

A POLITICAL ECONOMIC ANALYSIS OF FISCAL GAP

Tsuyoshi Shinozaki*

Faculty of Economics, Tohoku-Gakuin University, 1-3-1, Tsuchitoi, Aoba, Sendai, Miyagi 9808511, Japan.

Isidoro Mazza

Department of Economics and Business, University of Catania, Corso Italia 55, 95129 Catania, Italy

Minoru Kunizaki

Faculty of Economics, Aichi University, 1-1 Machihatamachi, Toyohashi-shi, Aichi 4418522, Japan.

ABSTRACT

We investigate tax policies of two governments hierarchically linked in a federation. At each level, policies can be influenced by lobbying activities of an interest group. We show that the sign of the fiscal gap depends on the influence of lobbying on government decisions and the institutional context (single-tier versus two-tier lobbying). In particular, lobbying at the state tier introduces a new ‘political’ vertical externality that contrasts the traditional fiscal externality. As a result the fiscal gap, and then the transfer from federal to state government, may have a positive sign in a second-best. This result is consistent with common observation but in contrast to previous theoretical analysis (Boadway and Keen, 1996) disregarding lobbying. Remarkably, lobbying taking place at both tiers reduces the relevance of the political externality and makes a negative fiscal gap more likely.

(JEL: D72, D78, H20, H71, H72, H77).

Keywords: Multi-tier lobbying, endogenous policymaking, vertical tax competition, hierarchical government, fiscal federalism.

1. Introduction

We extend Boadway and Keen (1996) introducing a political economy perspective, where decisions taken by state and federal governments can be influenced by an immobile interest group lobbying for tax reduction. As results, when special interest group lobbies to state government, regardless of labor mobile, federal government can adjust concurrent tax rate and can provide the optimal level of state-federal public goods to account for the effect of lobbying on state tax. However, when two-tier lobbying or lobbying for federal government exists, federal government cannot provide the optimal level of public goods

The paper is organized as follows. Section 2 covers the basic model, while Section 3 includes a discussion of the results. Section 4 concludes the paper with some additional comments.

2. The model

We consider a federation of k states and nk workers with identical preferences and immobile across states. Labor and an additional fixed factor, available in the same quantity in each state, are the inputs used for the production of a private good, x , and two public goods: a state public good, g , and a federal public good, G . The fixed factor is interpreted as foreign invested capital that does not move because of high sunk costs. The marginal rate of transformation between different public goods, each one of them and the private good is assumed equal to one. Public expenditure is financed by an income tax with a rate $\tau = t + T$ where t is the state tax rate and T is the federal tax rate. A worker's preferences are described by the following separable utility function:

$$U = u(x, l) + b(g) + B(G) \quad (1)$$

where l is labor supply, u is a quasi-concave function, with $u_x > 0$, $u_l < 0$, where subscript refers to partial derivatives, and $b_g > 0$, $B_G > 0$, $b_{gg} < 0$ and $B_{GG} < 0$. Maximization of (1) over x and l subject to the budget constraint, $x = (w - \tau)l$, leads to the following first order condition:

$$(w - \tau)u_x + u_l = 0 \quad (2)$$

which implies the labor supply function $l(w - \tau)$. We assume $l_w > 0$, and substituting in (1), we obtain the following indirect utility function for a worker:

$$V = v(w - \tau) + b(g) + B(G) \quad (3)$$

where $u_x l = v_x$. Assuming an increasing and strictly concave production function $f(nl)$, which applies labor to the immobile factor, and a perfectly competitive labor market, the wage rate is:

$$w = f_l(nl(w - \tau)) \quad (4)$$

Consequently, the gross capital rent is:

$$r = f(nl(w - \tau)) - nl(w - \tau)f_l(nl(w - \tau)) \quad (5)$$

For future reference, we report the following comparative statics:

$$\frac{\partial w}{\partial \tau} \equiv w_\tau = \frac{-f_{ll}nl'}{1 - f_{ll}nl'} > 0 \text{ and } < 1, \frac{\partial w}{\partial n} \equiv w_n = \frac{-w_\tau l}{nl'} < 0 \quad (6)$$

$$\frac{\partial r}{\partial \tau} \equiv r_\tau = \left(1 - \frac{\partial w}{\partial \tau}\right) f_{ll}n^2 l' l = \frac{f_{ll}n^2 l_w l}{1 - f_{ll}nl'} < 0, \frac{\partial r}{\partial n} \equiv r_n = \frac{-r_\tau l}{nl'} > 0 \quad (7)$$

