = S + a, \quad (2)$$

where S represents the net wasteful spending or net rent of RP, and a political spending or efforts by RP. The objective of the representative RP is to maximize S .

On the other hand, the social welfare, W , which reflects VT's preferences over public goods G and private consumption c , is given by

$$W = u(G) + h(c), \quad (3)$$

where $u(G)$ denotes utility from public consumption G , with $u' > 0$ and $u'' < 0$, and $h(c)$ refers to utility from private consumption c with $h' > 0$ and $h'' < 0$.

VTs are consumers and investors in the economic sphere. They engage in private investment k , which has the productive effect of raising income, and thereby, tax revenue. Moreover, k may be regarded as the various efforts made to increase private income, such as physical investment, human investment, or labor supply. We assume that Y is dependent on private investment by the private sector with $Y = \sum f(k) = nf(k)$, where f is the per capita income and n is the number of general voters. The function f is assumed to satisfy the standard condition: $f' > 0$, and $f'' < 0$. Henceforth, we assume $n = 1$ for simplicity; this implies that the free-rider problem does not exist among VTs, which provides them with the best scenario for dealing with RPs. However, the main result of our paper will qualitatively hold even if we allow for the case wherein $n > 1$ (see Section 3.4).

VTs also make political efforts e . These political efforts may be direct, for example, through voting in referendums such as the passage of Proposition 13,⁴ or indirect, for example, through donating money to organized groups such as the National Taxpayer Union.⁵ The budget constraint of each voter is given as

$$c + e + k = (1 - \tau)f(k). \quad (4)$$

For simplicity, investment is assumed to produce output instantaneously. Therefore, we may use the static model.

2.2. *Pure rent-seeking model*

We first consider the pure rent-seeking model as a benchmark. Without any political contest, $a = e = 0$ and $G = 0$. RP is assumed to maximize S simply by choosing τ . The timing of the game is as follows. First, RP chooses τ to maximize S . Then, VT determines k and c .

The first-order condition with respect to k for VT is

$$(1 - \tau)f'(k) = 1. \quad (5)$$

VT's responses to τ can be summarized by the functions

$$k = k(\tau) \text{ and}$$

$$c = c(\tau).$$

It is clear that the total tax revenue, τY , also becomes a function of τ .

The optimal condition with respect to τ for RP is given as

$$\frac{dS}{d\tau} = \frac{d(\tau Y)}{d\tau} = 0. \quad (6)$$

Since the total tax revenue is used solely for rent (or wasteful spending), it is optimal for RP to choose the tax rate that maximizes the total tax revenue. We denote the revenue-maximizing tax rate by τ_M .

2.3. *Pure benevolent model*

We consider the pure benevolent model as the other benchmark. A benevolent RP chooses G and τ to maximize

$$W = u(G) + h[(1 - \tau)f - k].$$

The timing of the game is as follows. First, RP chooses G and τ to maximize W . Then, VT chooses k to maximize W at the given G and τ .

In the second stage of the game, the first-order condition with respect to k is the same as that in Section 2.2; that is,

$$(1 - \tau)f' = 1. \quad (5)$$

As a result, VT's response functions for k and c are the same as those in Section 2.2.

In the first stage of the game, the first-order condition with respect to τ (and hence G) is

$$\frac{dW}{d\tau} = u' \frac{d\tau Y}{d\tau} + h[(1 - \tau)f' - 1] \frac{dk}{d\tau} - h' f = 0. \quad (7)$$

The second term reduces to zero owing to the first-order condition with respect to k ; that is, equation (5). The third term represents the (negative) income effect of raising tax on consumption. Thus, at the optimum level,

$$\frac{d\tau Y}{d\tau} > 0 \text{ since } h'f > 0.$$

In other words, the optimal tax rate set by the benevolent RP is less than the revenue-maximizing tax rate, τ_M . This is the standard result since the benevolent RP considers the marginal cost (negative income effect) of raising τ on private consumption c as well as the marginal benefit from raising τ on the provision of public good G .

