



Optimal fiscal federalism in the presence of tax competition[☆]

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ABSTRACT

This paper models the optimal division of public goods provision between central and regional governments in an economy with interregional tax competition. Regional provision is inefficient because governments compete for scarce capital by lowering their capital taxes and public good levels to inefficiently low levels. On the other hand, central provision is inefficient because it is determined by the minimum winning coalition within a legislature. The optimal degree to which public good provision should be decentralized depends on a tradeoff between these inefficiencies. In our main model, complete centralization is never optimal: regional governments should supply some public goods.

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1. Introduction

A fundamental question in public economics is how to allocate spending responsibilities and taxing powers between the central and lower-level governments. While multi-tier government structures are the norm in many countries today, the benefit of hierarchical government structures is not obvious. One of the more prominent approaches, originally put forward by Oates (1972), views federal structures as balancing the various inefficiencies of central and local provision of public goods. Under central provision, there is an inefficient uniformity of public good benefits across localities, whereas cross-border spillovers of public good benefits create inefficiencies under decentralized provision. Oates's decentralization theorem states that decentralization is preferable in the absence of spillovers.

In a related approach, Besley and Coate (2003) also view public goods as being inefficiently allocated across localities under centralization. But by giving careful attention to the exact form of legislative bargaining and strategic delegation under centralization, their approach yields inefficiencies involving the unequal distribution of public good expenditures across jurisdictions. In a complementary paper, Lockwood (2002) also compares the benefits from centraliza-

tion relative to decentralization. He shows that legislative outcomes under centralization are not sufficiently sensitive to the within-region benefits of the public projects that are being allocated across regions.

All three of these models suggest that spillovers must be sufficiently small for decentralization to be more efficient than centralization. It is tempting to generalize this finding to other sources of interjurisdictional externalities.

In this paper, we replace spillover effects with the fiscal externalities associated with tax competition. This focus is particularly interesting, because standard tax competition models provide no justification for decentralizing public good provision. Only the inefficiencies associated with local government behaviour are modeled, not inefficiencies at the central level. In particular, a major theme of the tax competition literature has been that competition for mobile capital by local governments leads to inefficiently low tax rates and public good levels.¹ Once we recognize inefficiencies in the legislative process at the central level, the literature reviewed above suggests that decentralization is the preferable outcome if the price elasticity of capital demand is sufficiently small at the regional level, since this elasticity influences the size of fiscal externalities.

We borrow from Besley and Coate's specification of a minimum winning coalition (MWC) as the decision-maker for public good provision at the central level. But we replace their assumption of a single public good with many public goods, thereby enabling us to analyze equilibria in which some goods are centrally provided, while others are provided by regional governments. We then obtain a stronger result: *some* decentralization of public good provision is

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¹ See Wilson (1986) and Zodrow and Mieszkowski (1986) for the initial contributions. Wilson (1999) and Wilson and Wildasin (2004) review the literature on tax competition, and Wilson (2006) reviews models of tax competition in a federal setting.

always preferable to complete centralization. In particular, this result holds regardless of the price elasticity of capital at the regional level. The paper also describes circumstances under which at least some centralization of public good provision is desirable, and it considers an alternative specification of the model where complete centralization may be optimal when the resulting inefficiencies are sufficiently low. But the case for some decentralization as part of an optimal federal system appears to be stronger when there is tax competition than when there are spillover effects.

For our model of tax competition, we extend the *Zodrow–Mieszkowski* (1986) model to include a continuum of public goods, all of which are imperfect substitutes from the consumers' perspective.² Regional (or “local”) governments act in the best interest of their representative citizens but must use a distortionary tax on inter-regionally mobile capital to finance public good expenditures. A Nash game in public goods is used to model competition for mobile capital. Thus, the tax increase required to raise a region's public expenditures one unit causes an outflow of capital, and the regional government treats as a cost the resulting loss in tax revenue. But this outflow represents an inflow for other regions, and the resulting increase in their tax revenue is the fiscal externality. The size of this externality clearly depends on the level of capital taxation. If most of the public goods supplied to a region's residents are centrally provided, then the region will need only a small tax rate to finance its provision of the remaining public goods, and so it will care little about the capital outflow that occurs when it raises its tax rate to supply an additional unit of one of its public goods. In this sense, the tax competition problem is relatively unimportant when only a small amount of public good provision is decentralized.

This last insight is the basis for our finding that some decentralization is optimal. We use the Besley–Coate reduced-form specification of a minimum winning coalition, which treats all regions within it identically.³ Membership in the MWC is random, with equal probabilities of belonging, in which case an optimal federal system may be defined as one that maximizes the common expected welfare for each region, calculated prior to knowing this membership. To focus on efficiency issues, utility functions are assumed to be quasi-linear, leaving the discussion of distributional issues to our concluding section.