Next, we assume that invested capital belongs to owners not resident or taxed in the federation, having a budget constraint $x = r$ and indirect utility function, $\omega(r)$. This assumption is consistent with a taxation system based on the residence principle, and justified by the fact that any attempt to influence policymaking would be frustrated if the whole gain for capital from lobbying is appropriated by the government. As references for the analysis that will follow, we include further comparative statics. Given the resource constraints and a vertical transfer S from the federal government, the budget constraint of a state government is:

$$g(t, T, S) = ntl[w(\tau, n) - \tau] + S \quad (8)$$

On the other hand, the federal government budget constraint is:

$$G(t, T, S) = nkTl[w(\tau, n) - \tau] - kS \quad (9)$$

As a benchmark for future results, we derive the social optimum. The following shows the second-best outcome:

$$\frac{nkB_G}{u_x} = \frac{nb_g}{u_x} = \frac{1}{1 - \frac{\tau l_w}{l} - f_{ll}nl_w} = \frac{1}{1 - \frac{\tau l_w}{l} + \frac{r_\tau}{(w_\tau - 1)nl}} \quad (10)$$

This is the usual Samuelson rule indicating that the Pareto-efficient provision of each tier's public good occurs when the sum of the marginal rates of substitution of each state public good g for the private good x should be equal to the sum of the marginal rates of substitution of the federal public good G for x , and both should be equal to marginal cost of public funds using distortionary taxation. Next section shows the results relative to policy-making under lobbying by the capitalist.

3. Results under lobbying

To introduce lobbying into the model, we adopt the very influential and widely applied model of interest group influence developed by Grossman and Helpman (2002) building on Bernheim and Whinston (1986). We assume that a capital owner can attempt to influence policies by submitting a 'menu' of policy contingent contributions to the state and federal governments, each of them compensating the policymakers for the political costs of passing a bill in favor of the lobby. Our analysis of monopsonistic lobbying is relevant in case of particularistic policies, which are exclusively offered to a lobby and impose widespread marginal costs over population that do not elicit counteracting opposition (see Baron, 1994; Grossman and Helpman, 1996).

At both government tiers, the capital owner profits from advocating a lower tax on labor, as it is evident from the negative impact on rent in (7). Thus, the latter offers (differentiable) tax contingent contributions, $\zeta(t)$, to the state government and $\theta(T)$ to the federal government ($\zeta_t < 0$ and $\theta_T < 0$).

The sequence of events is as follows. At the first stage of policymaking, the federal government levies a tax on labor (T). At the second stage of policymaking, the state government levies a tax on labor t that maximizes that government's objective function.

3.1. Policies with a benevolent federal government and a non-benevolent state government

State government

Starting from the lower tier of policymaking, taking the federal policy variables T and S as given, and assuming that the capital owner has political access to influence the (non-benevolent) state government, the latter will

$$\max_t v(w(\tau) - \tau) + b(g(t, S)) + B(G) + \lambda\zeta(t) \quad (11)$$

Subject to (8) and capitalist's maximization condition:

$$\omega_r r_\tau - \zeta_\tau = 0 \quad (12)$$

After rearranging, we obtain:

$$\begin{aligned} \frac{nb_g}{u_x} &= \frac{1}{1 - \frac{\tau l_w}{l} - f_{ll} n l_w + \frac{G_\tau}{(w_\tau - 1) k n l}} \left(1 - \lambda \frac{\omega_r}{u_x} f_{ll} n^2 l_w \right) \\ &= \frac{1}{1 - \frac{\tau l_w}{l} + \frac{r_\tau}{(w_\tau - 1) n l} + \frac{G_\tau}{(w_\tau - 1) k n l}} \left(1 - \lambda \frac{\omega_r}{u_x} \frac{r_\tau}{(w_\tau - 1) l} \right) \end{aligned} \quad (13)$$