3. Political contest approach

Section 2 considers two extreme governments, namely, pure rent seeking and pure benevolent. These two extremes correspond to two broad types of governments that are based on the doctrine of self-interest and the doctrine of the common good respectively. In both the models, RP is only allowed to choose tax rate τ , and VT is only allowed to choose investment k . In particular, RP's rent seeking is constrained only by his/her ability to extract tax revenues from VT through taxation. However, it is obvious that VT makes political efforts to influence budgetary outcomes through voting, writing articles, lobbies, and protests. Likewise, it is obvious that RP makes such efforts through campaigns, logrolling, bribery, and corruption.

We now incorporate political efforts by RP and VT into the pure model. The timing of the game is as follows:

Stage I: RP determines the tax rate and his/her political effort.

Stage II: VT decides his/her investment, private consumption, and his/her political effort.

Stage III: The political contest determines the actual distribution of tax revenue between useful and wasteful projects.

This formulation is a natural extension of the pure rent-seeking model (Section 2.3) and the pure benevolent model (Section 2.4) wherein RP is allowed to choose a apart from tax rate τ , while VT is allowed to choose e apart from investment k . The variable a represents RP's political efforts to seek rents from the government budget, while the variable e represents VT's political efforts to oppose RP's rent seeking.

3.1. Stage III

RP's political efforts to exploit budget rents and VT's political efforts to oppose RP's

exploitation trigger a conflict or contest between RP and VT. The conflict/contest involved is presumably complicated, but a key factor used to determine the “output” of the conflict/contest is the “inputs” expended by players. Following the seminal work of Tullock (1980) and the ensuing literature,⁶ we adopt the “production function” approach to the conflict/contest and assume that the outcome of the political conflict/contest is a function of the relative share of the political spending of players. Specifically, RP’s gross gain \hat{S} is determined by

$$\hat{S} = \frac{a}{a+e} \tau Y, \quad (8-1)$$

whereas VT’s gross gain G is determined by

$$G = \frac{e}{a+e} \tau Y. \quad (8-2)$$

The outcome of the political conflict/contest between RP and VT is summarized by contest success functions (8-1) and (8-2).⁷ These functions show that an increase in a at the given e results in an increased distribution of the “pie” τY in favor of RP but against VT and vice versa. Moreover, the functions exhibit the property of homogeneity of degree zero such that the same proportional increase or decrease in a and e leaves the conflict/contest outcome unchanged.⁸

The contest success function usually yields the probability of winning or losing. This formulation may then be justified if both RP and VT are concerned with the expected division of tax revenue. Alternatively, following Long and Vousden (1987) and others, the contest success function may be given a non-probabilistic interpretation: players expend resources competing for a share of divisible rent rather than the entire indivisible rent, and therefore, the relative share of tax revenue is allocated according to the relative share of players’ political efforts.

Note that (8-1) can be rewritten as

$$S = \frac{a}{a+e} \tau Y - a. \quad (8-1)'$$

Thus, RP’s net gain or rent S is given by the difference between \hat{S} and a . If $a = 0$, then $\hat{S} = S = 0$ according to (8-1) and (8-1)′.

Moreover, note that an increase in e reduces c at a given level of k . The gain in G for VT is at the expense of private consumption. The central trade-off faced by agents in the conflict literature is between producing goods and exploiting what

others have produced (Garfinkel and Skaperdas, 2006). The main trade-off faced by VT in our model is between investments for producing goods, which can be used in the private or public sector, and protests against RP's rent seeking in the public sector.

3.2. Stage II

Next, the representative household (VT) maximizes W by choosing his/her investment, consumption, and political effort, taking RP's political effort and the tax rate as given, and anticipating the political contest constraint (8-2). Then, for the first-order conditions with respect to e and k , we have

$$u'G_e = h' \quad \text{and} \quad (9)$$

$$u'G_{\tau Y} \tau f' + h'[f'(1-\tau) - 1] = 0, \quad (10)$$

where $G_e \equiv \frac{a\tau Y}{(a+e)^2}$ and $G_{\tau Y} \equiv \frac{e}{a+e}$.

