Public good differentiation and the intensity of tax competition ☆

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Abstract

We show that, in a setting where tax competition promotes efficiency, variation in the extent to which firms can use public goods to reduce costs brings about a reduction in the intensity of tax competition. This in turn brings about a loss of efficiency. In this environment, a 'minimum tax' counters the reduction in the intensity of tax competition, thereby enhancing efficiency. 'Split-the-difference' tax harmonization also potentially enhances efficiency but would not be agreed upon by governments because it lowers the payoff to at least one of them. This paper also presents an explanation for how traditionally high-tax countries have continued to set taxes at a relatively high rate even as markets have become more integrated.
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1. Introduction

This paper demonstrates how variation across firms in their requirements for public goods may bring about differentiation in the levels of public good provision across countries and, as a result, lead to a reduction in the intensity of tax competition. In the case of zero variation in firms' requirements for public goods, a benchmark case, tax competition between countries for mobile firms is intense and leads to an equilibrium outcome that is efficient (as in Brennan and Buchanan, 1980). As the variation in firms' requirements for public goods is increased, the intensity of tax competition is reduced relative to the benchmark case; the level of public good provision becomes inefficiently low and the difference between the level of taxes across countries increases.[1] The paper then raises the question of whether tax

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[1] The notion of 'intensity of tax competition' as we use it here is parallel to the notion of 'intensity of price competition' as used in the industrial organization literature (Tirole, 1998, Chapter 7). Variations of the term 'intensity of tax competition' are used informally elsewhere in the literature but as far as we know they have not been formalized.

coordination can alleviate the inefficiency. A 'minimum tax' counters the reduction in the intensity of tax competition resulting from the variation in firms' public good requirements, and thus reduces inefficiency. Tax harmonization would potentially counter the reduction in the intensity of tax competition but would always be vetoed by the low-tax government.[2]

To obtain our results, we analyze a two-stage game of fiscal competition between national governments. In the first stage, each government sets a level of public good provision. The public good is only useful in the reduction of firms' production costs (there are no consumers in the model). In the second stage, each government sets its level of (lump sum) taxes. The location of each firm is determined (non-strategically) by where it will make the highest profits, given public good provision and taxes. An increase in a country's public-input level or a decrease in its tax attracts firms from the other country. Governments care about rents (tax revenue minus public-input costs).[3] The efficient solution is asymmetric. The equilibrium exhibits the properties discussed above and is asymmetric. Note that, because the model exhibits a unique asymmetric equilibrium, the framework yields a novel explanation for how traditionally high-tax countries have continued to set taxes at a relatively high rate even as markets have become more integrated.

The relationship between public good provision and fiscal competition has already received some attention in the literature. Some prominent examples are the following. Brueckner (2000) considers Tiebout/tax competition in an environment where firms' public good requirements vary, and shows that firms whose requirements are similar sort themselves efficiently across jurisdictions. Hoyt and Jensen (2001) consider the capitalization of public education quality (i.e. a public good differentiated by quality) into house prices in the presence of tax competition. Justman et al. (2002) consider fiscal competition when public good quality varies, and identify a 'fiscal agglomeration' property which defines an upper bound on the number of jurisdictions over which firms will locate. Each of these papers makes an important contribution. None of them, however, treats the limits created by differing public good requirements to efficiency gains that can be achieved through tax competition as we do in this paper. Also, none of these previous papers consider the merits of tax coordination. We will continue the discussion of how the present paper relates to the literature in Section 6 below.

The paper proceeds as follows. In Section 2 the basic model is set up. In Section 3 the efficient solution is solved for under the assumption that levels of public good provision and firm locations are chosen by a planner. Section 4 models a game of tax competition between countries, characterizing a non-cooperative equilibrium. In Section 5, policies of tax coordination are considered. Section 6 places the paper's contribution to the literature and draws conclusions.

2. The model

There are two countries, A and B, each of which has a government that sets the level of public good provision, x_A and x_B respectively, and the tax level, τ_A and τ_B respectively for its country. There is a set of firms, each of which is able to sell a single unit of a good. The costs of a firm depend on the level of taxation and the level of public good provision in the country where it locates.[4] We will first specify the behavior of firms, after which we will turn to governments. Finally, we will set out the sequence of events in the policy-setting game.

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[2] The literature on capital tax competition has focused on three different situations. The first concentrates on the presence of a 'fiscal externality,' whereby lowering the tax rate attracts capital to the jurisdiction. As a result, each government has an incentive to engage in wasteful competition for capital. The second, following Tiebout (1956), focuses on situations where competition among independent governments is like competition among firms and has desirable efficiency properties. The third setting combines features of the other two. On the one hand, competition introduces efficiency-enhancing incentives. On the other hand, such incentives operate in an environment characterized by market- or policy-failures that make a fully efficient equilibrium unattainable. The present paper is placed in the third setting. See Wilson (1999) and Wilson and Wildasin (2004) for comprehensive surveys of the tax competition literature. We will leave aside issues of commodity taxation, which are synthesized by Lockwood (2001).

[3] We assume that governments maximize rents but otherwise do not specify their motivation. For examples of other work on tax competition in which governments are rent maximizers, see Kanbur and Keen (1993), Hoyt (1995, 1999), Brueckner (2000), Keen and Kotsogiannis (2003), and Devereux et al. (2007).

[4] Since countries are ex ante symmetrical, firm location decisions and hence the boundaries of the countries are determined solely by the interaction of policy choices with firms' public good requirements. This is of course highly stylized, but serves to focus attention on the relationship between public good differentiation and tax competition. Additional features could be introduced to the model to make one country more attractive to firms than others, either by assuming that it is cheaper to locate/set up in one country than another or that there is an 'attachment to home', but these would obscure the effects we want to focus on. See Hindriks (1999) for an example of where attachment to home is modeled in the context of tax (vs. transfer) competition.