Tax competition, rent-seeking and fiscal decentralization

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Abstract

The present paper provides a basis for evaluating fiscal decentralization of expenditure and tax responsibilities, by encompassing the literature on tax competition and rent seeking. Both tax and rent seeking competitions are conceived of as being wasteful and self-defeating. We find that rent-seeking activities account for political distortions which may be mitigated in the process of fiscal decentralization, while tax competition results in economic distortions associated with decentralization. Welfare evaluation should be based on the balance of the political gain and the economic cost. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

A common phenomenon in both industrialized and developing economies has been the devolution of the fiscal system within countries. Fiscal devolution has occurred simultaneously with increased economic integration. These movements have raised concern and interest among economists about the effectiveness of government policies. While decentralization of expenditure responsibilities may enhance the flexibility of public good/service provision at the local level to suit the preferences of residents, devolving functions of
tax and transfer limits the ability of the public sector to fulfill these tasks because lower levels of government are more vulnerable to factor and residential mobility across borders than is the central authority. Views on the latter prospect have been divergent, however. On the one hand, more intensive tax competition – led by the devolution of the tax system – is seen as wasteful or self-defeating, resulting in the under-provision of public expenditures. This view is widely accepted among normative public economists (Musgrave, 1997; Zodrow and Mieszkowski, 1986). These authors tend to advocate a re-construction of the centralized system or policy harmonization among different governmental units. On the other hand, the public choice perspective provides a different evaluation of tax competition. It argues that intergovernmental competition in a decentralized fiscal system will serve as a device to discipline governments (Brennan and Buchanan, 1980; Frey and Eichenberger, 1996).

These opposing views stem from different perceptions of government. The tradition of normative public economics presumes a benevolent government (a social welfare maximizer), while the public choice school regards government as a self-serving agent or a revenue maximizer (Leviathan). The literature on rent seeking, developed by Krueger (1974) and Buchanan et al. (1980) provides a view, closely related to, but different from, Leviathan government. Rent seeking is expenditure by competing interest groups in the form of lobbying and/or bribery, to acquire favorable treatment through public policies (e.g. regulation, tax/subsidy). In this literature, government serves the winning (most successful) interest groups by awarding them ‘artificially created transfers’ (Tollison, 1982). ¹ In the present paper, we aim to synthesize the approaches of normative public economics and public choice. We examine the welfare implications of fiscal decentralization within a nation, in the presence of rent-seeking activities as well as capital tax competition. In this context, fiscal decentralization includes the devolution of both revenue and expenditure powers.²

Capital tax competition among local jurisdictions motivated by an attempt to attract mobile factors is wasteful in nature and contributes to economic distortions. For this reason, normative public economists have called for tax harmonization and/or central authority intervention to correct this inefficiency (Wildasin, 1989). The present model departs from this traditional argument

¹ This approach does not necessarily mean that the government is always the agent of the winning rent seeker. Appelbaum and Katz (1987) examine the situation where the government (regulator) designs a rent seeking game to maximize its own interests.

² The present paper considers political rents that can be decentralized. Examples include transfers to targeted households or/and specific industries (or occupations). Obviously, tariffs are not our focus.
by introducing rent-seeking activities among interest groups within a jurisdiction. Rent seekers attempt to manipulate public policy in their favor. Such rent seeking accounts for political distortions. Both types of competition are consequences of non-cooperative behavior, which creates waste and/or produces a misallocation of resources. It is of interest to examine how these two forms of competition are related in the context of fiscal decentralization. In the present paper, fiscal decentralization would mitigate wasteful rent-seeking activities within the government sector. Decentralization is an institutional device which limits the ability of the government sector to acquire and distribute political rents. It leads to more intensive tax competition, however, which is also wasteful. Therefore, any welfare evaluation of decentralization must weigh these political and economic costs. An analogous study has been undertaken by Edwards and Keen (1996) in the context of what they call a ‘moderate Leviathan’ (i.e., a government concerned with both residents’ welfare and its own benefit). Our work is also related to Qian and Weingast (1997), which claims that fiscal decentralization in China served as a commitment device to preserve market incentives, preventing ex-post government intervention in economic activities.

There are mixed views on the political accountability of local governments. The public choice school argues that the presence of ‘voting with feet’, or residential mobility, induces local governments to serve to their residents better than does the central government (Brennan and Buchanan, 1980). In an environment with incomplete contracts, Seabright (1996) also provides a theoretical model to illustrate that ballot voting works better at the local level and thus residents can more effectively discipline local politicians than their national counterparts. On the other hand, Tanzi (1995) claims that this proximity to residents may make local politicians/officials more vulnerable to rent-seeking activities, especially in developing nations. Moreover, it has been argued that a relatively small interest group can be better organized than one that is large (Becker, 1983). This observation implies that local lobbying groups can be more easily formed than similar national organization. Therefore, decentralization may intensify the rent seeking activities among them.

To the author’s knowledge, few works consider whether decentralization improves accountability or worsens it in the context of rent-seeking and tax competition. In the theoretical model, we establish the hypothesis that – contrary to the concerns raised by Tanzi (1995) – fiscal decentralization can reduce the incentives of special interest groups to bribe local politicians/officials, since intensive intergovernmental competition lowers the expected gain from

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3 Thus rent seeking activities as a possible source of inefficiency in the centralized fiscal system, and tax competition as a cost of fiscal devolution.
the rent seeking, leaving the empirical accuracy of our argument for future research. 4

Our model is highly stylized and contains several simplifications. The model is not intended to replicate the real world. Its simple structure, however, allows us to focus on what we believe to be the essence of our problem. In the basic model developed over the next three sections, the purpose of rent seeking is to obtain non-negative lump-sum transfers (or the monetary values of political rents). If the transfers are intended for a specific sector (such as farming or fishing), we can view this case as one in which each region is divided into two industries and residents work for either one. In Section 5, we examine the case where rent seekers try to influence decisions about public service provision or residence-based taxes. Section 6 concludes.

2. Model of rent seeking in a federation

We denote by \( M \) the number of local jurisdictions in the federation. \( M \) represents the degree of fiscal decentralization by proxying for the choice of government level responsible for taxation and expenditures: a large \( M \) implies that fiscal responsibilities are assigned to lower level of governments. In the present paper, by ‘fiscal decentralization’, we mean the fiscal devolution of both taxation and expenditure responsibilities. The entire population in the national economy, normalized to be unity, is partitioned equally into local jurisdictions, so that each jurisdiction holds \( 1/M \) immobile households. The model involves capital tax competition among local jurisdictions. An increase in the number of local governments, or equivalently a reduction in jurisdictional size in terms of population, encourages this competition. The use of \( M \) as an index of fiscal decentralization, therefore, reflects the notion that the decentralized fiscal system induces intergovernmental competition more than the centralized system. An analogous notion of the decentralized system can be found in Epple and Zelenitz (1981) and Hoyt (1991): they relate the number of local governments to interjurisdictional competition. Although in practice decentralization involves a discrete increase in the number of jurisdictions, we treat \( M \) as a real number for expositional convenience.

