



Corporate taxes and the location of intangible assets within multinational firms

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ABSTRACT

Intangible assets, like patents and trademarks, are increasingly seen as the key to competitive success and as the drivers of corporate profit. Moreover, they constitute a major source of profit shifting opportunities in multinational enterprises (MNEs) due to a highly intransparent transfer pricing process. This paper argues that, for both reasons, MNEs have an incentive to locate intangible property at affiliates with a relatively low corporate tax rate. Using panel data on European MNEs and controlling for unobserved time-constant heterogeneity between affiliates, we find that the lower a subsidiary's corporate tax rate relative to other affiliates of the multinational group the higher is its level of intangible asset investment. This effect is statistically and economically significant, even after controlling for subsidiary size and accounting for a dynamic intangible investment pattern.

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1. Introduction

In recent years, intangible assets have gained increasing importance in the corporate production process (e.g. Hall, 2001). Since access to financial capital has been substantially improved, physical assets are less scarce (Zingales, 2000) and intangible factors related to product innovation and marketing are increasingly seen as the key to competitive success (Edmans, 2007). Hence, intangibles like patents, trademarks, customer lists and copyrights have become major determinants of firm value. This development is especially significant in multinational enterprises (MNEs).¹ While until the early 1990s, MNEs commonly raised little or no fee from their corporate affiliates for the use of patents or trademarks, owners of these intangibles have – in line with updated legal regulations and accounting standards – started to charge for their immaterial goods and thus intangibles-related intra-firm trade has surged.

Furthermore, there is increasing anecdotal evidence that MNEs transfer their valuable intangible property holdings to low-tax

jurisdictions. Famous examples are Pfizer, Bristol-Myers Squibb and Microsoft which have relocated a considerable part of their research and development (R&D) units and patents from their home countries to Ireland (see e.g. Simpson, 2005) on Microsoft's R&D transfer). Others founded trademark holding companies in tax havens that own and administer the group's brands and licenses. E.g. Vodafone's intangible properties are held by an Irish subsidiary, and Shell's central brand management is located at a Swiss affiliate from where it charges royalties to operating subsidiaries worldwide. Moreover, an increasing number of financial consultancies advocates multinational tax planning strategies that imply the relocation of intangible property to low-tax affiliates.²

Governments and tax authorities have raised increasing concerns about these intangible relocations (Hejazi, 2006). They fear that the trend to fragment corporate production by locating value-driving intangible intermediate goods in low-tax economies diminishes the multinational corporate tax base in their countries. Moreover, arm's length prices for firm-specific intangibles are hard to determine (see e.g. Grubert, 2003; Desai et al., 2006), which gives rise to the additional concern that MNEs may shift profits earned at production affiliates in high-tax countries to the intangibles-holding low-

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¹ Empirical evidence links the presence of intangible property to the emergence of MNEs. Intangibles are perceived to foster FDI since they “can be easily transferred back and forth and [...] enjoy a public good nature which makes them available to additional production facilities at relatively low costs” (Markusen, 1995; see also Gattai, 2005).

² Examples are the British brand valuation consultancy *Brand Finance* whose client list includes world-wide operating MNEs like *British American Tobacco*, *Danone*, *Shell* or *Foster's* (*Brand Finance plc*, 2008) and the renowned U.S. law firm *Morgan, Lewis & Bockius LLP* (*Morgan Lewis and Bockius LLP*, 2007).

tax affiliate by overstating the true transfer price for royalties and licenses.

Surprisingly though, it has, to the best of our knowledge, not yet been clarified within an empirical framework whether these relocation examples are singular cases or whether they represent a systematic multinational investment pattern. We explore this question using panel data on European MNEs and find evidence for a statistically significant and quantitatively relevant bias of intangible property holdings towards affiliates with a low corporate tax rate relative to other group locations.

To receive guidance for the specification of our estimation approach, the paper starts out with a short section on theoretical considerations. We argue that MNEs have an incentive to locate intangible property at low-tax affiliates in order to tax its rents at a small rate. This is especially attractive since intangibles can be geographically separated from other production units in the group at small costs.³ Moreover, holding intangibles in low-tax countries may also be beneficial due to their public good nature and the fact that they are commonly used as input factors by several operating affiliates within the group. This allows MNEs to shift additional profits from their production affiliates to low-tax economies by distorting the associated royalty prices. The paper argues that, for both reasons, locating intangible property at an affiliate is more attractive the lower the subsidiary's corporate tax rate relative to other group locations.