From the optimizing behavior of voters, we obtain the response functions for e , k , and c . In general, e , k , and c are formulated as functions of τ and a . However, since we are mainly interested in the effect of τ on e , that is, $\frac{\partial e}{\partial \tau}$, at $\tau = \tau_M$, it is appropriate to separate the effect of τY on e from that of τ on e . At $\tau = \tau_M$, τY is fixed with respect to τ in the first-order effect sense, such that the value of $\frac{\partial e}{\partial \tau}$ is the same between the two formulations. Then, we have

$$e = e(\tau, \tau Y, a), \quad (11-1)$$

$$k = k(\tau, \tau Y, a), \quad \text{and} \quad (11-2)$$

$$c = c(\tau, \tau Y, a). \quad (11-3)$$

With regard to the partial derivatives of equations (11-1, 2, 3) with respect to τ , we have

$$\frac{\partial e}{\partial \tau} = \frac{1}{A} [-u'G_{\tau Y} \tau f' + h' f'] h'' (f' - 1), \quad (12-1)$$

$$\frac{\partial k}{\partial \tau} = \frac{1}{A} [u''(G_e)^2 + u'G_{ee} + h''] (-u'G_{\tau Y} \tau f' + h' f'), \quad \text{and} \quad (12-2)$$

$$\frac{\partial c}{\partial \tau} = (f' - 1)k_\tau - e_\tau, \text{ respectively,} \quad (12-3)$$

where $A \equiv [u''(G_e)^2 + u'G_{ee} + h''] [u'G_{\tau Y} \tau f'' + h' f''(1 - \tau) + h'' [f'(1 - \tau) - 1](f' - 1)] + h''(f' - 1) [u''G_e G_{\tau Y} \tau f' - h'' [f'(1 - \tau) - 1]]$,

$G_{ee} \equiv -\frac{2a\tau Y}{(a + e)^2}$, and $A > 0$ if the second-order condition is satisfied. Note that these

derivatives are meaningful only at the point of $\tau = \tau_M$. At this point,

$$\frac{\partial \tau Y}{\partial \tau} = f + \tau f' k_\tau = 0.$$

Using (10), (12-1) reduces to

$$\frac{\partial e}{\partial \tau} = \frac{1}{A} \frac{h'}{\tau} h'' (f' - 1)^2. \quad (12-1)'$$

Since $h'' < 0$, we have $e_\tau \equiv \frac{\partial e}{\partial \tau} < 0$ (unless $f' = 1$). In addition, (12-2) reduces to

$$\frac{\partial k}{\partial \tau} = \frac{1}{A} [u''(G_e)^2 + u'G_{ee} + h''] \frac{h'}{\tau} (f' - 1). \quad (12-2)'$$

The sign of $k_\tau \equiv \frac{\partial k}{\partial \tau}$ depends on the sign of $f' - 1$. On the other hand, since

$\frac{\partial \tau Y}{\partial \tau} = f + \tau f' k_\tau = 0$ at $\tau = \tau_M$, k_τ is negative at this point. Considering (12-2)', it

follows that $f' > 1$, and hence, $e_\tau < 0$ at that point.

Note that the sign of e_τ is generally ambiguous at $\tau \neq \tau_M$. In other words, an increase in τ normally reduces the disposable income, which is the negative income effect. On the other hand, an increase in τ raises the total tax revenue if $\tau < \tau_M$, which stimulates political effort e ; this may be called the tax revenue effect. If the positive tax revenue effect dominates the negative income effect, an increase in τ would simulate political effort e . However, the total tax revenue effect is absent at the revenue-maximized point τ_M , and hence, an increase in τ undermines political effort e .