Each local jurisdiction provides a public good/service and non-negative transfers to its residents. We suppose that the public service is ‘private’ in the

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4 Many empirical works examine the relationship between government size and decentralization. See, for example, Oates (1985), Nelson (1986) and Marlow (1988). Although these studies cannot be immediately related to our argument, when a substantial portion of government revenue is directed to special interest groups, it seems plausible that having a larger government attracts more rent seeking. Therefore, an inverse relationship between government size and decentralization might imply our hypothesis.
nature of its consumption and is uniformly provided within each jurisdiction.  

The transfers, on the other hand, can be differentiated among residents. This possibility induces rent-seeking activities among interest groups. It will be shown that while rent seeking competition over transfers is mitigated through fiscal decentralization, decreasing the provision of public services accounts for an economic cost.

We assume that households are identical with respect to preferences, capital endowments and production technology. However, they are assigned to different rent-seeking (interest) groups. Households in the economy are equally divided into two interest groups, denoted by \( j = 1, 2 \). We assume that each local jurisdiction contains \( 1/(2M) \) residents of each group. Each interest group organizes the local body and acts collectively within a jurisdiction. Rent-seeking activities in this context take place over the lump-sum transfers. These may represent targeted cash or in-kind transfers favoring special interests. More generally, they can be the equivalent of political rent arising from any government policy, including regulation. The rent seeking game takes the form of a contest (lottery), as is typical in the literature. So, the consequence of rent seeking is to either win or lose.

2.1. Households and capital market

The preferences of households are assumed to be additively separable between private consumption \( C \) and the public service (or the publicly provided private good), \( G: U(C) + B(G) \). Both \( U \) and \( G \) are increasing and strictly concave. In addition, \( B'(0) = \infty \), making the provision of \( G \) essential. We assume that each resident is endowed with a fixed unit of labor and a common production technology, \( f(k) \), which uses both labor and capital \( k \) as inputs. \( f'(k) \) is the gross of tax return on capital and the wage is defined as the residual: \( f(k) - f'(k)k \). Capital is freely mobile across regions, which requires the net of tax return of capital to be equal for all regions. If we

\[ \text{[5] This assumption implies that there are no spill-over effects across jurisdictions.} \]

\[ \text{[6] Rent seeking competition may take several forms, including workers versus capitalists, regulated industry versus consumers, or tax payers versus subsidy recipients. Although the model does not include heterogeneity associated with rent seekers' characteristics, the assumption of symmetry turns out to be helpful in capturing the wasteful nature of rent seeking behavior.} \]

\[ \text{[7] Write the regional production function as } F(k/M, 1/M) \text{ where } k/M \text{ is the total capital input and } 1/M \text{ is labor. Assuming constant returns to scale, we can define } f(k) \text{ by } f(k)/M = F(k, 1)/M. \text{ Note that the per-resident production function, } f(k), \text{ is invariant with respect to } M. \]

\[ \text{[8] We assume away international mobility of capital, so the stock of capital is fixed for the economy as a whole. This assumption is standard in the literature on capital tax competition and allows us to focus on the wasteful nature of intergovernmental competition. In an open economy, the case for centralization of capital taxation is weakened, since an upper level government also faces mobility of capital, further favoring fiscal decentralization in our context.} \]
denote the net return and a source-based capital tax rate by $\rho$ and $t_i$, respectively, the per-resident capital demanded in jurisdiction $i$ is determined by

$$f'(k_i) - t_i = \rho. \tag{1}$$

Solving (1) for $k_i$ yields the per-resident demand function $k(\rho + t_i)$, with $k'(\rho + t_i) = 1/f'' < 0$. The income (before transfers) of a household residing in jurisdiction $i$ consists of wage income plus capital income:

$$I_i = f(k(t_i + \rho)) - f'(\cdot)k(t_i + \rho) + \rho \bar{k}, \tag{2}$$

where $\bar{k}$ is the capital endowment per resident.

The regional demand for capital is $k(\rho + t_i)/M$. Because the total population is unity, the capital endowment in the entire economy is also $\bar{k}$. Given the capital tax rates, $\rho$ is determined so that the market clears:

$$\sum_{i=1}^{M} \frac{1}{M} k(\rho + t_i) = \bar{k}. \tag{3}$$

Eq. (3) yields the net return $\rho$ as a function of capital tax rates ($t_i$, $i = 1, \ldots, M$) where

$$\frac{d\rho}{dt_i} = - \frac{k'(\rho + t_i)}{\sum_{j=1}^{M} k'(\rho + t_j)} < 0. \tag{4}$$

In the symmetric outcome where $t_i = t$ for all $i$, the above reduces to $d\rho/dt_i = -1/M$.

2.2. Local government

Local governments finance their public expenditures (composed of the provision of the public service and the transfers to residents) by imposing a capital tax. The inefficiency arising from capital taxation is associated with horizontal tax externalities, and is well known in the literature on tax competition (Zodrow and Mieszkowski, 1986). We assume that the local government maximizes a weighted sum of residents’ welfare. The existence of rent seeking is incorporated into our framework by supposing that each local government favors the winning interest group in its objective. Each local government assigns the welfare weight $\alpha$ on the winning interest group and $1 - \alpha$ on the losers, with $\frac{1}{2} < \alpha \leq 1$. The local objective function is therefore

$$\alpha U(I_i + T_W) + (1 - \alpha) U(I_i + T_L) + B(G), \tag{5}$$

Admittedly, we do not explicitly model the reason why the local government differentiates between the two groups in the first place. Behind (5), there may lie the self-interested motive of the local authority to maximize the sum of contributions by the rent seekers. I owe this point to one referee.
where $T_W$ and $T_L$ are non-negative transfers to the winners and the losers, respectively. As mentioned, $T_W$ can differ from $T_L$, and $\alpha > \frac{1}{2}$ implies that $T_W$ exceeds $T_L$. Note that this differential fiscal treatment does not cause any inefficiency in itself; transfers among individuals are purely redistributive, given the tax revenues. In other words, while efficiency is an issue for collecting the capital tax, the distribution of tax revenue among residents can be separated from efficiency when rent seeking is not present. In the presence of rent-seeking behavior that aims to affect the welfare weights, however, the transfers cannot be dissociated from efficiency. Attempts to obtain the higher welfare weight result in wasteful or self-defeating competition.

