



Tax competition among European countries. Does the EU matter?



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ABSTRACT

This paper provides a simple theoretical model of capital tax competition between countries that differ in spatial location, and where cross-border investment costs are proportional to distance (a gravity model). We model EU membership as a reduction in 'distance' between countries. Precise predictions about reaction functions' intercepts and slopes are derived. In particular we find that joining the Union lowers the intercept and that all countries react more to member countries than they do to non-members. These predictions are largely confirmed using a panel data set of statutory corporate tax rates on Western European countries.

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1. Introduction

This paper explores the impact of EU membership on capital tax competition among European countries. The creation of a 'common market' for goods, capital and to some extent labor was the main focus of the Treaty of Rome in 1957, and also of the Single European Act, which came into force in July 1987. Its provisions included gradually establishing a single market over a period up to the end of 1992, by means of a vast legislative program involving the adoption of hundreds of directives and regulations. This program has been largely successful, and has reduced the costs of trade and investment between EU countries. To take only one example, European Union countries have to comply with a number of technical harmonization standards for goods and services, which means a firm located in one EU country faces a lower cost of exporting goods to, or indeed of investing in, another EU country than to a third country outside the EU, where different technical standards may apply.¹ Economic theory suggests that such market integration will impact positively on FDI flows both between member states and between member states and the rest of the world (Motta and Norman, 1996; Barrell and Pain, 1997; Raff, 2004).

There is supporting empirical evidence for this. Baltagi et al. (2008) show that the effects of preferential trade liberalization in Europe go beyond the involved countries and affect not only trade but also FDI. Brenton (1996) finds that the EU single market program led to a significant increase in investment by EU firms in other EU countries in the late 1980s. Barrell and Pain (1997, 1998, 1999) and Van Aarle (1996) show that the removal of internal barriers to trade and capital mobility during the single

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¹ An important example is the standards for the production of new motor vehicles. Here, EU emission standards define the acceptable limits for exhaust emissions of new vehicles sold in EU member states.

market program have been accompanied by a rapid growth in multinational activity in the European Union both by European and non-European firms. Overall, several studies show a robust positive relationship between market size and the likelihood to attract FDI (e.g. [Devereux and Griffith, 1998](#); [Head and Mayer, 2002](#)), and, in particular, that firms are more likely to invest in a country that is a member state of the EU. A similar effect cannot be observed for members of other regional trade agreements ([Grubert and Mutti, 2000](#)). Other research concentrates on the effect of the EMU on FDI; [Petroulas \(2007\)](#) shows that the introduction of the Euro raised inward FDI by 14 to 16% between Eurozone countries, by 11 to 13% from member countries to non-members, and by around 8% from non-member countries to member countries and [Schiavo \(2007\)](#) uses a gravity model on a sample of OECD countries to demonstrate that currency unions have a positive impact on FDI.

However, while the deepening of the single market in goods, capital and labor has progressed, there has been little progress on corporate and personal income tax harmonization, despite the fact that there is now almost unanimous consensus that the corporate tax rate of the host country has a significant, negative effect on inward FDI ([Haufler and Wooton, 2006](#); [Bénassy-Quéré et al., 2005](#)). This is not a direct objective of the EU² and, in practice, harmonization has been minimal: member states are reasonably free to set their own direct and corporate tax rates and tax bases. For example, although a common consolidated tax base for the corporate tax is an objective of the European Commission, little progress on this has been made to date ([Fuest, 2008](#)), and harmonization of personal taxes on capital income is not even on the agenda. Rather, the EU has adopted a policy of exchange of information to minimize evasion of these taxes.³

Our hypothesis is that the combination of these two factors, i.e., the lower cost of cross-border FDI between EU member countries, on the one hand, and the lack of tax harmonization programs between members, on the other hand, should cause EU countries to compete more intensively for FDI amongst themselves than with countries outside the EU. This might in turn cause them to react more to each others' taxes than to taxes of countries outside the EU.

