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How do local governments decide on public policy in fiscal federalism? Tax vs. expenditure optimization ☆

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ABSTRACT

Previous literature widely assumes that taxes are optimized in local public finance while expenditures adjust residually. This paper endogenizes the choice of the optimization variable. In particular, it analyzes how federal policy toward local governments' influences the way local governments decide on public policy. Unlike the usual presumption, the paper shows that local governments may choose to optimize over expenditures. The result holds when federal policy subsidizes local taxation. The results offer a new perspective of the efficiency implications of federal policy toward local governments and, thereby, enable a more precise characterization of local government behavior in fiscal federalism.

1. Introduction

Models of local public finance predominantly assume local governments set taxes while expenditures are residually determined via the budget constraint. This view is one possible description of how governments decide on fiscal policy. In making budgetary decisions, governments may alternatively set expenditures optimally and let taxes adjust residually.[1] Given the two options, a natural question is why governments should prefer one or the other budgetary item as a policy variable. A potential strategic motive is that each item differently influences the amount of federal resources that flow to the jurisdiction. Incentives to attract federal transfers, either intended or unintended by federal policy, are widespread in local public finance. Besides responding to corrective grants to cash in on federal resources, local governments also adjust their taxes in order to receive more formulaic equalizing transfer payments (Smart, 1998; Buettner, 2006, and Egger et al., 2010). Similarly, local governments may well select inefficient local policies to lure more discretionary federal transfers to the local budget, e.g., as part of a bailout package (Wildasin, 1997; Qian and Roland, 1998, and Pettersson-Lidbom, 2010). Building on these insights, the goal of this paper is to analyze whether federal policy has a bearing on the choice of the policy variable in local public finance. We set up a model where the choice of the policy variable is not imposed, but arises endogenously from the fundamentals of the fiscal architecture of the federation. More precisely, we consider a model of fiscal federalism in which local policies interact through a formula-based equalization scheme. Local governments levy a tax on local residents and use the proceeds along with federal transfers to provide a public good.

A presumption might be that expenditure and tax optimization yield identical policy outcomes since taxes and expenditures are inherently related via the budget constraint. The presumption holds true when local economies are fiscally independent, i.e., when there exists no fiscal interaction between policy choices by different local governments. The common assumption in the literature that taxes are optimized is consistent with equilibrium behavior in such a fiscal environment. We show that the equivalence between tax and expenditure policy becomes invalid if local policies are linked via transfer programs. Key to the result is that tax and expenditure policy

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[1] Throughout the paper we interchangeably refer to tax (expenditure) optimization as tax (expenditure) policy and to the optimization variable as policy variable.

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have different effects on transfer payments and local governments thus strategically choose their policy variable in order to gain in transfers. In particular, when local taxation crowds out transfer payments, governments lure more transfers to their budgets by choosing taxes as the policy variable. Differently, when transfers rise with local tax rates, governments opt for expenditure optimization in order to gain in transfer income.

The analysis allows for a more informed prediction as to the efficiency of pubic good provision in fiscal federalism. For instance, when transfers encourage local taxation, state governments optimize over expenditures and public good provision is less severely upward distorted than when taxes are optimized (as widely assumed in the literature). However, when transfers undermine taxing incentives, the efficiency prediction as perceived in the literature turns out to be consistent with the equilibrium outcome. Relatedly, the results are of relevance for predicting the incidence of federal policy. The prediction as to the magnitude of tax rates and expenditure levels in local public finance generically differs in models with (exogenous) tax optimization and with an endogenous selection of policy variables, and so does the incidence of federal transfers that are conditioned on local fiscal choices.

While the notion that expenditure and tax policy have different implications for local public finance is well established in the literature, it lacks (to the best of our knowledge) an analysis of how federal policy incentivizes local governments to opt for one or the other type of policy setting. In particular, Wildasin (1988), Bayindir-Upmann (1998), and Hindriks (1999) compare expenditure and tax policy in the presence of capital mobility or household mobility among jurisdictions. Moreover, Wildasin (1991) looks at the choice of policy instruments in capital tax competition. Federal policy is absent in these contributions. More related to the present paper, Akai and Sato (2008) contrast expenditure and tax policy setting in a two-tier federal system in which the federal government provides transfers ex-post. The governments' choice of the optimization variable is exogenous to the analysis.

Finally, the choice of optimization variable determines which policy variable state governments commit toward other states' fiscal policy.[2] The endogenous choice of commitment relates our paper to the Industrial Organization literature on endogenous timing of moves, and hence commitment, in models of firm competition (e.g., Van Damme and Hurkens, 1999, and Caruana and Einav, 2008). Therein, the sequence of decisions is determined endogenously, while the choice of optimization variables is exogenous. In this paper it is reversed: the sequence of moves is exogenous while the choice of optimization variables (for state governments) is endogenous.[3] This paper is also related to the literature on price versus quantity competition between firms. The prediction is that firms prefer to compete with respect to quantities; see, e.g., Singh and Vives (1984) and Cheng (1985). This paper analyzes the role of interstate transfers for the type of public decision making rather than the role of demand linkages for firm competition.[4]

The outline of the paper is as follows. Section 2 introduces a model of local public finance and Section 3 characterizes the choice of policy variable by state governments. Section 4 summarizes and concludes.