3.3. Stage I

Here, the rent-seeking RP maximizes S by choosing his/her political effort a and tax rate τ , anticipating the political contest outcome (8-1) and VT's response functions. The first-order condition with respect to a reduces to

$$(e - ae_a)\tau Y = (a + e)^2. \quad (13)$$

The left-hand side of (13) represents the marginal benefit of increasing a and the right-hand side indicates the marginal cost of increasing a for RP.

At the same time, the effect of the tax rate on S at $\tau = \tau_M$ can be written as

$$\frac{\partial S}{\partial \tau} = \frac{\partial \tau Y}{\partial \tau} \left[\frac{a}{a+e} - \tau Y \frac{ae_{\tau Y}}{(a+e)^2} \right] - \tau Y \frac{ae_\tau}{(a+e)^2}, \quad (14)$$

where $\frac{\partial \tau Y}{\partial \tau}$ denotes the derivative of total tax revenue with respect to τ and

$e_{\tau Y} \equiv \frac{\partial e}{\partial \tau Y}$. By definition, $\frac{\partial \tau Y}{\partial \tau} = 0$ at $\tau = \tau_M$, and hence, the first term of (14)

reduces to zero at this point. On the other hand, since $e_\tau < 0$, the second term of (14)

is positive, and hence, $\frac{\partial S}{\partial \tau} > 0$ at $\tau = \tau_M$. In other words, $\frac{\partial \tau Y}{\partial \tau} < 0$ at RP's optimal

choice of τ , which implies that the optimal level of τ set by RP is higher than τ_M .

We can call this the Laffer paradox.

3.4. Some remarks

First, let us consider the case of $n > 1$ and compare the cooperative and non-cooperative solutions. Suppose that VTs behave non-cooperatively in choosing e at Stage II. (8-2) is now replaced by

$$G = \frac{e_i + e_{-i}}{a + e_i + e_{-i}} \tau Y,$$

where $e_{-i} = \sum_{j \neq i} e_j$. Each VT chooses e_i to maximize

$$W_i = u \left\{ \frac{e_i + e_{-i}}{a + e_i + e_{-i}} \tau [f_i(k_i) + \sum_{j \neq i} f_j(k_j)] \right\} + h((1 - \tau)f(k_i) - k_i - e_i)$$

by taking e_{-i} as given. Then, the first-order condition with respect to e_i gives

$$u' \tilde{G}_e = h', \quad (9)'$$

where $\tilde{G}_e \equiv \frac{a\tau Y}{(a + ne)^2}$ with $e = e_i$ for all i 's under the symmetric assumption.

Note that $Y = f(k)$ if $n = 1$ but $Y = nf(k)$ if $n > 1$.

In the cooperative case where VTs maximize $\sum W_i$, the first-order condition becomes

$$nu' \tilde{G}_e = h'. \quad (9)''$$

Since VTs internalize the spillover effect of each member's political effort at the cooperative solution, the total marginal benefit of e is the sum of each member's marginal benefit, which is expressed in the left-hand side of (9)''. Comparing the two first-order conditions (9)' and (9)'', it is clear that the equilibrium level of e (VT's political effort) at the non-cooperative solution is less than that of the cooperative solution.

Nevertheless, we can still show that in the non-cooperative case, $e_\tau < 0$ at the revenue-maximizing point. This is because the first-order condition for each VT in the non-cooperative case is qualitatively the same as that in the cooperative case as long as $n < \infty$. If n goes to infinity, then the non-cooperative solution implies that $e = 0$ and the equilibrium reduces to the pure rent-seeking model of Section 2.2.

Second, our seemingly paradoxical outcome holds in more general formulations of the political contest as long as τ is set before VT determines e ; therefore, an increase in τ may reduce e at $\tau = \tau_M$. For example, consider the following setting, which is more general than (8-2):

$$G = G(a, e, \tau Y). \quad G_a \equiv \frac{\partial G}{\partial a} < 0, G_e \equiv \frac{\partial G}{\partial e} > 0, G_{\tau Y} \equiv \frac{\partial G}{\partial \tau Y} > 0, \quad G_{ee} \equiv \frac{\partial^2 G}{\partial e^2} < 0.$$

It can be shown that the Laffer paradox still occurs under this formulation.