where the right hand side indicates the marginal cost of public funds (MCPF). Comparing (13) with the second best optimal decision shows a vertical externality from state taxation on federal revenues, given by G_τ , which has a negative sign when $T > 0$ and then pushes t_L above the second-best. The main novel element with respect to Boadway and Keen (1996) is the political externality from lobbying, which is equal to $-\lambda \frac{\omega_r}{u_x} f_{ll} n^2 l_w (= -\lambda \frac{\omega_r}{u_x} \frac{r_\tau}{(w_\tau - 1) l}) > 0$ and always increases the MCPF inducing a lower t . This result shows that lobbying tends to counterweigh the vertical externality of state taxes on federal revenue. From (13) and state government budget constraint (8), we get the optimal state tax rate selected by a non-benevolent state government, $t^{NB}(T, S)$ (where superscript indicates non-benevolent government), which is supported in equilibrium by the contribution schedule:

$$\zeta^* = \frac{1}{\lambda} \{ [v(w(\tau, t^B) - \tau(t^B)) + b(g, t^B)] - [v(w(\tau, t^{NB}) - \tau(t^{NB})) + b(g, t^{NB})] \} \quad (14)$$

A benevolent federal government will then have the following program:

$$\max_{T, S} v(w(\tau) - \tau) + b(g(t^{NB}(T, S), T, S)) + B(G(t^{NB}(T, S), T, S)) \quad (15)$$

From the first order conditions for T and S , the federal government policy has to satisfy the following condition:

$$G_t^{B, NB} = \frac{\lambda \omega_r r_\tau}{B_G(G^B)} \quad (16)$$

Equation (16) highlights the external effect of lobbying at the state level on the federal government decision, showing a negative impact of state tax on the federal public good. If the state government were not lobbied, $G_t^{B, NB} = 0$ (as in Boadway and Keen, 1996) because the federal government would incorporate the fiscal externality when choosing G . However, since lobbying at the state tier (but not at the federal tier) has a negative impact on the *state* tax, the benevolent federal government tries to offset that effect by increasing the federal public good provision. After some calculation, we obtain the optimal labor tax of the benevolent federal government:

$$T^{B, NB} = -\frac{\lambda \omega_r n l f_{ll}}{k B_G(G^B)} = -\frac{\lambda \omega_r}{k B_G(G^B)} \left\{ \frac{r_\tau}{(1 - w_\tau^{B, NB}) n l_w} \right\} > 0 \quad (17)$$

As long as the state government is non-benevolent ($\lambda > 0$), this result contrast with the normative analysis of Boadway and Keen (1996) where federal tax is equal to zero. The federal government, which is not politically influenced by capital, reacts to the reduction of the state labor tax (due to state lobbying) by levying a tax on labor. Substituting (17) into the federal budget constraint (10), we get an intergovernmental transfer to the state government:

$$S^{B,NB} = -\frac{G^{B,NB} B_G(G^{B,NB})}{k B_G(G^{B,NB})} - \frac{\lambda \omega_r}{k B_G(G^{B,NB})} \left\{ \frac{r_\tau l}{(1 - w_\tau) l_w} \right\} > 0 \quad (18)$$

A central and somewhat counterintuitive result in Boadway and Keen (1996) is a negative S , namely a negative fiscal gap. In our study, the sign of fiscal gap depends on the conflict between vertical fiscal externality and political externality due to the lobbying activity represented by $\lambda \geq 0$. If state government is not influenced by capital ($\lambda = 0$) we have the well-known case of vertical fiscal externality with greater than optimal state tax rate; thus, the federal government will set an optimal consolidated tax rate by decreasing federal tax rate. In such a case, fiscal revenue of the federal government is insufficient and it has to receive a transfer from the state government: a negative fiscal gap then stems from vertical fiscal externality.