The local public expenditures ($G$ and $T_j$), as well as $t_i$, are determined so as to maximize (5) subject to the following revenue constraint:

$$\frac{G}{M} + \frac{T_W}{2M} + \frac{T_L}{2M} = t_i k(\rho + t_i),$$

where $1/2M$ is the size of each interest group. When setting their tax rates, local governments are strategic in the sense that they incorporate the dependency of $\rho$ – the net return – on their tax rates, as given by (4). This behavioral assumption is key to understanding the relation between the equilibrium value of the tax rate and the number of jurisdictions. Contrarily, Edwards and Keen (1996) assume that each local government takes $\rho$ as given. This assumption explains why the number of jurisdictions does not matter when evaluating the benefits of tax coordination in their model.

Because all residents belonging to either interest group have equal incomes ($I_i$), the objective of the local government is invariant to the identity of a winner in the rent seeking game, as is the choice of the capital tax rate. In other words, there is no uncertainty associated with rent seeking in the economy as a whole. This property substantially simplifies our discussion.

### 2.3. Rent seeking

Each interest group engages in lobbying and/or bribery to obtain a larger welfare weight in the government objective, and thus to receive higher rents (transfers) than the other group. Each group $j$ spends resources in an attempt to increase its probability of winning the contest. Let $e_j/(2M)$ be the total amount spent by group $j$, where $e_j$ is an expense or time cost per member. In the present paper, we assume that rent seeking in each region takes place prior to tax competition among local jurisdictions, so $e_j$ is spent in the earlier stage and thus it does not decrease current consumption. Alternatively, $e_j$ may be interpreted as a time cost of lobbying. Denote the disutility of rent seeking effort by $\phi(e_j)$, which is separable from the utility of the private
good, \( U(\cdot) \). \( \phi \) is increasing and convex in \( e_j \) with \( \phi(0) = \phi_r(0) = 0 \). \(^{10}\) \( \phi(e_j) \) is not accounted in the local objective, since it is sunk when the rents are transferred.

The probability that group \( j \) wins depends on both \( e_j/(2M) \) and \( e_h/(2M) \) \((h \neq j)\): \( P_j(e_j/(2M), e_h/(2M)) \). This probability does not rely on rent-seeking activities in other jurisdictions, ruling out the possibility of inter-regional cooperation among interest groups. Although essentially ad hoc, we follow the literature in specifying the probability function by

\[
P_j = \frac{(e_j/2M)^\gamma}{(e_j/2M)^\gamma + (e_h/2M)^\gamma} = \frac{(e_j)^\gamma}{(e_j)^\gamma + (e_h)^\gamma}.
\]

If \( e_j \) is interpreted as a bribe, some portion of \( e_j \) net of transaction costs constitutes the gain to public officials. The presence of transaction costs reflects the notion that bribery and/or lobbying activities waste resources at least to some extent (Laffont and Tirole, 1991; Mueller, 1988, Chapter 13). Our model – which is concerned with residents’ welfare, not the gain of public officials – treats \( e_j \) as a pure ‘waste’ of resources. \(^{11}\)

The expected utility from engaging in rent seeking is expressed by

\[
P_j U(I_i + T_W) + (1 - P_j) U(I_i + T_L) + B(G) - \phi(e_j).
\]

Before turning to the description of equilibrium in this economy, we summarize the sequence of decision making as follows:

**Stage 0:** Each interest group selects \( e_j \).

**Stage 1:** The outcome of the rent-seeking game is revealed.

**Stage 2:** Local governments compete with one another in setting their capital tax rates.

**Stage 3:** \( G \) and transfers are chosen.

Throughout the present paper, we suppose that rent seeking competition comes before the stage of inter-jurisdictional capital tax competition. Thus, when the local government engages in tax competition, an interest group that is entitled to a favorable transfer has already been identified from the outcome of rent seeking revealed in stage 1. The distinction between stages 2 and 3 is for analytical convenience. Our results would be unchanged if these two stages were combined. It turns out to be helpful, however, to think of the local government’s decision making as sequential.

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\(^{10}\) The effect of group size on rent-seeking cost noted by Becker (1983) is not considered in our model. Including this feature would complicate our analysis without adding insightful results.

\(^{11}\) The common agency literature claims that rent seeking can result in an efficient allocation of resources when the agent (local governments in our context) can design a more sophisticated scheme than \( (7) \) to exploit the interests of all rent seekers (Dixit et al., 1997). It is ethically contentious, however, whether one ought to count the official’s utility in the welfare analysis.
3. Determination of equilibrium

In this section, we provide characteristics of the resulting non-cooperative equilibrium, given $M$. The effects of fiscal decentralization (i.e., an increase in $M$) are examined in the next section. Because of the assumption of identical regions, and the nature of the rent-seeking game, we can concentrate on the symmetric outcome at each stage. Let us start with the final stage and work our way backwards.

Stage 3. Given $t_i$, the local government selects $G$ and the transfers to maximize the objective (5). Since transfers must be non-negative, optimization yields the following Kuhn–Tucker conditions:

$$\alpha U'(I_i + T_W) \leq \frac{B'(G)}{2},$$  \hspace{1cm} (9W)

$$\left(1 - \alpha\right)U'(I_i + T_L) \leq \frac{B'(G)}{2}.$$  \hspace{1cm} (9L)

This expression holds with equality if the transfer is positive. It is immediate to see that $T_W > T_L$, since $\alpha > \frac{1}{2}$. We later show that $T_L = 0$ in the presence of tax competition. Given $T_L = 0$, the transfer can be defined as a function of $I_i$ and the capital tax revenue, $E_i \equiv t_k(\rho + t_i)$: $T_W(I_i,E_i)$. When $T_W > 0$ with $T_L = 0$, comparative statics give

$$\frac{dT_W}{dI_i} = -\frac{4\alpha U''_W}{B'' + 4\alpha U''_W} < 0, \quad \frac{dT_W}{dE_i} = \frac{2B''}{B'' + 4\alpha U''_W} > 0,$$  \hspace{1cm} (10)

where $U_W \equiv U(I_i + T_W)$. Later, we also use $U_L$ to express the loser’s utility.

