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A simple dynamic decentralized leadership model with private savings and local borrowing regulation

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ABSTRACT

This paper considers a simple dynamic decentralized leadership model with local borrowing and regional productivity-enhancing investment. In this model, the central government is benevolent but cannot commit to ex post intergovernmental transfer policies, while local governments act strategically after accounting for the ex post motives of the central government. We then investigate inefficiency in the subgame perfect equilibrium. We analyze the effect of central control on local borrowing and show that central control is of no benefit because ex ante local taxation works to offset it. We find the model yields different policy implications that central control is effective when extended to the case of residential mobility.

1. Introduction

This paper highlights the commitment problem in the context of intergovernmental grants, addressing the adverse effects of the ex post bailouts by the central government on the incentives of local governments in their ex ante decisions.[1] To illustrate the problem, consider a heavily indebted fiscally distressed region. In these circumstances, the local government needs to either reduce spending on public services or raise local taxes. The benevolent central government might regard the expenditure cut and the tax increase as inequitable and thus unacceptable. In the presence of interregional spillovers, the expenditure cut of spillover-generating public services might also undermine efficiency (Wildasin, 1997). Accordingly, consideration of ex post equity and efficiency might trigger the fiscal rescue of a fiscally distressed region if the central government has the discretion to do so.

Although enhancing social welfare ex post, the local government, in anticipation of a bailout, would be ex ante motivated to borrow excessively. Put differently, the pursuit of an ex post optimum would lead to ex ante distortions. This modeling is then analogous to the Samaritan's dilemma in which altruistic individuals cannot commit not to assist the poor, whereas the latter ex ante anticipates the ex post motive of the former (Coate, 1995).[2,3]

The lack of commitment to transfers by the central government has already been addressed in the literature on decentralized leadership, with the central government acting as a Stackelberg follower and the local government as a leader (Caplan et al., 2000). According to Caplan et al. (2000), with perfect interregional spillovers in the sense that the locally provided public services equally

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[1] The commitment problem in this paper involves a soft budget, referring to the circumstance of a "…local government turning to the central government for fiscal relief" (Oates, 2005) and ex ante manipulating "…its access to funds in undesirable ways" (Rodden et al., 2003). Rodden et al. (2003) and Vigneault (2006) provide a conceptual review and a discussion of international experience with this problem.

[2] The consequence is close to the fiscal commons problem that gives rise to the overaccumulation of public debt (Velasco, 2000). Ihori and Itaya (2001) also examine the subgame perfect equilibrium of the dynamic tragedy of the fiscal commons. The fiscal commons assume fragmented policy decisions within the central government, with stakeholders being able to extract freely from central funds. In contrast, the present paper assumes coherent ex post policymaking by the central authority pursuing a single objective.

[3] There are various studies on intergovernmental transfers that analyze the perverse incentive effect on local governments. See for instance Smart (1998) and Johnson (1988).

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benefit for both regioanl residents and non-residents, the decentralized leadership leads to a Pareto efficient outcome. However, as noted by Akai and Sato (2008), efficiency does not hold in a more general setting where the model allows an imperfect degree of spillovers. Köthenbürger (2004) also considers decentralized leadership in the context of capital tax competition.

Importantly, the nature of the game between the central government and local governments is dynamic. To our knowledge, however, most existing studies, including Akai and Sato (2008), have assumed a static (single-period) model that contains a sequence of decisions by governments or an incomplete multi-period setting because of the absence of private savings. One of the few exceptions is Goodspeed (2002), which considers the political economy in a two-period model with the central government providing interregional transfers for tactical purposes and local governments issuing bonds ex ante. Private savings are incorporated as well. Inspired by this work, and relying on a setting of decentralized leadership, the present paper considers a simple dynamic model accounting for both local borrowing and private savings. Interestingly, Goodspeed (2002) is rather descriptive and does not explore the strategic responses of local governments in borrowing, the incentive for residents to save, or the interaction between them. The present paper aims to address these issues. It establishes that the results of the game change substantially when private savings are accounted for explicitly.

More precisely, using a two-period setting, our model contains both a public input and consumption. The former refers to regional productivity-enhancing public investment conducted in the first period, and the latter are local public services provided in both periods. Local taxes finance these expenditures. In the first period, local governments issue bonds as well, while regional residents save. In the second period, there are intergovernmental transfers. The transfers are optimized from the ex post standpoint. The efficiency implication turns out to be different between the public investment and the public services. We establish that while the former is efficient, local governments are motivated ex ante to overprovide local public services in anticipation that the burden will ultimately be borne nationwide.