4. Degree of rent seeking

4.1. Analytical framework

In the basic framework presented in Section 2, we follow the Weberian tradition and suppose that politicians are distinct from voters.⁹ Specifically, it has been assumed that politicians adopt politics as a vocation and strive to make it their sole source of income. In this section, we relax this assumption.

We now consider that politicians themselves are identical to voters, except that politicians use their political influence to seek rents once they are in power. Alternatively, to be elected or reelected, rent-seeking politicians must also pay attention to voter welfare. In any case, politicians may exhibit neither completely

self-interested nor completely benevolent behavior.

Suppose that many types of politicians or governments exist. The types of governments or politicians may be represented by their degree of rent seeking, L . If the politicians are only concerned with rent seeking, as in the pure rent-seeking model developed in Section 2.2, the degree of rent seeking is the highest and it is normalized as unity. On the other hand, if the politicians are purely benevolent and seek to maximize the social welfare of voters, as in Section 2.3, rent seeking is absent and its degree is normalized as zero.

In general, the degree of rent seeking, L , is given between 0 and 1. This formulation of $0 < L < 1$ is an interesting combination of pure Leviathan and pure benevolent models. We allow politicians to choose a besides τ and allow voters to choose e besides k . We consider L to be exogenously given in our model. It can be perceived that the actual L in a society emerges from the electoral systems or political institutions of the society; evidently, different resulting L s reflect the different qualities of these systems and institutions.

Specifically, once a type of politician, L , is selected, the objective of RP, Σ , is given as

$$\Sigma \equiv LS + (1 - L)W. \quad (15)$$

Keen (1995) and Edwards and Keen (1996) use a similar formulation.

4.2. Analytical result

Suppose that a type of politician, L , is exogenously given. The objective of RP, Σ , is given as (15). Then, the effect of the tax rate on Σ is given by

$$\frac{\partial \Sigma}{\partial \tau} = L \frac{\partial S}{\partial \tau} + (1 - L) \frac{\partial W}{\partial \tau}, \quad (16)$$

where

$$\frac{\partial S}{\partial \tau} = \frac{\partial \tau Y}{\partial \tau} \left[\frac{a}{a+e} - \tau Y \frac{ae_{\tau Y}}{(a+e)^2} \right] - \tau Y \frac{ae_{\tau}}{(a+e)^2}, \quad (17)$$

$$\frac{\partial W}{\partial \tau} = U_G \left\{ \frac{\partial \tau Y}{\partial \tau} \left[\frac{a}{a+e} + \tau Y \frac{ae_{\tau Y}}{(a+e)^2} \right] + \tau Y \frac{ae_{\tau}}{(a+e)^2} \right\} + h_c(c_{\tau} + c_{\tau Y} \frac{\partial \tau Y}{\partial \tau}) \quad (18)$$

$c_{\tau} \equiv \frac{\partial c}{\partial \tau}$, and $c_{\tau Y} \equiv \frac{\partial c}{\partial \tau Y}$. Hence, at $\tau = \tau_M$, we have

$$\frac{\partial \Sigma}{\partial \tau} = -L\tau Y \frac{ae_\tau}{(a+e)^2} + (1-L)[U_G \tau Y \frac{ae_\tau}{(a+e)^2} + h_c c_\tau]. \quad (19)$$

Since $e_\tau < 0$, the first term of (19) is positive. Examining the sign of $c_\tau \equiv \frac{\partial c}{\partial \tau}$ at $\tau = \tau_M$ yields

$$c_\tau = (f' - 1)k_\tau - e_\tau < 0. \quad (20)$$

With $c_\tau < 0$, the second term of (19) is negative. If the second term dominates the first term, an increase in τ at a given level of τY would reduce Σ . In this case, the Laffer paradox does not occur.