Stage 2. Taking as given the tax rates in other jurisdictions, a local government’s problem at this stage is expressed by

$$\max_{t_i} \alpha U(I_i + T_W(I_i,E_i)) + (1 - \alpha)U(I_i + T_L(\cdot))$$

$$+ B \left( E_i - \frac{T_W(\cdot) + T_L(\cdot)}{2} \right),$$

where $E_i = t_k(\rho + t_i)$. The first-order condition for $t_k$, evaluated in the symmetric outcome (i.e., $t_i = t$), becomes the following:

$$A(t,M) \equiv -(\alpha U''_W + (1 - \alpha)U''_L)\tilde{k} + B' \left( \tilde{k} + \frac{t}{f''(\tilde{k})} \left( 1 - \frac{1}{M} \right) \right) = 0,$$  \hspace{1cm} (11)

where $I_i$ and $E_i$ reduce to $I = f(\tilde{k}) - t\tilde{k}$ and $E = t\tilde{k}$, respectively.

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12 Given $T_L = 0$, (10) can be obtained by substituting (6) and totally differentiating:

$$\alpha U'(I_i + T_W) = \frac{1}{2}B' \left( E_i - \frac{T_W}{2} \right)$$  \hspace{1cm} (9W')
Lemma 1. $T_L = 0$.

**Proof.** Suppose $T_L > 0$, which implies that both (9W) and (9L) hold with equality. Substituting into (11) implies $t = 0$ and thus $E = 0$. This contradicts $T_j > 0$ ($j = W, L$). \[\square\]

The intensity of tax competition is closely related to the degree of fiscal decentralization, as represented by the number of jurisdictions, $M$. It is interesting to examine the dependency of the symmetric equilibrium tax rate on $M$. Solve (11) for $t$. Then we have the equilibrium value of the capital tax rate given $M, t(M)$. The following lemma yields a characterization of $t(M)$:

**Lemma 2.** Given $M, t(M)$ is uniquely determined and decreasing in $M$, i.e., $dt(M)/dM < 0$.

This lemma is quite intuitive. As the number of local jurisdictions $M$ increases, tax competition becomes more intensive, forcing local governments to lower their tax rates on capital.

In equilibrium, the transfer to the winning group is given by $T_W = T_W(f(\tilde{k}) - tk, t\tilde{k})$. Making use of (10), we find a negative relation between $T_W$ and $M$:

$$\frac{dT_W}{dM} = \frac{4\alpha U'_W + 2B'' - dt}{4\alpha U'_W + B''} < 0.$$ (12)

The intuition of this result is the following. A lower $t(M)$, caused by an increase in $M$, raises the before-transfer private consumption of the winning rent seekers, $I = f(\tilde{k}) - t(M)\tilde{k}$, while reducing the tax revenue $E = t(M)\tilde{k}$. Consequently, the marginal evaluation of $T_W$, $\alpha U'_W$, decreases relative to that of $G$, $B'(G)$. This in turn lowers $T_W$.

From the above, it may be expected that the political rent $T_W$ vanishes when the fiscal system is sufficiently decentralized. We can provide the condition which justifies this intuition. Define $\tilde{t}$ by $\tilde{t} = \alpha U'(f(\tilde{k}) - \tilde{k}) = B'(\tilde{k})/2$.\[14\] When the equilibrium value of the tax rate is such that $t(M) \leq \tilde{t}$, (9W) holds with strict inequality at $t = t(M)$, leading to $T_W = 0$. Since $t(M)$ is decreasing in $M$, we can state that if there exists $\tilde{M} < \infty$ such that $t(\tilde{M}) = \tilde{t}$, $T_W$ vanishes for all $M > \tilde{M}$ because $t(M) < \tilde{t}$.\[15\] $\tilde{M}$ is likely to exist when either $\tilde{t}$ is relatively high or when $t(M)$ is low. From (11), it can be seen that the latter is the case if $-k' = -1/f''(\tilde{k})$ – which relates the sensitivity of capital to the local capital tax rate – is sufficiently large. This condition in turn implies that capital tax competition must be sufficiently intensive, given $M$. In such

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13 The proof is available from the author upon request.

14 The assumption of $B'(0) = \infty$ ensures $\tilde{t} > 0$.

15 The author thanks one referee for deriving the condition.
a circumstance, the local government would be motivated to prioritize the public service provision, even though it favors the utility of the winning group.

To summarize:

**Lemma 3.** The equilibrium value of the political rent $T_W$ is monotonically decreasing as decentralization proceeds (i.e., as $M$ increases). If there exists $\bar{M} < \infty$ such that $t(\bar{M}) = \tilde{t}$, where $\alpha U'(f(\bar{k}) - \tilde{t}k) = B'(\tilde{t}k)/2$, the political rent vanishes for all $M > \bar{M}$.

Let us now turn to the marginal cost of raising local tax revenue. The degree of decentralization, given by $M$, also affects the marginal cost that local governments perceive when collecting the capital tax. Rewrite (11) in the following way:

$$
\frac{B'}{U'} = \left(1 + \frac{t}{\bar{k}f''(\bar{k})} \left(1 - \frac{1}{M}\right)\right)^{-1},
$$

(11')

where $\bar{U}' = \alpha U_W' + (1 - \alpha)U_L'$. The above equation is a familiar form of the modified Samuelson condition in the presence of distortionary taxation. The right-hand side of (11') represents the marginal cost of public funds at the local level (henceforth MCPF). The next lemma claims that the MCPF is increasing in $M$: 16

**Lemma 4.** A larger $M$ implies a higher MCPF at the local level.

Because the economy is endowed with a fixed amount of capital $\bar{k}$, the marginal cost of the capital tax is unity from a national viewpoint. That is, the tax is not distortionary if levied at equal rates in all locations. The disparity between the regional and the national MCPFs is due to the horizontal fiscal externality associated with the interregional mobility of capital. An increase in the capital tax rate in one region leads to a capital outflow from that region but benefits the other local jurisdictions experiencing capital inflow because their tax bases expand. This external benefit is ignored by the individual region, however. The above lemma implies that as the size of local jurisdictions, $1/M$, becomes smaller, the MCPF disparity becomes more significant. The local governments perceive higher MCPFs, which lowers public expenditures excessively. The same effect is found by Hoyt (1991), who claims that consolidation of local governments (i.e., a reduction in $M$) is welfare improving, because it enhances under-provided local public services by decreasing the perceived MCPF. A higher MCPF can account for the economic distortion associated with fiscal decentralization.

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16 It can be shown that $t(M)(1 - 1/M)$ is increasing in $M$. 
We now turn to the rent-seeking activity of each interest group in the jurisdiction.