We develop a simple model of tax competition which verifies and refines this intuition. Motivated by the success of 'gravity models' in explaining FDI flows (e.g., [Egger and Pfaffermayr, 2004](#)), we assume that, conditional on taxes, the size of cross-border investment between two countries is inversely proportional to the marginal cost of cross-border investment (these marginal costs could be physical, legal, or regulatory). We model EU membership as a reduction in 'distance' to other EU countries. We derive precise predictions on reaction function slopes and intercepts. In particular we predict that (i) EU members react more to each other than they do to non-members; (ii) non-EU countries also react to EU countries more than non-EU countries; and (iii) EU membership lowers the intercept of the tax reaction function.

We then take the model to the data: we investigate competition in statutory corporate tax rates using a dataset on seventeen Western European countries for a period of thirty years. Tax reaction functions are estimated following a literature initiated by [Case et al. \(1993\)](#) and followed by several other researchers (e.g. [Brueckner and Saavedra, 2001](#); [Solé-Ollé, 2003](#); [Devereux et al., 2008](#)). Specifically, taxes in any given country are assumed to depend linearly on a weighted average of taxes in other countries, where the weights are not estimated, but chosen a priori.

We find evidence in support of our theory for statutory corporate tax rates. Specifically, in our preferred specification, with weights inversely related to the effective distance between countries, EU countries react to a one percentage point decrease in the statutory rate of corporate tax of EU members by cutting their own taxes by 0.71 percentage points, and to a one percentage point decrease in the statutory rate of corporate tax of other non-EU countries by cutting their own tax by only 0.01 percentage points, but the latter figure is not significantly different from zero. Moreover we find that non-EU countries react to a one percentage point cut in the statutory tax rate of corporate tax of EU members by decreasing their own tax rate by 0.56 percentage points, and to a one percentage point decrease in the statutory rate of corporate tax of non-EU countries by cutting its own tax by 0.12 percentage points, but, again this latter figure is not significant. Finally, we find that joining the EU has a negative effect on the level of taxes equal to 0.02 points. Other alternative weighting schemes work much worse. So, overall, our results are consistent with the pattern of tax competition that emerges endogenously from a model where cross-border investment costs are lower for and towards union members.

The related literature is as follows. [Bretschger and Hettich \(2002\)](#), [Dreher \(2006\)](#), [Haufler et al. \(2008\)](#), and [Raff \(2004\)](#) analyze the impact of market integration on corporate tax setting. [Altshuler and Goodspeed \(2002\)](#), [Besley et al. \(2001\)](#), [Crabbe and Vandenbussche \(2008\)](#), [Devereux et al. \(2008\)](#), and [Overesch and Rincke \(2011\)](#) all estimate corporate tax reaction functions for OECD countries. For Europe, in particular, [Altshuler and Goodspeed \(2002\)](#) find that European countries behaved as if the US were a leader in setting corporate taxes after the 1986 tax reform; [Crabbe and Vandenbussche \(2008\)](#) investigates the effect of the new members on EU 15 members, finding a positive correlation for countries close to the new countries. [Overesch and Rincke \(2011\)](#) estimate a dynamic panel data on European countries that relates current tax rates to lagged values of a country's own as well as other countries' tax rates. But none of these papers explicitly models the impact of EU membership on tax competition, either theoretically or empirically.

The most closely related paper is the independent⁴ work of [Davies and Voget \(2009\)](#). They construct a theoretical model of firm location and corporate tax competition, where their derived tax reaction slopes (i.e., how the tax in country i reacts to the tax

² The legal basis for corporate tax harmonization is formed by art. 100, which deals with the harmonization of laws in general. This general harmonization is obligatory only in so far as the establishment or functioning of the internal market is at stake. Additionally article 94 of the EC Treaty provides for approximation of such laws, regulations or administrative provisions of the Member States as directly affect the establishment or functioning of the common market.

³ "The Council on 21 April 2004 adopted an amending Directive that is designed to speed up the flow of information between the tax authorities of Member States. The Directive which relates to direct taxation (income tax, company tax and capital gains tax), together with Insurance Premium Tax, enables Member States to co-ordinate their investigative action against cross-border tax fraud and carry out more procedures on behalf of each other." Council Directive 2004/56/EC of 21 April 2004.

⁴ The first version of this paper ([Redoano, 2003](#)) only studied fiscal interactions between EU members. A later version ([Redoano, 2007](#)) addressed the issue of different responses by EU members and non-members by running separate regressions for the two groups. The first version of the paper by [Davies and Voget](#) came out in 2008.

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