From (19), it is clear that $\frac{\partial \Sigma}{\partial \tau}$ is increasing with L . Let us define \underline{L} , which satisfies $\frac{\partial \Sigma}{\partial \tau} = 0$ at $\tau = \tau_M$. Then, $\frac{\partial \Sigma}{\partial \tau} > 0$ at $\tau = \tau_M$ if and only if $L > \underline{L}$. In other words, the Laffer paradox will occur if $L > \underline{L}$ and not occur otherwise. Note that if $L = 0$, then $\frac{\partial \Sigma}{\partial \tau} < 0$ at $\tau = \tau_M$ must be true. It then follows that $0 < \underline{L} < 1$.

In this general version of the rent-seeking model, the Laffer paradox does not necessarily occur, since the paradoxical possibility also depends on the level of L . If the degree of a politician's rent-seeking is higher, and his/her L is greater than \underline{L} , the Laffer paradox is more likely to occur, and vice versa.

5. Concluding comments

Pure benevolent governments impose a tax rate at a level lower than the revenue-maximizing tax rate. On the other hand, pure Leviathan-type governments impose taxes at the level that maximizes the tax revenue. It is now widely recognized that competition among governments can serve as an appropriate substitute for constitutional constraints on the power of politicians.

Instead of institutional competition, we have examined the role of political protests as limits to Leviathans. More specifically, we consider a political contest model wherein self-interested politicians seek rents from public budgets, while general voters make political efforts to protest against politicians' rent seeking directly (for example, through voting in referendums such as the passage of

Proposition 13) or indirectly (for example, through donating money to organized groups such as the National Taxpayer Union). It is shown that ironically, the Laffer paradox can occur in the political contest between rent-seeking politicians and general voters. Therefore, we provide an example where “voice” can increase, rather than decrease, the tax rate.

We have explored the possibility that political protests may not limit the power of politicians. We do not claim that the Laffer paradox always occurs in a political contest model. If the degree of a politician rent seeking is low, the Laffer paradox is less likely to occur. Our model is admittedly highly stylized, and it abstracts from several possible complications in the real world. In particular, we focus on the conflict/contest between voters and politicians but ignore their heterogeneity. This excludes possible conflicts among voters (for example, various individuals or interest groups competing for budgets, as addressed in Becker, 1981) and among politicians themselves (for example, politicians pursuing their own career and personal interests and disagreeing over the distribution of budgets as revealed in Baron and Ferejohn, 1989). Nevertheless, we hope that this paper has highlighted the limitation of “voice” in constraining the power of politicians and served as a meaningful attempt toward attaining a relatively complete solution for containing Leviathans.

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Appendices

1. Tiebout (1956) and Hirschman (1970) are two classical works on the “exit” issue.
2. For research on rent-seeking, see Congleton et al. (2008).
3. See also Anderson et al. (1989).
4. Proposition 13 endorsed by California voters to limit property tax burdens is a

renowned example.

5. The National Taxpayer Union in the USA is “a nonprofit, nonpartisan citizen group whose members work every day for lower taxes and smaller government at all levels.” There are many other similar organized groups, including the California Taxpayers’ Association (“a watchdog group founded in 1926 to protect taxpayers from unnecessary taxes and to promote efficient, quality government services”) and World Taxpayers Associations (“working together for lower taxes, less waste, accountable government and taxpayer rights all over the world”). The quotations here appear in the websites of the respective organizations.

6. See Nitzan (1994), Garfinkel and Skaperdas (2006), and Konrad (2007) for surveys of relevant literature.

7. This form of the contest success function is widely employed in studies on conflict/contest. See Konrad (2007, section 2.3) for its justifications. We discuss a more general formulation in Section 3.5.

8. As noted by Garfinkel and Skaperdas (2006), this property is analytically convenient like the Cobb-Douglas form in the case of production functions in neoclassical economics, and this may be a reason for its popularity among applications.

9. For a discussion on the Weberian tradition of modeling politicians, see Merlo (2006).

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