Stage 0. Note that, given \( M \), the expenditure (lobbying cost) \( e_j \) does not influence either \( t \) or \( T_W \) in the equilibrium. The local government objective is invariant to the outcome of the rent seeking game as discussed above. The expenditure of group \( j \) is solely to raise its probability of winning the rent. Therefore, the optimization problem of each group is

\[
\max e_j P_j U(f(\tilde{k}) - t\tilde{k} + T_W) + (1 - P_j) U(f(\tilde{k}) - t\tilde{k}) + B(G) - \phi(e_j).
\]

The first-order condition for \( e_j \), evaluated at the symmetric outcome (\( e_j = e \)), is expressed by

\[
\Omega(t(M)) \equiv U(f(\tilde{k}) - t\tilde{k} + T_W) - U(f(\tilde{k}) - t\tilde{k}) = \frac{4}{\gamma} e \phi_e(e), \tag{13}
\]

where \( T_W = T_W(f(\tilde{k}) - t\tilde{k}, t\tilde{k}) \). Solving (13) for \( e \) yields the symmetric equilibrium expenditure, \( e(t(M)) \), in the rent seeking game.

Eq. (13), along with \( \phi_e(0) = 0 \), immediately reveals that rent seeking occurs if and only if \( T_W > 0 \). This outcome is intuitive. The interesting case is when \( T_W > 0 \) so that rent-seeking activities are present. We can then establish that rent seeking becomes more active as the capital tax rate increases:

\[
\frac{de}{dt} = \frac{\gamma}{4\phi_e(1 + e)} \left( U'_L - U'_W \right) \frac{dT_W}{dt} > 0, \tag{14}
\]

where \( e = e \phi_{ee}/\phi_e \). The above equation leads to our first proposition:

**Proposition 1.** When \( T_W > 0 \), an increase in \( M \) contributes to less rent seeking activity.

The intuition behind Proposition 1 is obvious. As the size of each jurisdiction decreases, capital tax competition becomes more intensive, which increases the MCPF at the local level. This in turn lowers \( t(M) \) and therefore diminishes the rent, \( T_W \), as well as \( G \). Thus it becomes less profitable to engage in rent-seeking activities. Along with \( dt(M)/dM < 0 \) and (14), we can conclude that \( e(t(M)) \) is monotonically decreasing in \( M \). Notably, if \( M \) exists as defined in Lemma 3, rent seeking vanishes in a sufficiently decentralized fiscal system (i.e., \( e(t(M)) = 0 \) for \( M > \hat{M} \)).

4. Effects of fiscal decentralization

The costs and benefits of fiscal decentralization – modeled as an increase in \( M \) – were made explicit in the previous section. Its cost arises due to an increase in the MCPF at the local level, which leads to under-provision of the
public service $G$. On the other hand, more intensive tax competition lowers the amount of rent available, which can mitigate wasteful rent-seeking competition. The purpose of this section is to compare these costs and benefits, and to provide a condition under which decentralization is welfare improving.

Given $M$, since each interest group has an equal chance of winning the rent-seeking game ($P_j = \frac{1}{2}$), the equilibrium value of expected utility is expressed by

$$W(t(M)) \equiv \frac{1}{2} U(f(k) - t(M)\tilde{k} + T_W) + \frac{1}{2} U(f(\tilde{k}) - t(M)\tilde{k}) + B(t(M)\tilde{k} - \frac{T_W}{2}) - \phi(e(t(M))).$$

(15)

Differentiating (15) with respect to $M$ yields the marginal welfare evaluation of further fiscal decentralization:

Proposition 2. An increase in the number of local jurisdictions is welfare-improving if and only if

$$\left(\alpha - \frac{1}{2}\right)\Omega'(t(M)) + \phi_e e_t - \tilde{U}' \tilde{k} \left(\frac{B'}{\tilde{U}} - 1\right) > 0,$$

(16)

where $\tilde{U}' \equiv \alpha U'_W + (1 - \alpha)U'_L$.

The first term, $(\alpha - 1/2)\Omega'(t(M))$, can be rewritten as

$$\frac{d}{dt}(\alpha U_W + (1 - \alpha)U_L + B(G)) - \frac{d}{dt}\left(\frac{U_W}{2} + \frac{U_L}{2} + B(G)\right).$$

(17)

This term represents the change in the difference between the government’s ex post objective and the residents’ ex ante expected utility, in the symmetric equilibrium. This term is positive, implying that as capital tax revenue ($E = t\tilde{k}$) expands, the government’s policy choice (of $G$ and $T_W$) becomes less desirable from the ex ante view of residents. The second term, $\phi_e e_t$, is the marginal disutility of $e$ caused by an increase in $t$, which induces more intensive rent-seeking competition. These two terms jointly account for the costs associated with rent-seeking activity. Thus, along with $dt/dM < 0$, the first two terms in (16) express the benefits from fiscal decentralization. In the final term, $B'/\tilde{U}' - 1$ represents the disparity between the MCPF at the local and social levels or, equivalently, the horizontal external

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17 Note that (15) can be re-expressed as

$$W(t(M)) = (\frac{1}{2} - \alpha)U(f(k) - t(M)\tilde{k} + T_W) + (\frac{1}{2} - (1 - \alpha))U(f(\tilde{k}) - t(M)\tilde{k}) + \alpha U_W + (1 - \alpha)U_L + B(\cdot) - \phi(e(t(M)))$$

$$= - (\alpha - \frac{1}{2})\Omega(t(M)) + \alpha U_W + (1 - \alpha)U_L + B(\cdot) - \phi(e(t(M))).$$
effects. As argued in Lemma 3, the perceived MCPF is increasing in \( M \), so the underprovision of \( G \) is exacerbated. Obviously, \( B'/\bar{U}' - 1 \) should be seen as the cost of the decentralization. The desirability of decentralization depends on the balance of these three terms: a decrease in political rent due the shrunken tax revenue is advantageous (as represented by the first two terms in (16)), while an increase in the MCPF is harmful.

It can be seen immediately that (16) cannot hold when \( T_W = 0 \), and thus no rent seeking takes place; only the negative term \( B'/\bar{U}' - 1 \) appears in the expression. Although decentralization serves as a device to reduce rent-seeking activities, the optimum does not require them to be eliminated if we can optimize the degree of fiscal decentralization by choosing the number of local jurisdictions, \( M \).

