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European Economic Review 50 (2006) 647–668
EUROPEAN ECONOMIC REVIEW
www.elsevier.com/locate/econbase

# Agglomeration and tax competition

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Received 28 January 2004; accepted 12 January 2005
Available online 19 February 2005

**Abstract**

Tax competition may be different in 'new economic geography settings' compared to standard tax competition models. If the mobile factor is completely agglomerated in one region, it earns an agglomeration rent which can be taxed. Closer integration first results in a 'race to the top' in taxes before leading to a 'race to the bottom'. We reexamine these issues in a model that produces stable equilibria with partial agglomeration in addition to the core–periphery equilibria. A bell-shaped tax differential also arises in our model. Therefore, the 'race to the top' result generalises to a framework with partial agglomeration.


*JEL classification:* F15; F22; H73; R12

*Keywords:* Economic geography; Agglomeration; Tax competition

## 1. Introduction

Conventional wisdom holds that capital tax competition leads to a 'race to the bottom'. Under the assumptions of constant returns to scale and perfect competition, the standard model shows that the desire to attract physical capital

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doi:10.1016/j.euroecorev.2005.01.006

leads to inefficiently low tax rates.[1] In this framework, deeper economic integration would lead to fiercer competition and thus falling tax rates.

Things are different in models of the 'new economic geography'.[2] In the 'core–periphery' model, under certain parameter ranges, industry is completely agglomerated in one region. An agglomeration rent accrues to mobile capital in the core region. Therefore, taxing capital in the core region will not lead to an outflow of capital as long as the tax gap is smaller than the agglomeration rent. Moreover, since this agglomeration rent is a bell-shaped function of the level of trade integration, the tax gap is also bell-shaped. Hence, in contrast to standard international tax-competition results, closer integration may first result in a 'race to the top' before leading to a 'race to the bottom' (Baldwin and Krugman, 2004). Baldwin and Krugman (2004) suggest that this may explain the observed pattern of the evolution of corporate taxes in the European Union.

All of the theoretical papers on agglomeration and tax competition to date use the core–periphery model or a variant thereof (see Ludema and Wooton, 2000; Kind et al., 2000; Andersson and Forslid, 2003; Baldwin and Krugman, 2004; Baldwin et al., 2003). In these models, stable equilibria are either those where industry is divided symmetrically or where all of industry locates in one of two countries. This feature is arguably extreme and not very realistic (see, e.g., Ottaviano and Thisse, 2004). By focusing on the standard core–periphery model or on very close descendants, the previous literature has left out an important class of locational equilibria. Ludema and Wooton who have themselves contributed to the development of models containing stable equilibria with partial agglomeration (Ludema and Wooton, 1999) are fully aware of this omission. However, they note that an analysis of such cases would become complex and therefore abstain from analysing this case in their tax competition paper (Ludema and Wooton, 2000, p. 342).

The present paper also analyses tax competition with agglomeration forces. But we depart from the literature by using an economic geography model which, in addition to the core–periphery equilibria, allows for stable locational equilibria with only partial agglomeration of firms in one of two countries. An interesting question is how far the results of the core–periphery model – in particular the possible 'race to the top' – generalise to such a framework with partial agglomeration.

To make the problem tractable, the present paper makes a few strategic simplifications. First, we use a simple model out of the class of models which feature stable partial agglomeration equilibria (the model of Pflüger, 2004). Second, we follow Ludema and Wooton (2000) by considering lump sum taxes only. Third, to sharpen the tax game, we follow the standard tax competition literature in assuming that taxes are levied on the mobile factor only (Zodrow and Mieszkowski, 1986).[3] Fourth, we adopt the reduced-form government objective function of

[1] See Zodrow and Mieszkowski (1986). There are, of course, many qualifications to this finding; see Wilson (1999) for a comprehensive survey.

[2] See Baldwin et al. (2003) and Ottaviano and Thisse (2004) for recent surveys.

[3] For an analysis of the tax structure in standard tax competition models, see, e.g., Bucovetsky and Wilson (1991) and Borck (2003). See also Andersson and Forslid (2003) for a discussion of tax structure in a new economic geography setting.