



Does tax competition really promote growth?

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ABSTRACT

This paper considers the relationship between tax competition and growth in an endogenous growth model where there are stochastic shocks to productivity, and capital taxes fund a public good which may be for final consumption or an infrastructure input. Absent stochastic shocks, decentralized tax setting (two or more jurisdictions) maximizes the rate of growth, as the constant returns to scale present with endogenous growth implies “extreme” tax competition. Stochastic shocks imply that households face a portfolio choice problem, which dampens down tax competition and may raise taxes above the centralized level. Growth can be lower with decentralization. Our results also predict a negative relationship between output volatility and growth with decentralization.

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1. Introduction

The link between fiscal decentralization and economic growth is increasingly attracting the attention of economists. In particular, a growing body of empirical research is investigating the links between measures of fiscal decentralization and growth, both at the country and sub-national level. Overall, the evidence is mixed. In particular, cross-country studies, which generally use similar measures of fiscal decentralization, can find positive or negative effects, depending on the precise measure of decentralization, sample, estimation method, etc. (Davoodi and Zou, 1998; Wooller and Phillips, 1998; Zhang and Zou, 1998; Iimi, 2005; Thornton, 2007). More recently, two studies on US data have found more robust evidence that fiscal decentralization increases growth (Akai and Sakata, 2002; Stansel, 2005). For example, Stansel (2005), in a study of growth over 30 years in 314 US metropolitan areas, has found that the degree of fractionalization (the number of county governments per million population in a metropolitan area) significantly increases growth.

On the theoretical side, explanation of the mechanisms linking fiscal decentralization and growth are thin on the ground. Two mechanisms have been studied. First, as shown by Hatfield (2006), tax competition will quite generally raise the post-tax return on capital, thus increasing the return to savings, and thus growth, in an endogenous growth model. Second, Brueckner (2006) shows that centralization, if it imposes uniform public good provision across regions, can lower the rate of savings and thus growth, although this mechanism appears to require differences in the mix of young and old across fiscal jurisdictions.

This paper makes a contribution to understanding of the tax competition mechanism. We set up a multi-jurisdiction endogenous growth model which combines two empirically relevant motives for investing outside the jurisdiction, namely rate-of-return arbitrage and portfolio diversification. To create demand for portfolio diversification we assume that there

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are independent stochastic shocks to production in each of n regions. The diversification motive is absent in standard tax competition models which only take rate-of-return differentials as the driving force for investing abroad. The rate-of-return motive accounts for the well-known positive fiscal externality in tax competition: a higher capital tax rate causes capital to flow to other jurisdictions and expands the tax base therein. The consequence is that taxes will be set at an inefficiently low level.

The existence of output shocks generates stochastic returns to capital invested by a household in each region. So, if taxes are not too different, the household located in one region will want to invest some of its accumulated capital in *all* regions. This in turn generates a negative fiscal externality: an increase in the capital tax in any “foreign” region reduces the return on capital invested in that region. Specifically, because the “home” household will not wish to withdraw all of its savings from the foreign region in response to higher taxes, in order to maintain a diversified portfolio, its interest income will go down. The key point is that this negative “rate-of-return” externality offsets the usual positive fiscal externality arising from mobile capital (i.e. that an increase in the foreign region’s tax leads to a capital outflow from the foreign region to the home region). This implies that when the second externality dominates, taxation under decentralization will be *higher*, and growth *lower*, than with centralization. In the simple AK version of our growth model, in which a consumption public good is financed out of a tax on capital, analytical results show that this occurs when: (i) the number of regions is small and (ii) the variance of the shock is sufficiently high.

We then modify the AK model to the Barro (1990) model of infrastructure growth in which we allow the production technology to be stochastic. This has the consequence that the pre-tax rate of return to capital in a region becomes more variable as the tax and thus the amount of infrastructure good in that region increases. This specification introduces a third type of tax externality, not seen in the literature on fiscal competition so far, which we call the *risk-exposure* externality. Specifically, a higher tax increases the riskiness of investment and thus the risk-bearing of non-residents. The risk-exposure externality is negative and, thus, counteracts the tendency of taxes to race to the bottom in fiscal competition. As to growth, we find, consistently with Alesina and Rodrik (1994), that absent stochastic shocks, centralization yields a tax rate which is too high to be growth maximizing, while decentralization yields a tax rate which is growth maximizing. By a continuity argument, growth is higher under decentralized government when the variance of the shock is small. But, as the variance of the shock increases, centralization may generate *higher* growth than decentralization, as in the consumption public good case.

One of the interesting predictions of our model concerns the relationship between the variance of stochastic shocks and growth. With a public consumption good, we show analytically that growth is (at least weakly) decreasing in the variance of the output shock. With a public infrastructure good, and fiscal decentralization, simulation results indicate a negative relationship between growth and the variance of output shock. This is consistent with the macroeconomic evidence (see Ramey and Ramey, 1995), although of course there are other mechanisms linking output shocks and growth (Jones and Manuelli, 2005).

Finally, the question arises as to why we need stochastic shocks and portfolio diversification as the mechanism for generating a countervailing negative externality in our endogenous growth model. After all, there are various other mechanisms (see Section 2) that tend to raise taxes above the socially optimal level in static tax competition models. The answer is the following. In the AK-type growth model without stochastic shocks, the firm’s demand for capital is perfectly elastic at the tax-inclusive price of capital. This in turn, under the standard assumption of perfect mobility of capital across regions (also made in this paper) implies “extreme” or Bertrand tax competition: each jurisdiction can undercut the others by a fraction and capture all the capital in the economy (Hatfield, 2006). This extreme competition dominates other mechanisms (such as tax exporting) which tend to raise taxes. Stochastic shocks, by contrast, have *two* effects. As already pointed out, they generate the countervailing rate of return externality. But also, they *weaken the tax undercutting incentive*; a small cut in tax will now only lead to a small capital inflow. So, our view is that stochastic shocks are the *only* means by which a micro-founded model can generate higher taxes and lower growth under decentralization.

The rest of the paper is organized as follows. Section 2 discusses the related literature. Section 3 introduces the model, solves for equilibrium conditional on fixed government policy, and identifies the fiscal externalities at work in the model. Section 4 contains the main results. Section 5 modifies the model to include infrastructure public goods. Section 6 concludes.

2. Related literature

The static tax competition literature emphasizes several mechanisms which can offset, or even dominate, the basic positive mobile tax base externality. For example, foreign ownership of fixed factors can lead to a tax exporting incentive to raise taxes (Huizinga and Nielsen, 1997). Or, if countries are asymmetric, capital importers wish to set higher taxes in order to lower the cost of capital (Bucovetsky, 1991; Wilson, 1991). Neither of these mechanisms apply here. Fixed factors (if present) are owned by domestic residents, and since the model is symmetric and we confine attention to symmetric equilibria, net trade in capital is zero in equilibrium.

In a more closely related contribution, Lee (2004) studies the impact of stochastic output shocks on tax competition in the usual static model of mobile capital. However, in his model, as the number of regions is assumed large, investors can be sure of a certain return on capital, and only face uncertain wage income. Thus, the negative externality arising though

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