Our work aims to complement that by Edwards and Keen (1996), so we briefly examine the welfare implications of tax coordination, starting from the non-cooperative symmetric equilibrium given \( M \). Alternatively, we could consider the case where a centrally administered capital tax is introduced infinitesimally, with the revenue being distributed equally across jurisdictions. In either case, capital tax rates are raised by an equal amount in all localities. The costs and benefits of tax harmonization and the national capital tax are the opposite of those under fiscal decentralization, given \( M \); there, active rent-seeking accounts for the costs, while the reduction in MCPF is a benefit. The marginal change in welfare can be expressed by the negative of (16). In the present context, whenever fiscal decentralization is not beneficial, tax coordination or/and a national tax policy should be in place.

The results of the basic model are predicated on the assumption that the rent seekers compete with one another to obtain lump-sum transfers. There are other ways of modeling rent seeking, however. In the next section, we consider alternative, and more realistic, settings for the rent-seeking game.

5. Alternative formulations of the rent-seeking game

5.1. Public goods/services

Rent seeking activities can be directed to influence the allocation of public services, or to obtain more preferable provisions of services for the favored

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18 Recall that from the social viewpoint, capital taxation does not cause distortion due to the fixed supply of capital.

19 Let \( t_c \) be the central capital tax rate. The symmetric equilibrium tax rate is represented by \( t(M, t_c) \). It is straightforward to show that \( 0 > dt/dt_c > -1 \). The equilibrium local tax rate is not perfectly crowded out, and so an increase in \( t_c \) raises the aggregate tax rate.
group. Suppose that there are two local public services, both of which are private in nature. Let group \( j \) gain utility exclusively from the public service \( g_j \) \((j = 1, 2)\). To keep the properties of symmetry, however, we assume that the utility function for a public service, \( b(g_j) \), is the same between the groups: \( b(g_j) \) is strictly concave with \( b'(0) = \infty \) and \( b(0) = 0 \). Alternatively, we can say that \( g_j \) is the amount of the public service provided for group \( j \) if we allow its provision to be differentiated among the residents. The timing structure and the nature of rent seeking are the same as in our basic model. Each group spends \( e_j \) per member to raise its probability of winning the game, where the probability is again given by (7). The local government assigns a welfare weight \( \frac{1}{2} \) to the winning group, so that its objective function is given by

\[
\alpha(U(I_i) + b(g_W)) + (1 - \alpha)(U(I_i) + b(g_L)), \tag{5P}
\]

where \( g_W \) and \( g_L \) are the public services offered to the winner and loser, respectively. Again, let us begin with the stage of choosing the public expenditures (stage 3).

At stage 3, given per-resident capital tax revenue \( E_i \equiv t_i(k(p + t_i)) \), \( g_W \) and \( g_L \) are chosen to maximize (5P) subject to \((g_W + g_L)/2 = E_i\). The discussion at this stage is divided into two cases: \( \alpha < 1 \) and \( \alpha = 1 \).

\( \alpha < 1 \): The first-order condition for this problem is straightforward:

\[
\alpha b'(g_W) = (1 - \alpha)b'(g_L). \tag{18}
\]

Thus, \( g_W > g_L \). Simple comparative statics yield:

\[
\frac{d\alpha g_W}{dE_i} = \frac{2(1 - \alpha)b''_W}{zb''_W + (1 - \alpha)b''_L}, \quad \frac{dg_L}{dE_i} = \frac{2\alpha b''_W}{zb''_W + (1 - \alpha)b''_L} > 0. \tag{19}
\]

\( \alpha = 1 \): Obviously, \( g_W = E_i \) and \( g_L = 0 \). All benefits from the capital tax revenue accrue to the winners of the rent-seeking game.

In either case, the optimized objective excluding \( U(I_i) \) may be written as

\[
B(E_i) \equiv \alpha b(g_W(E_i)) + (1 - \alpha)b(g_L(E_i)).
\]

It is easy to see that \( B(E_i) \) is concave in \( E_i \) owing to the concavity of \( b(g) \).

Now consider stage 2, where local governments compete with one another to attract capital. We can express the first-order condition for \( t_i \), evaluated in

\footnote{The present model does not include mobile households. With mobility, fiscal decentralization (again, an increase in the number of jurisdiction) may cause households to segregate according to their tastes, obviously mitigating the conflict between interest groups and thus rent-seeking activities. Mobility may strengthen the case for fiscal decentralization. Also, when a smaller region is relatively homogeneous, fiscal decentralization leads to fewer rent-seeking activities. These cases are not considered in the present model, but it would be possible to incorporate them into our analysis.}
the symmetric equilibrium (i.e., \( t_i = t \) for all \( i \)) by

\[
\Delta(t, M) \equiv B'(t\tilde{k}) \left( \tilde{k} + \frac{t}{f''(\tilde{k})} \left( 1 - \frac{1}{M} \right) \right) - U'(f(\tilde{k}) - t\tilde{k})\tilde{k} = 0.
\]

(11P)

We can establish that Lemma 2 applies in the present case: that is, \( t(M) \), the symmetric equilibrium taxrate is decreasing in \( M \). Now let us move to stage 0, the stage of rent-seeking competition. Each interest group in region \( i \) chooses its expenditure \( e_j \) to maximize:

\[
U(f(\tilde{k}) - t(M)\tilde{k}) + P_j b(g_w(t(M)\tilde{k})) + (1 - P_j) b(g_l(t(M)\tilde{k})) - \phi(e_j).
\]

(8P)

In the symmetric outcome (\( e_j = e \)), the first-order condition for the choice of \( e_j \) is represented by

\[
\Omega(t) \equiv b(g_w(t\tilde{k})) - b(g_l(t\tilde{k})) = \frac{4}{\gamma} e \phi(e).
\]

(13P)

Solving the above for \( e \) indicates the equilibrium value of rent-seeking expenditure, given \( M' \): \( e = e(t(M)) \). Comparative statics can again be divided into two cases, depending on the value of \( \gamma \).

\( \gamma < 1 \): Opposed to our basic model, the sign of \( de/dt \) becomes ambiguous:

\[
\frac{de}{dt} \propto \Omega'(t) = -\frac{2b''_w b'_l}{b''_w + (1 - \gamma) b''_l} \tilde{k}
\]

\[
\times \left( (1 - \gamma) \left( -\frac{b''_l}{b'_l} \right) - \gamma \left( -\frac{b''_w}{b'_w} \right) \right) \geq 0.
\]

\( \gamma = 1 \): Since \( g_L = 0 \) and \( g_W = t\tilde{k} \), it is immediate to see \( de/dt > 0 \).

In contrast to Proposition 1, it is not obvious whether further decentralization discourages rent-seeking activities.