However, the outcome in our study differs when $\lambda > 0$. At the state tier, lobbying tends to reduce the tax on labor. If, therefore, the impact of lobbying on reducing the state tax fully (or partially) offsets the incentive of the state government to overexploit the common tax base (namely to set an inefficiently high tax rate), then lobbying *fully (or partially) internalizes* the negative fiscal externality of state policy-making, and the fiscal gap is nil (or still negative).

If, on the other hand, lobbying has a sufficiently high impact on the state government policy, it could reduce the state labor tax so much to necessitate a *positive* fiscal gap to restore efficiency: the federal government increases the labor tax rate to subsidize the state government through an intergovernmental transfer. In the latter case, we can say that the strong preference of the state government for lobbying (λ) causes a net ‘political externality’ for the federal government, in the sense that the externality due to lobbying exceeds that caused by overexploitation of the common tax base. Thus:

$$S^{B,NB} \begin{matrix} > \\ = 0 \\ < \end{matrix} \leftrightarrow \lambda = \begin{matrix} > \\ < \end{matrix} \frac{G^{B,NB} B_G(G^{B,NB})}{\omega_r} \left\{ \frac{(1 - w_\tau) l_w}{r_\tau l} \right\} > 0$$

From the previous discussion, it is evident that a “positive fiscal gap” here stems from the interest that the *state* government has for campaign contributions, which are not accruing to the federal government. Moreover, for all values of λ , the federal government can internalize the distortion of state labor tax by adjusting federal labor tax. Thus, federal government controls intergovernmental fiscal imbalance just through the intergovernmental transfer. Since this transfer is lump-sum fashion, even if the state government has interest for campaign contribution, the second best outcome is achieved, under lobbying at the state level. Results under this specific regime of lobbying are summarized in the following Proposition 1 and Corollary 1.

PROPOSITION 1. *If the capital owner lobbies the state government but not the federal government, a second best outcome is achieved and the sign of the federal transfer (i.e. fiscal gap) is ambiguous.*

Corollary 1. If and only if the political externality due to state government lobbying cancels out the vertical fiscal externality, the federal transfer becomes zero and second best allocation is achieved by the state policy.

We will see in the next paragraph that when lobbying intervenes also at the federal tier it lessens the political externality effect.

3.2. Policies with non-benevolent federal and state governments.

Next we consider the case where capitalist contributes both level of government, that is, the case of two-tier lobbying.

Once the state government will select a tax on labor, the federal government (or policymaker) problem is:

$$\max_{T,S} v(w(\tau) - \tau) + b(g(t^{NB}(T,S), T, S)) + B(G(t^{NB}(T,S), T, S)) + \varphi\theta(T) \quad (19)$$

This time the capitalist lobbies both governments (policymakers). Therefore, the net utility of the capitalist is:

$$\omega(r(t^{NB}(T,S) + T)) - \zeta^*(t^{NB}(T,S)) - \theta(T) \quad (20)$$

where $\theta(T)$ is the contribution schedule offered to the federal policymaker. The federal government (policymaker)'s first order conditions for T and S are respectively:

$$(-\lambda\omega_r r_\tau^{NB} + B_G(G^{NB})G_t^{NB,NB})\left(\frac{\partial t^{NB}}{\partial S}\right) + (b_g(g^{NB}) - kB_G(G^{NB})) = 0 \quad (21)$$

As for fiscal transfer,

$$S^{NB,NB} = \frac{1}{kB_G(G^{NB})} \left\{ \frac{-\varphi\theta_T}{(w_\tau - 1)l_w^{NB} \left(1 + \frac{\partial t^{NB}}{\partial T} + nl \frac{\partial t^{NB}}{\partial S}\right)} - \lambda\omega_r \frac{r_\tau l}{(1 - w_\tau)l_w} - G^{NB}B_G(G^{NB}) \right\} \quad (22)$$

Similarly to the previous case of benevolent federal government, the sign of fiscal gap is again ambiguous. The intuition is that the stronger is the interest of the federal government for contributions ($\varphi > 0$), the more likely is a negative fiscal gap, because the federal government is now more reluctant to collect labor tax revenue. It is easy to ascertain that the second best outcome cannot be achieved, since $b_g \neq kB_G$.

