Journal of International Economics 84 (2011) 124–130

Contents lists available at ScienceDirect

Journal of International Economics

journal homepage: www.elsevier.com/locate/jie

On tax competition, public goods provision and jurisdictions' size

Patrice Pieretti, Skerdilajda Zanaj *

Center for Research in Economic Analysis (CREA), University of Luxembourg, 162a, avenue de la Faïencerie, L-1511, Luxembourg

ARTICLE INFO

Article history:
Received 18 February 2009
Received in revised form 30 January 2011
Accepted 31 January 2011
Available online 15 March 2011

JEL classification:
H25
H73
F13
F15
F22

Keywords:
Tax competition
Public goods competition
Spatial competition
Mobile capital
Country size

ABSTRACT

In this paper, we analyze competition among jurisdictions to attract foreign capital through low taxes and public inputs that enhance firms' productivity. The competing jurisdictions are different in size and mobility of capital is costly. We find that for moderate mobility costs, small economies can attract foreign capital by supplying higher levels of public goods than larger jurisdictions, without practicing tax undercutting. The classical result that small jurisdictions are attractive because they engage in tax dumping is recovered only for high mobility costs of capital.

1. Introduction

In this paper, we analyze competition among countries to attract entrepreneurs through low taxes on capital and/or high level of public goods, which enhance firm productivity. Our main interest is in investigating which types of countries (small or large) are attractive to foreign entrepreneurs and which instruments (taxes or public goods) are chosen by the successful jurisdiction.

The phenomenon of tax competition among countries to attract *mobile* capital, entrepreneurs or shoppers has generated a large body of literature. Two topics have attracted particular attention. One focus, the normative approach to tax competition, has considered the inefficiencies created by mobility (see for instance Zodrow and Mieszkowski, 1986; Wilson, 1995; Mintz and Tulkens, 1986; Wildasin, 1988a,b; Bucovetsky, 1991; Bucovetsky and Wilson, 1991; Matsumoto, 1998; Bucovetsky and Wilson,1991). A second topic of interest has been the study of the characteristics[1] that a country should possess to be a desirable destination for investors and foreign consumers (Wilson, 1991; Kanbur and Keen, 1993; Barros and Cabral, 2000; Bjorvatn and Eckel, 2005; Haufler and Wooton, 1999). In this paper, we adopt a similarly positive approach rather than a normative one by focusing on the role of countries' size asymmetries in attracting mobile investors.

A finding that generally appears in the tax competition literature is that small jurisdictions benefit from low taxes. The argument is that small countries face more elastic tax bases than larger countries if tax rates are uniform (Wilson, 1991, Kanbur and Keen, 1993; Hindriks and Myles, 2006). This feature may also arise from the homogeneity of the population in small countries. Wealthy individuals migrate to small jurisdictions in which they are able to democratically choose low taxes for themselves (Hansen and Kessler, 2001).

It is important to note that if small countries were always to offer lower capital tax rates than larger ones, then they would be importers of capital and exhibit a high capital-labor ratio. Marceau et al. (2010) use data from 1991 to 1999 to show that this is not the case, claiming that

> "the correlation between the size-population of a country and its tax rate is not clear. For example, some large countries like France and Germany have below average tax rates. (…) [T]he predictions of the asymmetric tax competition literature do not appear to be realized in the real world equilibrium."

Furthermore, recent data (Chen and Mintz, 2008) on effective corporate taxes show that some small countries, such as Belgium or the Netherlands, set very low tax rates, even lower than those of small countries such as Luxembourg. Some medium-sized countries such as

* Corresponding author. Tel.: +352 46 66 44 6464; fax: +352 46 66 44 6341.
E-mail address: skerdilajda.zanaj@uni.lu (S. Zanaj).

[1] For example, the level of employment, population density, production technology, tariffs and subsidies.

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doi:10.1016/j.jinteco.2011.01.005

Austria set rates that are as high as those in some large countries. Large countries are also divided in clusters on this basis: one requiring the payment of high taxes (Argentina, China, Russia, US, and France) and another offering low taxes (Ukraine and Poland). Therefore, the evidence is that there is no monotonic increasing relationship between capital tax rates and the population size of jurisdictions.

The model developed in this paper allows for a non-monotonic pattern of capital tax rates based on the assumption that countries of unequal size compete for foreign entrepreneurs using taxes and public goods as incentives that improve firm productivity. The existing literature has already analyzed the role of public goods differentiation in relaxing fiscal competition (Zissimos and Wooders, 2008; Hindriks et al., 2008). Accordingly, tax rate differentials between competing jurisdictions may persist in equilibrium. In the same vein, the stratification of countries in different tax classes can be explained by the quality differentiation of public goods (Justman et al., 2001). Benassy-Quéré et al., 2007 also study joint competition through taxes and the provision of public goods that enhance consumers' utility and firms' productivity. They find in particular that both the amount of public R&D expenditures as a share of GDP and the road infrastructure had a positive impact on FDIs flowing from the United States to European countries in 1994–2003.