**Proposition 3.** When \( \gamma < 1 \), a lower tax rate mitigates rent-seeking activities if and only if

\[
(1 - \gamma) \left( -\frac{b''_l}{b'_l} \right) > \gamma \left( -\frac{b''_w}{b'_w} \right).
\]

(20)

More decentralization implies a reduction in the local capital tax base, \( E = t(M)\tilde{k} \), due to the decrease in \( t(M) \). This in turn implies lower values of \( g_W \) and \( g_L \) as shown in (19). Recall that \( e_j \) relies on the difference of the utility gains, \( b(g_W) - b(g_L) \). If \( g_L \) decreases relative to \( g_W \), this gap expands and rent seeking is encouraged. In other words, it might be the case that the losers become worse off more than the winners as a consequence of fiscal decentralization. For rent seeking to be discouraged, on the contrary,
$b(g_W) - b(g_L)$ must decrease as $t(M)$ falls. Eq. (20) represents the condition for this outcome to occur: the inequality holds if the function, $b(g)$, is relatively more concave at $g = g_L$ than at $g = g_W$. When $\alpha = 1$, on the other hand, a lower tax rate always reduces rent-seeking activity. The reason is obvious. Since $g_L = 0$, the losing group has no more to lose when $M$ increases: the gap, $b(g_W) - b(g_L)$, is unambiguously decreasing in $M$. The following are counterexamples and an example of Proposition 3 assuming $\alpha < 1$.

Example. (i) Exponential function ($b(g) = -e^{-g}$): $-b''/b'$ is constant and since $\alpha > 1/2$, (20) is clearly not satisfied.

    (ii) CES function ($b(g) = g^{1-\mu}/(1 - \mu)$): It can be shown that

\[
(1 - \alpha)(-b''_L/b'_L) > \alpha(-b''_W/b'_W) \Leftrightarrow \mu < 1.
\]

So (20) holds if and only if $\mu < 1$.

As to the welfare effects of decentralization, Proposition 2 applies to the present case and so the overall effect of an increase in $M$ relies on the balance of the three terms in (16).\(^{21}\) Of course, if (20) does not hold, so that decentralization encourages rent seeking, no welfare gain is possible from increasing $M$. Here, fiscal decentralization is undesirable both economically and politically.

5.2. Commodity taxes

In practice, the revenue sources of local governments are not limited to source-based taxation on mobile factors; rather, they are often able to levy destination or residence-based taxes including commodity taxes, payroll taxes and property taxes. In what follows, we consider the case where local jurisdictions can access immobile tax bases, namely commodity tax bases.\(^{22}\) We assume that the local government can impose differentiated commodity taxes on two goods, and that each of the two interest groups prefers one of them exclusively. We say group $j$ prefers good $j$ ($j = 1, 2$). The two groups compete with each other to lower the tax rates levied on their favorite goods. Let $\tau_W$ and $\tau_L$ be the tax rates on the commodities preferred by the winners and the losers, respectively. The supply price is normalized to unity, so that

\(^{21}\) The symmetric value of welfare is given by

\[
W(t(M)) = U(f(\tilde{k}) - t(M)\tilde{k}) + \frac{1}{2}b(g_W) + \frac{1}{2}b(g_L) - \phi(e(t(M)))
\]

\[
= U(f(\tilde{k}) - t(M)\tilde{k}) + B(t(M)\tilde{k}) - (\alpha - \frac{1}{2})\Omega(t(M)) - \phi(e(t(M))), \quad (15')
\]

using the definitions of $B(E_i)$ and $\Omega(t)$. The differentiation of (15') with respect to $M$ reduces to (16) times $-t'(M)$.

\(^{22}\) The case with commodity taxation is considered in Edwards and Keen (1996). Note, however, both our model and theirs assume away cross-border shopping.
$1 + \tau_j$ is the consumer price of commodity $j$. Introducing another source of tax revenue makes our analysis highly complicated. To keep our model tractable, we impose the following quasi-linear specification on preferences:

$$U = I_i - (1 + \tau_j) y_j + v(y_j) + B(G)$$

where

$$v(y_j) = \frac{y_j^{1-(1/v)}}{1 - (1/v)}$$

$j$ is either $W$ or $L$, $y_j$ is a taxable commodity, and $I_i - (1 + \tau_j) y_j$ is a non-taxable (numeraire) good in region $i$. Also, we restrict our attention to the interior solution (thus $\zeta < 1$ is assumed). By optimizing $y_j$, we can obtain the indirect utility function,

$$I_i + H(\tau_j) + B(G)$$

as well as the demand function,

$$y_j = \frac{\psi(\tau_j) \equiv (1 + \tau_j)^{-1}}{\psi(\tau_j)}$$

Note that the elasticity of demand for $y_j$ is constant at $\psi(\tau_j)$.

At stage 3, given the capital tax rate $t_i$, optimization by each local government with respect to $\tau_W$ and $\tau_L$ yields the following first-order conditions:

$$\Psi^i(\tau_W, \tau_L, E_i) \equiv B'(G) \left(1 - \frac{\tau_j}{1 + \tau_j}\right) - \alpha_j = 0,$$

where $E_i = t_i k(\rho + t_i)$, $\alpha_W = \alpha$ and $\alpha_L = 1 - \alpha$. It is immediate to see that $\tau_W < \tau_L$. Also, comparative statics establish $d\tau_W/dE_i < 0$ and $d\tau_L/dE_i < 0$. This result is quite intuitive: as capital tax revenue $E_i$ increases, there is less demand to raise revenue from commodity taxes. The local government’s choice of $t_i$ at Stage 2 is the same as before. In the symmetric equilibrium, we can establish

$$\Delta(t, M) \equiv B'(t\bar{k} + \frac{1}{2}(\tau_W \psi_W + \tau_L \psi_L)) \left(\bar{k} + \frac{t}{f''(\bar{k})} \left(1 - \frac{1}{M}\right)\right) - \bar{k} = 0,$$

where $\tau_j$ ($j = W, L$) is a function of $E = t\bar{k}$. Local stability of the symmetric equilibrium requires $\Delta_t < 0$. Since $\Delta_M < 0$, Lemma 2 applies in the present context: an increase in $M$ lowers the symmetric equilibrium value of the capital tax rate; that is, $t'(M) < 0$.

In the present case, the rent-seekers’ expected utility at stage 0 is expressed by

$$f(\bar{k}) - t(M)\bar{k} + P_j H(\tau_W) + (1 - P_j) H(\tau_L) + B(G) - \phi(e_j).$$

The objective of the local government is given by

$$\alpha(I^i + H(\tau_W)) + (1 - \alpha)(I^i + H(\tau_L)) + B(t, k(\rho + t_i) + \frac{1}{2}(\tau_W \psi_W + \tau_L \psi_L)),$$

where $\psi_j \equiv \psi(\tau_j)$.

