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# Firms' financial choices and thin capitalization rules under corporate tax competition

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## Abstract

Thin capitalization rules have become an important element in the corporate tax systems of developed countries. This paper sets up a model where national and multinational firms choose tax-efficient financial structures and countries compete for multinational firms through statutory tax rates and thin capitalization rules that limit the tax-deductibility of internal debt flows. In a symmetric tax competition equilibrium, each country chooses inefficiently low tax rates and inefficiently lax thin capitalization rules. We show that a coordinated tightening of thin capitalization rules benefits both countries, even though it intensifies competition via tax rates. When countries differ in size, the smaller country not only chooses the lower tax rate but also the more lenient thin capitalization rule.

## Highlights

► We analyze tax competition in the statutory tax rate and in a thin capitalization rule. ► Under tax competition, multinational firms are tax-favored over national firms. ► A coordinated tightening of thin capitalization rules reduces tax rates, but raises welfare. ► With size asymmetries, the smaller country is more lenient towards multinationals.

## Introduction

Existing corporate tax systems permit deduction of interest payments from the tax base, whereas equity returns to investors are not tax-deductible. This asymmetric treatment of alternative means of financing investment offers firms a fundamental incentive to increase their reliance on debt finance. For multinational companies, this incentive is further strengthened by the opportunity to use internal debt as a means to shift profits from high-tax to low-tax countries. Recent empirical research provides conclusive evidence that international tax differentials affect multinationals' financial structure in a way that is consistent with overall tax minimization.[1] Moreover, while profit shifting within multinationals can occur through a variety of channels, there are clear empirical indications that the use of financial policies plays an important role in this process (Grubert, 2003, Mintz, 2004). For this reason, international debt is suspected to be a core factor behind empirical findings that multinational firms seem to pay substantially lower taxes, as a share of pre-tax profits, as compared to nationally operating firms.[2]

In response to these developments, many countries have introduced thin capitalization rules, which limit the amount of interest payments to related entities that is deductible from the tax base. Table 1 lists all countries that included such constraints in their corporate tax codes in 2005. The general way to enact thin capitalization provisions is to specify a *safe haven* debt-to-equity ratio, and to limit the deduction of the costs of debt once this critical threshold level is surpassed.[3]

On the other hand, the move to stricter thin capitalization rules is not universal. The United States, for example, which was one of the first countries to introduce an *earnings*' *stripping rule* in 1989, has introduced changes to its tax code in 1997 that facilitated the use of internal debt as a tax-saving instrument.[4] Ireland and, more recently, Spain have even abolished thin capitalization restrictions for loans from EU-based companies completely, in response to a 2002 ruling by the European Court of Justice that thin capitalization rules must be set up in a non-discriminatory way. In the case of Ireland, it is furthermore noteworthy that the relaxation of thin capitalization rules directly followed the forced termination of Ireland's split corporate tax rate, which had long been used as an instrument to provide preferential tax treatment to multinationals. This suggests that at least some countries might strategically use lax thin capitalization rules as a means to grant targeted tax relief to multinational firms.

These recent developments have led to an increasing awareness in the European Union of the potential inefficiencies that result from a decentralized setting of thin capitalization rules. In a communication, the European Commission (2007) has announced its willingness to take coordinated actions against ‘wholly artificial arrangements' used to shift profits between establishments, and explicitly includes thin capitalization rules as a possible countermeasure at the EU level. A more detailed discussion has taken place in conjunction with the directive proposal of the European Commission (2011) to introduce a Common Consolidated Corporate Tax Base (CCCTB). According to the directive proposal, interest paid to an associated enterprise resident in a third country shall not be tax deductible when the statutory tax rate in the third country is less than 40% of the average statutory corporate tax rate in the EU member states, or when the associated enterprise is subject to a special tax regime in the third country (European Commission, 2011, Article 81).[5]

Despite the policy relevance of the subject, and in contrast to a growing body of empirical research, we are unaware of a theoretical analysis that focuses on the positive and normative aspects of the choice of thin capitalization rules by countries engaged in tax competition. This is what we aim to do in the present paper.