The literature contains other approaches to fiscal federalism. In our own work (*Wilson and Janeba, 2005*), we have examined how countries might use a federal structure to gain a strategic advantage over foreign rivals in their competition for internationally mobile capital. Another approach is based on the idea that lower-level governments possess informational advantages over the central government. In this case, the central government should act as a principal in an agency problem, confronting the lower-level governments (the “agents”) with incentives to behave in ways that are optimal for the entire system of regions (see, e.g., *Raff and Wilson, 1997*). The microfoundations behind these informational asymmetries are not well-understood, however. Finally, it is widely understood that the distributional functions of the government should be allocated to the central government.⁴ See *Tresch (2002)* for a careful and critical discussion of the argument concerning redistribution. In contrast, our approach focuses on the efficiency issues associated with tax competition, rather than income distribution problems.

² The continuum approach has been successfully used before by *Lorz and Willmann (2005)*, as well as *Wilson and Janeba (2005)*, both in the context of fiscal decentralization. The use of a continuum of public goods avoids the all-or-nothing decision between centralization and decentralization, and allows us to focus on the optimal degree of decentralization and the co-existence of multiple tiers of government.

³ For simplicity, Besley and Coate work with a 2-region model, whereas we find it useful to assume many ex ante identical regions. In standard tax competition models, the inefficiencies from tax competition increase with the number of competing regions, making decentralization less desirable (see *Hoyt, 1991*).

⁴ *Oates (1972)* includes this insight as part of his decentralization theorem.

The work by *Lockwood (2002)* and *Besley and Coate (2003)* are early contributions in a sizable political economy literature on fiscal decentralization, which is surveyed by *Lockwood (2006)*. A number of other papers consider the benefits of centralization relative to decentralization in the presence of public good spillovers. These spillovers are important components of the models developed by Besley and Coate. *Dur and Roelfsma (2005)* show that underprovision of centrally-provided goods occurs when the cost of provision cannot be fully shared across districts, and regions therefore strategically delegate ‘conservatives’ under centralized decision making. *Lorz and Willmann (2005)* endogenize the range of public goods that are to be centrally provided, where local public goods differ in terms of their regional spillover degree. They show that in a political economy equilibrium, too few goods are centralized relative to the social optimum. *Cheikbossian (2008)* demonstrates that even in the presence of symmetric regions, centralization can lead to inefficient outcomes because of rent-seeking activities by jurisdictions to influence the policy choice under centralized decision making. *Koethenburger (2008)* revisits Oates' Theorem and examines the difference in welfare levels under centralization (with uniform provision of public goods across districts) and decentralization. This difference is found to be non-monotonic in the spillover parameter for some preference parameters. In a recent contribution, *Hatfield and Padro i Miquel (2009)* derive the optimality of partial decentralization. While decentralization suffers from tax competition, as in our model, centralization leads to excessive capital taxation due to lack of commitment power. As a result the median voter wishes to delegate some provision of public goods to the regional level. All of the above papers share our interest in the merits of fiscal decentralization, but none emphasizes the difference between tax competition and public good spillovers.

The next section presents the model, and *Sections 3 and 4* describe the main results concerning optimal federalism. Our formal model divides public goods into those provided by the central government and those provided by the regional governments. This division is decided at the “constitutional stage,” before taxes and public good are chosen. *Section 5* amends the model by allowing regional governments to also top off the public good supplies obtained from the central government if they are deemed to be too low. This extra policy freedom is enough to eliminate the desirability of decentralization in some cases, primarily because regions outside the minimum winning coalition must now impose significant taxes even when all public goods are centrally provided, to fund the top offs. But the optimality of complete centralization holds only in cases where the MWC possesses little power to unequally distribute public good levels across regions. *Section 6* investigates an example with specific function forms, and *Section 7* concludes.

2. The model

We consider an economy consisting of many identical regions, each of which treats the after-tax return on interregionally-mobile capital as fixed. Thus, individual regions cannot use capital taxes to manipulate this return, but our working paper (*Wilson and Janeba, 2009*) obtains similar insights from a two-region model with this motivation for tax policy.⁵ Following the *Wilson (1986)* and *Zodrow and Mieszkowski (1986)* model of tax competition, each region contains a representative resident, who supplies labor to competitive firms within the region. These firms use a constant-returns technology to produce output from this labor and mobile capital. Labor is fixed in supply within each region, whereas capital is mobile across regions but fixed in supply for the economy as a whole. Thus, capital

⁵ In the current model, regions would not wish to manipulate the terms of trade even if they were large, because they neither import nor export capital. *Section 5* analyzes a model in which regions choose different tax rates, generating trade in capital and output, but regions are again small. Our working paper considers a similar model with large regions, in which case terms-of-trade effects become important.

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