Suppose $\Delta_t > 0$ in the symmetric equilibrium. If $t$ is raised by $dt$ simultaneously, each local government believes that a further increase in its own tax rate, given the others’ choices, is beneficial. They continue to raise their tax rates so that the initial symmetric equilibrium tax rate cannot be restored. The same logic applies when $dt < 0$. 

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23 The objective of the local government is given by

$$\alpha(I^i + H(\tau_W)) + (1 - \alpha)(I^i + H(\tau_L)) + B(t, k(\rho + t_i) + \frac{1}{2}(\tau_W \psi_W + \tau_L \psi_L)),$$
In the symmetric equilibrium (i.e., \( e_j = e \)), expenditure is determined so that

\[
\Omega(\tau_W, \tau_L) = H(\tau_W) - H(\tau_L) = \frac{4e}{\gamma} \phi_e(e).
\]  

(13C)

We can again write the solution to the above as \( e(t(M)) \). Its derivative is given by \(^{25}\)

\[
\frac{de}{dt} = \frac{\gamma \hat{k}}{4\phi_e(1 + e)} \left( \psi_L \frac{d\tau_L}{dE} - \psi_W \frac{d\tau_W}{dE} \right) \propto \left( \frac{1 + \tau_L}{1 + \tau_W} \right)^{v-2} \frac{\alpha}{1 - \alpha} - 1. \quad (22)
\]

The sign of (22) is not immediately apparent, as was the case in the previous section.

**Proposition 4.** *Fiscal decentralization mitigates the rent-seeking activities if \( v > 2 \).*

The higher the value of \( v \), the more distortionary are commodity taxes. Given \( \tau_L > \tau_W \), an additional tax on the losing group further worsens the distortion than would a similar additional tax on the winning group. Therefore, the government – which considers efficiency as well as the distribution of tax burden – may be motivated not to increase \( \tau_L \) relative to \( \tau_W \) (and thus act in favor of the losing group), when commodity taxes must be raised because of a decrease in capital tax revenue \( E \). This process results in a lower gain from engaging in rent seeking. Conversely, when demand is relatively inelastic, the sign of (22) becomes negative and thus a lower capital tax rate encourages rent-seeking activities.

The residents’ expected utility in the equilibrium is defined by replacing \( P_j \) and \( 1 - P_j \) in (8C) by \( \frac{1}{2} \). The welfare implication of an increase in \( M \) is the same as earlier, and Proposition 2 is still relevant in the present context. When (22) is negative, \( e \) is increasing in \( M \), and there is no gain from decentralization.\(^{26}\)

In this section, we have analyzed more realistic cases of rent-seeking activities than our basic case. We find that in the present environment, the effect of decentralization on rent seeking becomes ambiguous and depends on parameter values. The situation may occur where rent seeking is more active in a more decentralized fiscal system. Intuitively, the losing group of the rent seeking game may lose more than the winning group as the source of political rent (i.e. tax revenue) decreases. It should be noted that this result did not occur in the basic case where nothing can be lost by the losing group when \( T_L = 0 \), so the utility gap between the winning and losing groups, \( U_W - U_L \), is monotonically decreasing in \( M \).

\(^{25}\) The proof is available from the author upon request.

\(^{26}\) Again we obtain the same expression as (15′) in the footnote.
6. Conclusion

Within a highly stylized framework, we have studied the circumstances under which fiscal decentralization is welfare improving, in economies with both tax competition and rent seeking. Our approach is also applicable to some alternative forms of rent seeking. Although the model used is rather restrictive, we can derive some general implications. More intensive intergovernmental competition – induced by decentralization – decreases capital tax revenue, thus reducing the source of political rents. In our basic case where political rent takes the form of lump-sum transfers, this effect discourages rent seeking activities. Rent seeking over public service provision or residence-based taxes (e.g., commodity taxes) provides an interesting alternative result: a shrinkage in tax revenue may stimulate political activities. Therefore, we cannot unambiguously argue that fiscal decentralization serves to mitigate lobbying or bribery. Its effect relies on parameters including the price elasticity of demand that must be empirically assessed.

In circumstances where decentralization curtails spending by interest groups, we find a trade off between economic distortion and political gain, as stated by Proposition 2. Economic distortion arises due to an increase in the perceived MCPF at the local level, while less rent-seeking activity accounts for the political gain. Given that both tax and rent-seeking competitions are by nature wasteful, the optimal degree of fiscal decentralization is achieved by the balance of costs and benefits.

Our argument, that economic costs must be assessed against political ones, is not new. In the context of Leviathan governments, Brennan and Buchanan (1980) claim that distortionary taxation serves as a device to protect citizens from attempts by the government to exploit them. A related argument can be found in Usher (1995). According to his argument, the principle of horizontal equity in taxation (that persons with equal incomes should be taxed equally), although likely to oppose the optimal taxation rule (The Ramsey principle), is useful in preventing discriminatory taxation and preserving property rights.

Fiscal decentralization is now an inevitable process in many nations. Our simple model does not capture all aspects of fiscal decentralization. Before closing this paper, therefore, it is useful to note some limitations of our model and some possible avenues for future research. First, our results rely on the assumption of symmetry (i.e., a symmetric equilibrium in both capital tax and rent-seeking competitions). Obviously, introducing heterogeneity in either regional or individual characteristics would add complexity to our model and may also alter our argument. Second, we have examined the circumstance where both tax and expenditure responsibilities are decentralized. It is possible that only public expenditure tasks are assigned to the local level, while the authority for taxation is retained at the national level. This case seems to be widely endorsed among normative public economists (Boadway...
et al., 1994). Such asymmetry would complicate the rent seeking game. Rent seekers compete with one another at different levels of government. Also, inter- and/or intra-regional cooperation among different interest groups at the national level may emerge. Third, we have not discussed the political processes which determine the degree of fiscal decentralization. In the present model, we have assumed that individuals are identical ex ante, so if a constitutional stage exists prior to the rent seeking game, there will be unanimous agreement on the number of jurisdictions: $M$ will be chosen so that it maximizes the expected utility (15). Once ex ante heterogeneity of households is introduced, however, conflicts of interest will arise. A more careful discussion of the constitutional choice should then be undertaken. Finally, as stated in the introduction, more empirical works are needed to assess an effect of fiscal decentralization on political accountability.

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