We consider two jurisdictions of uneven size, where size refers to the population in a given jurisdiction.[2] Public goods that cover a wide range of infrastructures, services and regulations, provided by the local and/or the central government, are attractive to firms if they enhance their productivity.[3] Consequently, entrepreneurs decide where to locate capital according to differences in the level of public goods offered and tax differentials, net of the mobility cost. Competition between jurisdictions follows a two-stage game. First, governments decide on the level of public goods to supply, and then they set tax rates to maximize their rents. This timing leads to a strategic effect of public good provision on tax competition intensity because jurisdictions can anticipate during the first stage how harsh tax competition will be in the second stage.

The main findings of the paper can be summarized as follows. A large jurisdiction can only be attractive to capital through the supply of higher levels of public goods than its smaller rival offers. Such a result emerges if the mobility cost of capital is very low. Importantly, a small jurisdiction does not need to lower taxes to be attractive to foreign investments. For a certain range of mobility costs, it attracts foreign capital by supplying a higher level of public goods than its larger rival does without levying lower taxes. We show that for this equilibrium to occur, the cost level of mobility has to be intermediate and small countries must demonstrate no other specific feature apart from their size. However, adopting a low tax regime is a winning strategy for a small country if the mobility cost of capital is high enough.

A new general conclusion can be drawn based on the this model: all other things being equal, a certain degree of size asymmetry between jurisdictions is sufficient to define the direction of capital movements.

Findings relevant to our paper can be found in Hindriks et al. (2008) and Zissimos and Wooders (2008). Zissimos and Wooders (2008) address the inefficiency issues that may arise when jurisdictions compete regarding both taxes and public investments. They show that competition in public goods makes competition in taxes less fierce but has negative consequences for efficiency. We show that this impact on the intensity of tax competition may not always exist because it depends on the size asymmetry of the competing jurisdictions and the mobility cost of capital. Hindriks et al. (2008) also develop a model of tax and public goods competition with perfect capital mobility. Their aim is to investigate equalization schemes in federal states. They assume that jurisdictions differ in their attractiveness when one possesses a superior production technology. This asymmetry can be altered by public investments. The authors find that a region can be attractive to capital even if its capital taxes are higher than those of its rival if its level of equilibrium investment is not efficient, as in Zissimos and Wooders (2008). In both papers, inefficiency arises because jurisdictions make investment decisions at the first stage of the game and then compete in taxes. Hence, to make tax competition less fierce, jurisdictions invest inefficiently in public goods. Our approach shares with their paper the idea that fiscal choice is inefficient because of the strategic effect of public goods levels on tax competition intensity. However, the purpose of our paper is different.

Other contributions also deal with competition for capital between asymmetric jurisdictions. For example, Barros and Cabral (2000) consider a subsidy game between asymmetric countries to attract foreign direct investments to alleviate unemployment. In equilibrium, the winner is the country that gains the most in terms of employment for given transportation costs. Haufler and Wooton (1999) also consider competition for foreign investments by stressing the role of international trade costs and the "home market" effect. Because the authors consider asymmetrically sized home markets, the large country will have an advantage in attracting foreign capital. In both papers, a small economy can only be attractive to foreign investments if it underbids the larger one in terms of taxes or if it overbids it in terms of subsidies. In our paper, however, we show that the small country can win in interjurisdictional competition without being attractive in term of taxes.

The paper is organized as follows. The next section presents the model and defines the SPN equilibria of the two-stage game. Section 3 presents the properties of such equilibria when capital flows from the small to the large country. Section 4 analyzes the equilibrium where capital flows from the large country to the small one. Section 5 concludes.

2. The model

Consider two jurisdictions h and f of uneven size. The term jurisdiction refers equally to different regions of the same country or to different countries provided that these entities have the power to tax. Size refers to the magnitude of the population, which coincides with the number of capital-owners who are simultaneously entrepreneurs and workers. Entrepreneurs are endowed with one unit of a capital good (one individual—one unit of capital—one firm). They are heterogeneous according to their willingness to invest abroad. Thus, we assume that capital-owners are distributed over the interval $[0,1]$, with density s_h (resp. s_f in country f), $s_h + s_f = 1$, in an increasing order of their willingness to invest at home.[4] Assume without loss of generality that h is the small jurisdiction, i.e. $s_h < 1/2$.

The technology is defined as follows. Each entrepreneur is able to combine one unit of the capital good with her own labor to produce $q + a_i$, $(i = h,f)$ units of a final good, where q is the private component

[2] Country size may be defined by its population, by its area, or by its national income (Streeten, 1993).We focus on the population aspect rather than on spatial size. We thus assume that spatial area does not present a physical limitation for newly established firms. We also focus on competition between jurisdictions that differ greatly in size. Accordingly, we assume that when the population size is very small, the investment in human capital and the number of entrepreneurs are most likely very limited.

[3] In this context, we may consider transportation infrastructures, universities and public R&D investment in addition to property rights enforcement, capital market regulations, labor and environmental regulations and the absence of red tape procedures. It follows that countries' ability to attract foreign investment may also be based on the quality of their institutions. In the Oxford Handbook of Entrepreneurship (2007), it is argued that the number of entrepreneurs in a country depends, among other factors, on the character of regulations, property rights, accounting standards and disclosure requirements. Furthermore, in recent years there has been a surge of country and cross-country studies relating economic development to institutions, especially those affecting capital market development and functionality (La Porta et al., 1997, among others).

[4] These exogenously given populations will not change because we consider entrepreneurs as commuters. What changes is where the capital is invested.