We consider a model with two potentially asymmetric countries and national as well as multinational firms. Tax competition for internationally operating firms occurs through statutory tax rates and through thin capitalization rules that limit the tax-deductibility of internal debt flows within multinational enterprises. Both multinational and national firms can also respond to a higher domestic tax rate by increasing the level of external debt finance. We first consider the case of symmetric countries and show that tax competition leads to inefficiently low tax rates and inefficiently lax thin capitalization rules, relative to the Pareto efficient solution. This serves as a convenient benchmark from which our main results can be derived.

The first central result of our analysis is that, starting from the symmetric tax competition equilibrium, a coordinated tightening of thin capitalization rules is mutually welfare-increasing, even if countries are free to re-optimize their statutory tax rates in a non-cooperative fashion. Indeed, we find that countries compete more aggressively via statutory tax rates when thin capitalization rules are coordinated. Nevertheless, this partial coordination measure is beneficial because tax competition occurs primarily through thin capitalization rules. Therefore, the coordination of thin capitalization rules deprives countries of their most aggressive policy instrument and makes tax competition less severe, on average.

This finding implies that regulations specifically addressed at multinational corporations, such as thin capitalization rules, may be a more important determinant of foreign direct investment (FDI) than statutory tax rates. This prediction receives support from recent empirical studies. Altshuler and Grubert (2006) show that the U.S. statutory tax rate ceased to have a significant impact on FDI flows, after the United States had effectively relaxed their thin capitalization rules in 1997 (see above). Related evidence is reported in Buettner et al. (2009). They find, for a sample of 24 OECD countries, that thin capitalization rules are effective in reducing firms' debt-to-equity ratios and thus have the potential to reduce international debt shifting. At the same time, the study also finds that the existence and the tightness of thin capitalization rules have significant, adverse effects on foreign direct investment.

Our second main result pertains to the case of asymmetric countries. We show that the country with the smaller population size not only chooses the lower tax rate, but also the more lenient thin capitalization rule in the non-cooperative tax equilibrium. This is because the smaller country faces the more elastic tax base for mobile capital, but the same is not true for immobile capital. Hence, the small country will find it optimal to tax-discriminate more in favor of mobile, multinational firms. This finding is consistent with the stylized facts summarized in Table 1, which show that large countries such as Germany, France, the United Kingdom or the United States have rather elaborate rules limiting the tax-deductibility of internal debt, whereas small countries such as Belgium, Ireland, Luxembourg and many countries in Eastern Europe have either no thin capitalization rules at all or very permissive ones.

The analysis in this paper builds on two strands in the literature.[6] First, there are several studies that analyze the effects of corporate taxation on multinational firms' financing and investment decisions in the presence of profit shifting (Mintz and Smart, 2004, Weichenrieder and Windischbauer, 2008, Buettner et al., 2009, Schindler and Schjelderup, 2012). In these papers, however, the focus of the analysis is primarily on the adjustment of firms to a given tax environment. Hence, in contrast to our paper, the analyses do not endogenize the tax policies of countries competing for FDI. An exception is the paper of Davies and Gresik (2003) who analyze the implications of different financing sources for tax competition between countries. However, their focus is on double taxation regimes and they neither analyze internal debt as a means of profit shifting nor thin capitalization rules.

Second, our analysis also relates to the theoretical literature that investigates whether the abolition of tax preferences for mobile tax bases raises or reduces tax revenues and welfare in the competing countries (Janeba and Peters, 1999, Keen, 2001, Janeba and Smart, 2003, Haupt and Peters, 2005, Bucovetsky and Haufler, 2008). A related issue is addressed by Peralta et al. (2006) who show that countries may have an incentive not to monitor profit shifting in multinational firms. More recently, one focus in the profit-shifting literature has been on the role of tax havens. Slemrod and Wilson (2009) and Hong and Smart (2010) ask whether the presence of tax havens is desirable or not from the perspective of high-tax countries, by permitting them to tax mobile and immobile capital differentially. Johannesen (2012) considers profit shifting to a tax haven by intra-firm loans and shows that tax competition will drive optimal withholding taxes on interest payments from the haven to zero when multinational firms can engage in triangular financing structures.