Our empirical analysis employs a large panel dataset of multinational affiliates within the EU-25 which is available for the years 1995 to 2005 and uses the firm's balance sheet item intangible assets as a measure for intangible property holdings. The data is drawn from the micro database AMADEUS that provides detailed accounting information at the affiliate level and allows identification of a multinational group's ownership structure. Following our theoretical considerations, we determine the effect of an affiliate's average corporate tax rate difference to other group members on its level of intangible asset investment. Controlling for unobserved time-constant heterogeneity between subsidiaries, year fixed effects, time-varying host country characteristics and affiliate size, the results confirm our theoretical considerations and point to a robust inverse relation between the subsidiary's corporate tax rate relative to other group affiliates and its intangible asset holdings. The effect is statistically and economically significant and appears across a range of specifications and estimation choices that address endogeneity issues and the dynamic nature of intangible asset investment. Quantitatively, the estimations suggest a semi-elasticity of around -1.7 , i.e. a decrease in the average tax differential to other group affiliates by 1 percentage point raises a subsidiary's intangible property investment by around 1.7% on average. Finally, we provide evidence which suggests a positive correlation between intangible ownership and profit shifting behavior.

The paper adds to the literature on corporate taxation and multinational firm behavior. In recent years, research in this area has largely focused on the investigation of tax-motivated profit shifting activities. Various papers show that affiliate pre-tax profitability is inversely related to the corporate tax rate and the tax rate differential to other group members respectively (see [Huizinga and Laeven \(2008\)](#) for a recent paper). These results are usually interpreted as indirect evidence for profit shifting activities through the distortion of multinational transfer prices and/or the group's equity-debt structure.

Our paper suggests that this profitability pattern may be established by a third mechanism which is the transfer of profit-driving intangible property to low-tax affiliates. Although these relocations may also be induced by the desire to optimize transfer pricing opportunities (as described above), the relocation of value-driving assets itself generates the respective profitability pattern even in the absence of price distortions.

The paper is moreover related to existing work that connects intangible property holdings to the emergence of multinational firms, arguing that the threat of knowledge dissipation tends to favor market entry through foreign direct investment over other entry modes like licensing agreements with third parties (see e.g. [Ethier and Markusen, 1996](#); [Fosfuri, 2000](#); [Gattai and Molteni, 2007](#); [Markusen, 2001](#); [Saggi, 1996, 1999](#)). A small set of papers has moreover stressed that it is exactly this intellectual property ownership which facilitates profit shifting behavior between multinational entities since the true transfer price for firm-specific intangible assets is hard to control for national tax authorities and MNEs can thus easily engage in transfer pricing manipulations (see e.g. [Grubert, 2003](#); [Harris, 1993](#); [Harris et al., 1993](#)). Additionally, there is some evidence that MNEs adjust their organization and investment structure to optimize profit shifting opportunities. For example, [Grubert and Slemrod \(1998\)](#) and [Desai et al. \(2006\)](#) find that parent firms with high intangible asset investments and therefore good opportunities to engage in profit shifting activities are most likely to invest in tax havens. Analogously, [Grubert \(2003\)](#) shows that R&D intensive MNEs engage in significantly larger volumes of intra-group transactions and thus create more opportunities for income shifting.

However, none of these papers considers the location of intangible property within the multinational group to be a choice variable of the MNE. To the best of our knowledge, we are the first to show within a systematic econometric framework that MNEs distort the location of their intangibles towards low-tax affiliates in the multinational group. Most closely related to our study is a recent paper by [Grubert and Mutti \(2007\)](#) who point out that U.S. parents' R&D investments have become a weak predictor for royalty payments from foreign subsidiaries to the parent firm but simultaneously strongly enlarge the earnings of group affiliates located in tax haven countries. They interpret their results to reflect the parents' incentive to set up tax haven subsidiaries and to reach favorable cost-sharing agreements on R&D investment with them. The low-tax entities then sell patents and licenses to high-tax production affiliates and receive the corresponding royalty payments as earnings.

The remainder of the paper is structured as follows. [Section 2](#) presents a short motivation for the hypothesis tested in our empirical model. In [Section 3](#), we describe our data and the variable construction. [Section 4](#) discusses the estimation methodology. The estimation results are presented in [Section 5](#). [Section 6](#) analyzes the relationship between profit shifting and intangibles ownership. [Section 7](#) concludes.

2. Theoretical considerations

The purpose of our paper is to empirically investigate whether corporate taxes distort the location of intangible assets within a corporate group.⁴ For a better understanding, this section shortly

³ Note that this incentive holds irrespective of where the asset is created. With asset creation in the low-tax country, all accruing rents are taxed at a low rate. However, even if the asset is initially created in a high-tax country and transferred to a low-tax affiliate at a later point in time, a rather intransparent transfer pricing process for intangible property is likely to ensure that a considerable fraction of the intangibles' rents is shifted to the low-tax affiliate.

⁴ We follow the notion that there is an optimal location pattern for intangible assets across group affiliates in the absence of corporate taxation, i.e. some affiliates may be more efficient in developing and administering intangible property than others (e.g. due to a higher proportion of high-skilled workers at the respective hosting locations). Corporate taxes can distort this optimal location pattern.

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