PROPOSITION 2. If the capital owner lobbies both state and federal government, a second best outcome cannot be achieved and the sign of the federal transfer (i.e. fiscal gap) is ambiguous.

3.3. Policies with costless labor mobility.

So far, we have assumed immobile labor. We now relax this restriction and allow workers to relocate costless among two states, α and β . In this case, states take residential mobility into account when they decide about their policies. To show the effect of labor mobility, we investigate the case when the capital owner has political access to influence just the non-benevolent state government.

We assume a total population \bar{n} such that population of state β equals $\bar{n} - n^\alpha$ where n^i represents a total population of state i . Thus, migration equilibrium implies

$$v(w(\tau^\alpha, n^\alpha) - \tau^\alpha) + b(g^\alpha) = v(w(\tau^\beta, \bar{n} - n^\alpha) - \tau^\beta) + b(g^\beta) \quad (23)$$

where τ^i and g^i represent consolidated tax rate and state public goods in state i ($i = \alpha, \beta$). From this equation, the migration function becomes $n^\alpha = n^\alpha(\tau^\alpha, g^\alpha; \tau^\beta, g^\beta, \bar{n})$, where g^β , τ^β and \bar{n} are exogenous variables.

Next, we consider the problem of the state government, the objective function and constraints of state are:

$$\begin{aligned} \max_{t^i} v(w^i(\tau^i, n^i) - \tau^i) + b(g(\tau^i, n^i, T, S^i)) + B(G) + \lambda^i \zeta^i(t^i) \\ \text{s.t. } n^i = n^i(\tau^i; \tau^j, S^i, S^j), g^i = g^i(\tau^i; n^i, S^i) \end{aligned} \quad (24)$$

From the optimization of state governments, we get

$$\frac{n^i b_g^i}{u_{x^i}^i} = \frac{1}{1 - \frac{\tau^i l^i}{l^i} + \frac{r_\tau}{(w_\tau - 1)n^i l^i} + \frac{G_\tau}{(w_\tau - 1)2n^i l^i}} \left(1 + \lambda^i \left(\frac{\omega_r^i}{u_{x^i}^i} \frac{r_\tau}{(w_\tau - 1)l^i} \right) \left(\frac{\Delta}{v_{w^j}^j w_{n^j}^j + b_g^j g_{n^j}^j - \lambda^i \omega_r^i r_{n^i}^i} \right) \right) \quad (25)$$

From this condition, we can get the following Lemma.

LEMMA 1. When labor is perfectly mobile between states, an efficient allocation cannot be derived by the state government tax.

Taking the choices of the state government into account, the first order condition of federal government is

$$\{v_{w^i}^i(w_{t^i}^i - 1) + b_g^i g_{t^i}^i + B_G G_\tau\} \left(1 + \frac{\partial t^i}{\partial T} + n n l^i \frac{\partial t^i}{\partial S^i} \right) = 0 \quad (26)$$

As for the fiscal transfer, we get

$$S_{i, mobile}^{B, NB} = - \frac{G^{B, NB} B_G(G^{B, NB})}{2B_G(G^{B, NB})} - \frac{\lambda^i \omega_r^i}{2B_G(G^{B, NB})} \left\{ \frac{r_\tau^{B, NB} l_i}{(1 - w_\tau^{B, NB}) l_{i, w}} \right\} L_i \quad (27)$$

Results are then summarized by the following Proposition.

PROPOSITION 3. If capital lobbies the state government but not the federal government, and labor is mobile, the second best outcome is achieved and the sign of the federal transfer (fiscal gap) is ambiguous.

This result shows that, even in presence of labor mobility and lobbying, federal government can correct state distortion by a federal tax on labor wage and an intergovernmental transfer. The intuition is the same as in section 3.1.