However – with the partial exception of Hong and Smart (2010) – none of these studies addresses thin capitalization rules.[7] Moreover, almost the entire literature on discriminatory tax competition confines itself either to the case of a small open economy, or to fully symmetric countries. In contrast, our model allows us to study the effects that differences in country size have on the optimal combination of tax instruments when countries can discriminate between the taxation of national and multinational firms.

The remainder of the paper is set up as follows. Section 2 presents the basic framework. In Section 3 we derive the Pareto efficient (fully coordinated) set of tax policies. Section 4 analyzes the non-cooperative solution. Section 5 turns to the welfare effects of a partial coordination of thin capitalization rules. Section 6 investigates asymmetric tax competition when countries differ in size. Section 7 concludes.

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## Section snippets

### The model

We analyze a model of two countries, labeled *A* and *B*. The country indices are $i, j \in \{A, B\}$ with $i \neq j$, if not stated otherwise. The countries simultaneously compete in capital tax rates and in thin capitalization rules. These policy instruments affect the choices of two types of firms: national firms, which can only invest in the country where the owner resides, and multinational enterprises (MNEs), which can invest in either country. The categorization of firms into national vs.multinational firms…

### Benchmark: Pareto efficient tax policy

As a benchmark, we derive the Pareto efficient tax policy when countries *A* and *B* can fully coordinate both their tax rates and their thin capitalization rules. We initially focus on the symmetric case with $s_i$=0.5. Hence, we can assume that each country sets its tax policy so as to maximize the sum of utilities, $w := u_i + u_j$. Denoting the Pareto efficient policy by the superscript *PO* and introducing $\eta$ for the (positively defined) tax elasticity of the net-of-external-debt tax base, Appendix A.1…

### Tax competition

Let us now turn to the case where the two governments in countries *A* and *B* simultaneously and non-cooperatively choose their tax policies. We assume that tax rates and thin capitalization rules are chosen simultaneously, implying that they are equally flexible instruments from the perspective of each government. This specification is supported by several recent corporate tax reforms where statutory tax rates and thin capitalization restrictions were changed simultaneously.[21]…

### Partial coordination of thin capitalization rules

In the previous section, we have seen that tax competition will lead to inefficiently low tax rates and – when the competition for mobile capital is sufficiently strong – also to inefficiently lax thin capitalization rules. In the following, we thus consider the effects of a coordinated tightening of thin capitalization rules in both countries. At the same time we assume that each country is free to adjust its tax rate in a nationally optimal way to the new thin capitalization restrictions.…

## Asymmetries between countries

Virtually all of the existing literature on discriminatory tax competition is confined to the case of symmetric countries. In contrast, the present model allows us to derive algebraic results for how asymmetries in country size affect equilibrium tax rates and thin capitalization rules. To obtain these results, however, we need to place specific functional forms on the utility, production and agency costs functions.

We therefore assume that the per-capita production function in country *i* is…

## Conclusions

This paper has introduced a model where countries compete for mobile and immobile capital through both statutory tax rates and thin capitalization rules that limit the tax-deductibility of internal debt flows within MNEs. For the symmetric case, and starting from a tax competition equilibrium with inefficiently low tax rates and inefficiently lax thin capitalization rules, we have shown that a coordinated policy of tightening thin capitalization rules will benefit both countries, even though it …


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> …In comparison to CFC rules, thin-capitalization rules have received some more attention in the recent literature. From a theoretical perspective, Hong and Smart (2010) and Haufler and Runkel (2012) show that thin-capitalization rules can be used as an instrument to differentiate between the effective taxation of national and multinational firms. Gresik et al. (2017) and Mardan (2017) analytically compare the effects of alternative thin-capitalization rules.…

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