An obvious source of the moral hazard behavior of regions is their ex ante discretion in borrowing. One may therefore argue that the ex ante perverse incentives will be resolved once this discretion is regulated. To put it differently, the problem arises not because of the central government's commitment on ex post transfers, but rather because of its lack of ex ante regulation.[4] In response to this argument, we incorporate ex ante central regulation on local borrowing. The upshot is that ex ante central regulation on issuing local bonds is of no benefit in preventing such perverse incentives. In the extreme, overspending in the subgame perfect equilibrium is unchanged, even if a balanced budget imposed on local governments ex ante prohibits borrowing. This occurs because local governments can manipulate savings by residents by use of ex ante local taxation: this lowers the second period disposable income of residents, and in turn, influences the ex post transfers. Interestingly, in the present model and unlike conventional models, the ex ante overspending does not necessarily imply overborrowing; rather, it implies overtaxation.

We then extend the model to the case of ex post residential mobility. In this circumstance, the ex post transfers serve a different purpose from that in the basic model without mobility. Here, the transfers are ex post designed to enhance the efficiency of the interregional allocation of population as is familiar in the literature on fiscal federalism. The local government cannot attract ex post transfers by manipulating resident savings. In this context, ex post residential mobility turns out to be a source of the ex ante inefficiency. In contrast to the basic model, the first period public service level is efficient but the productivity-enhancing investment is discouraged. Central regulation becomes effective in preventing the otherwise overborrowing incentive of local governments. This creates different policy implications from those obtained with no residential mobility.

The model is highly stylized and it does not aim to describe exactly the reality of an economy. The decentralized leadership setting can, however, be regarded as "a fair representation of the European Union (EU) federation" as noted by Caplan et al. (2000). The case of residential mobility may capture some features of economies such as Canada and the USA. It is also applicable to a centralized country such as Japan where the local governments have heavily relied on intergovernmental transfers with the central government exercising considerable discretion toward them.

The paper is organized as follows. Section 2 outlines the two-period model. In Section 3, we consider the first-best outcome of the model. Section 4 analyzes the ex post behavior of the central and local governments. In Section 5, we examine the ex ante behavior and derive the subgame perfect equilibrium. In Section 6, we consider the case of free mobility across regions. Section 7 concludes the paper.

2. Basic setting

The economy lasts two periods denoted by $t = 1$, 2 and contains J regions. Each region consists of a representative resident. This assumes away intragenerational equity issues in order to focus on interregional differences. Denote the population size in region i by n_i, with the total population given by $\sum_i n_i = N$. n_i may vary across regions. There is a central government, and a local government for each region. The local governments provide local public services in the first and second periods, denoted by g_i and G_i, respectively. They also spend on public investment I_i^g at $t = 1$ that improves the regional productivity at $t = 2$. In the second period, the central government is in charge of intergovernmental transfers, σ_i ($i = 1,\ldots,J$). As will be shown, the transfers lead to quite different incentive effects on the local governments' choice of g_i and I_i^g.

2.1. Resident's budget and utility

Consider the representative resident in region i. In the first period, he/she is endowed with z_i. We account for interregional disparities in z_i. After the payment of local taxes, the endowment is spent on consumption or is saved. We consider a small open economy where private capital is freely mobile and its interest rate is determined in the international capital market. Without loss of generality, we set the interest rate equal to zero. The second period income includes the regional output y_i and the first period savings. The former is illustrated later. The resident's budget constraints at $t = 1$ and 2 are then expressed respectively as:

$$c_i^1 = z_i - s_i - \tau_i^1, \quad c_i^2 = y_i + s_i - \tau_i^2, \tag{1}$$

where c_i^t and s_i are private consumption and savings, respectively, and τ_i^t is the local tax level ($t = 1, 2$).

Consider the resident's utility given by:

$$\begin{aligned} U(c_i^1, g_i, c_i^2, G_i) &= u(c_i^1, g_i) + v(c_i^2, G_i) \\ &= u(z_i - s_i - \tau_i^1, g_i) + v(y_i + s_i - \tau_i^2, G_i). \end{aligned} \tag{2}$$

The present model abstracts from the preference heterogeneity for the sake of simplicity. The public services g_i and G_i are assumed to be private in nature, implying that their costs are proportional to

[4] Köthenbürger (2008) also considers the use of an ex ante policy instrument by the central authority in decentralized leadership as a device to mitigate the ex ante incentive problem of regional governments in anticipation of ex post transfers.