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Cross-border tax effects on affiliate investment—Evidence from European multinationals

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ABSTRACT

Recent studies suggest that multinational firm activities at home and abroad are positively correlated which may be due to the use of common inputs (like marketing, patents, etc.). Then, a cost shock at one location may lead to reduced activity in all other locations within the firm. In this paper, we theoretically and empirically analyze national corporate tax policy in such a setting. Our main hypothesis is that corporate taxation at the parent location not only reduces the parent's capital stock but also lowers capital stocks at affiliates abroad. Using micro data on European multinational firms, we confirm the hypothesis showing that a 10 percentage point increase in corporate tax rates is associated with a 5.6% decrease in the affiliate's capital stock. From a welfare point of view, this cross-border tax effect on the capital stock gives rise to a negative fiscal externality of corporate taxation which is empirically shown to compensate a substantial fraction of the well-known positive externality due to profit shifting.

1. Introduction

Recent empirical studies suggest that foreign investment of a multinational enterprise (MNE) does not reduce its domestic investment activity, it rather boosts it. Several papers demonstrate that an increase in foreign investment *causes* domestic investment to rise. These findings stand in sharp contrast to the standard model of tax competition which is based on the idea that foreign investment substitutes for domestic investment. The new empirical evidence instead suggests that if foreign taxes decrease foreign investment, they will consequently reduce domestic investment, too. To be precise, we expect taxes in one country to reduce the MNE's capital stocks at all locations. In the empirical public finance literature, these cross-border tax effects have been neglected so far.

In this paper, we theoretically identify cross-border tax effects on multinational capital investment, quantify them empirically and outline potential welfare implications. As a first step, we build a theoretical model to explain how taxes in one country affect investment in another country. Precisely, we consider tax rate changes at the MNE's headquarter location and investigate their effect on a foreign affiliate's capital investment. The second step is to empirically measure these cross-border tax effects on affiliate investment for a large panel of European MNEs and to test for the model predictions. As a third and final step, we explore some of the welfare implications. We show empirically that the fiscal

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externality caused by profit shifting behavior is considerably reduced if cross-border tax effects on affiliate capital stocks are taken into account.

In the standard literature on international investment, foreign investment is expected to substitute for domestic investment. Using aggregate investment data, Feldstein (1995) provides evidence that foreign investment replaces domestic investment 'dollar for dollar'. The tax competition literature rests on equivalent assumptions, see e.g. Zodrow and Mieszkowski (1986). Under perfect capital mobility, domestic taxes lower the domestic return to investment and drive capital out of the country. The interest rate falls which makes foreign capital stocks increase. Thus, national tax policies have positive externalities on other countries' tax revenue, which leads to inefficiently low tax rates in equilibrium.

Recent studies have challenged this view. Feldstein's (1995) finding is replicated in Desai et al. (2005) with respect to aggregate data, but the authors also find that US multinationals increase their domestic capital stock in response to investment abroad. In Desai et al. (2009), they use firm-level data of US multinationals and show that foreign investment in plant, property and equipment (PPE) is associated with higher domestic PPE investment. Similarly, Egger and Pfaffermayr (2003) find that foreign investment increases domestic investment in tangible assets and does not decrease investment in intangibles. Castellani and Barba Navaretti (2004) and Jäckle (2006) show that going abroad increases domestic productivity and competitiveness.[1]

Inspired by these findings, our central hypothesis is that the capital stock of multinational affiliates decreases in the tax rate at the parent location. Our estimation results support this prediction. Using a large set of European multinationals from the AMADEUS database, we regress the multinational affiliate's capital stock on the corporate tax rates at the affiliate and the parent country and derive a robust negative relationship between both tax measures and the affiliate's capital stock. Quantitatively, an increase in the parent tax rate by 10 percentage points is estimated to reduce the affiliate's capital stock by 5.6%. Moreover, in line with our theoretical presumptions, the effect turns out to be especially prevalent if the multinational headquarter owns intangible property and, hence, the use of common input goods tends to be important for the multinational firm.

The existence of a negative cross-border tax effect on the affiliate's capital stock may have important implications for the thinking about international tax issues. The standard model ignores these cross-border effects and focuses on direct tax effects instead (for a recent survey of empirical studies, see Devereux, 2007). More recent studies concentrate on profit shifting activities within multinational firms and find quantitatively sizable effects.[2] These studies suggest that corporate taxation exerts a positive fiscal externality on the foreign country's tax revenue which implies that corporate taxes are set inefficiently low from a worldwide welfare perspective. Our negative cross-border effect on capital stocks obviously runs counter to the positive externality due to profit shifting. In other words, domestic taxes *ceteris paribus* increase foreign tax revenue and consequently foreign welfare because reported foreign profits increase due to shifting activities but, at the same time, they *ceteris paribus* reduce foreign tax revenue because foreign capital use is deterred. The question arises which of the two effects prevails. We empirically quantify the externalities and find that the profit shifting effect dominates but is compensated substantially by the negative capital stock externality.

Besides the contribution to the literature on capital taxes and tax competition, our paper also adds to the work on investment activities within multinational firms, dealing with the question whether foreign and domestic investment levels are complements or substitutes. By using tax reforms, our approach provides a new solution to the often discussed endogeneity problem (see e.g. Desai et al., 2009) that a simultaneous increase in foreign and domestic activity may be driven by unobservable factors like a new invention, a productivity shock, etc. Since tax rate changes can be considered exogenous from the individual firm's point of view, our estimations provide additional evidence for the existence of a complementary relation between capital investment at different multinational locations without being exposed to the same methodological problems as previous studies (although there may be others).

The remainder of this paper is organized as follows. The next section outlines the theoretical model that underlies our analysis. Section 3 presents the estimation methodology. In Section 4, we describe the data, provide descriptive statistics and report the results. Section 5 discusses some implications and concludes.

2. Model and hypotheses

Our model analysis is inspired by Nielsen et al. (2010) where MNEs are characterized by the use of common input goods, like patents, trademarks or management services. The common input is assumed to be a public good within the firm, i.e., the use of the input in one location does not prevent its use in another location. In the following, we will outline the model setup (Section 2.1), identify cross-border tax effects on capital stocks (Section 2.2) and then discuss the implications for tax competition (Section 2.3).

[1] Lipsey (1995) analyzes a cross-section of American multinational firms, reporting a mild positive correlation between foreign production and domestic employment levels. Stevens and Lipsey (1992) analyze the investment behavior of seven multinational firms, concluding that investments in different locations substitute for each other due to costly external financing. Devereux and Freeman (1995) come to a different conclusion in their study of bilateral flows of aggregate investment funds between seven OECD countries, finding no evidence of tax-induced substitution between domestic and foreign investments. Desai et al. (2006) ask whether investment in tax havens diverts activity from non-havens and find that non-haven activity rises in response to tax haven investment activity.

[2] See e.g. Hines and Rice (1994), Clausing (2003), Weichenrieder (2009), Buettner and Wamser (2007), Huizinga and Laeven (2008).