2. Model

Consider two states that form a federation. The representative household in state i ($i=1,2$) derives utility from private consumption, c^i, leisure, l^i, and public consumption, g^i, according to the quasi-concave utility function $u^i(h(c^i, l^i), g^i)$ with $u^i_k>0$, $k=c^i, l^i, g^i$. Utility is weakly separable in public consumption, g^i, and private consumption levels, c^i and l^i, as captured by the scalar function $h(\cdot)$. The private budget constraint is

$$c^i = \left(1-\tau^i\right)w^i L^i, \tag{1}$$

where $\tau^i\in[0,1]$ is the wage tax rate levied by state government i, w^i denotes the wage rate and L^i is household labor supply in state i. The household has a time endowment of unity such that $L^i+l^i=1$. The utility-maximizing labor supply is characterized by[5]

$$u^i_c\left(1-\tau^i\right)w^i - u^i_l = 0. \tag{2}$$

The first-order condition implicitly defines labor supply as a function of the net-of-tax wage rate $(1-\tau^i)w^i$. In the sequel we assume that the substitution effect dominates the income effect such that $L^i_{(1-\tau^i)w^i}>0$. The assumption implies that wage taxation shrinks the local tax base.

The representative firm in state i produces the numeraire output y^i using the linear technology $y^i=L^i$.[6] Markets are perfectly competitive and profit maximization implies $w^i=1$.

State i's public budget constraint is

$$g^i = T^i + z^i. \tag{3}$$

$\{z^i\}_{i=1,2}$ are interstate transfers, $\{T^i=\tau^i L^i\}_{i=1,2}$ are locally collected wage taxes, and $\{g^i\}_{i=1,2}$ are the post-transfer expenditures. The transfer to state i, z^i, is conditioned on the level of the local tax rate τ^i and the tax rate in the neighbor jurisdiction τ^j,

$$z^i = \gamma\left(\tau^i,\tau^j\right), \quad \text{where } z^i + z^j = 0. \tag{4}$$

Given the generality of the transfer formula, we impose three reasonable assumptions:

$$\left|z^i_{\tau^i}\right| < d\left(\tau^i L^i\right) \Big/ d\tau^i,\ \operatorname{sign}\left\{z^i_{\tau^i}\right\} = \operatorname{sign}\left\{z^j_{\tau^j}\right\},\ \text{and}\ \operatorname{sign}\left\{z^i_{\tau^i}\right\} = const.$$

The first assumption says that a change in taxes does not imply an over-proportional change in transfers. The marginal tax or subsidy on own-source tax revenues is below 100%. Second, states are symmetrically treated by transfer policy in the sense that $\operatorname{sign}\{z^i_{\tau^i}\}=\operatorname{sign}\{z^j_{\tau^j}\}$. The transfer formula may still be non-linear in taxes and, thereby, the slope $\{z^i_{\tau^i}\}_{i=1,2}$ may differ in magnitude over the range of feasible taxes. Third, $\operatorname{sign}\{z^i_{\tau^i}\}$ is non-reversal, i.e., it is the same for all feasible levels of taxes.

The transfer scheme Eq. (4) is to be understood as a reduced form of various real-world transfer systems. It embeds different types of formula-based transfers that most notably differ w.r.t. the sign of the transfer response $z^i_{\tau^i}$. As an example, transfers that share locally collected tax revenues across states typically respond negatively to a rise in own-source tax revenues. Concretely, the transfer formula is

$$z^i = \alpha\left[\frac{\tau^1 L^1 + \tau^2 L^2}{2} - \tau^i L^i\right], \quad \alpha\in(0,1).$$

[2] Optimizing over, e.g., the tax rate implies that other states perceive the tax rate to be held fixed, and thus to be pre-committed, when they choose their policy simultaneously.

[3] Note, the two types of commitment, i.e. the sequencing of moves and the choice of optimization variables, are not equivalent. The former relates to sequential games while the latter already exists in simultaneous move games. Also, with the former type it is the best response of players which determines the value of commitment. With the latter it is the residual variation of fiscal variables (determined by the budget constraint rather than first-order conditions) which is primarily decisive for the choice of the commitment strategy.

[4] One may argue that the type of firm competition is determined by the technological and institutional environment in which firms operate rather than being a matter of firm choice, see Vives (2000). In contrast, expenditures and taxes can in principle be selected as fiscal variables to which public decision makers commit.

[5] Subscripts denote partial derivatives throughout.

[6] The assumed production function, including the symmetry assumption, is without loss of generality.