

DEBT SHIFTING AND THIN-CAPITALIZATION RULES

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A large body of literature in corporate finance argues that the trade-off between the cost and benefit of debt financing determines a firm's optimal capital structure. One prominent benefit of debt relative to equity financing relates to the tax-deductibility of interest expenses. This asymmetry in tax treatment implies that, on average, firms' capital structures will be distorted in favor of too much debt financing (see Graham, 2003, for a survey). Additional incentives to use debt instead of equity financing relate to the operations of multinational enterprises (MNEs) whose activities across jurisdictions with varying tax rates allow for profit shifting and reductions in overall tax burdens. Differences in tax rates across countries usually make it attractive to thinly capitalize foreign affiliates in high-tax countries and rely instead to an excessive extent on debt financing. In order to minimize the overall tax burden, MNEs may particularly use internal (related-party) debt as a vehicle for shifting profits by injecting equity financing into a foreign affiliate facing a low tax rate. This affiliate then provides loans to related entities within the MNE in high-tax countries. For the latter countries the implication is a reduction of the tax base (and tax revenue) due to the deductibility of interest expenses.

While early empirical work on taxes and debt financing of MNEs provides evidence that higher taxes at foreign locations are related to higher debt-to-asset ratios of foreign entities of MNEs (Desai, Foley and Hines, 2004; Mintz and Weichenrieder, 2009, and Feld, Heckemeyer and Overesch, 2013, for a survey), theoretical work on debt shifting of MNEs makes the prediction that the affiliate facing the lowest tax rate within the group should lend to all other affiliates of the same MNE (Mintz and Smart (2004)).

This pattern has been confirmed by Buettner and Wamser (2013) using data on German MNEs. Their estimates suggest that, *ceteris paribus*, a ten percent decrease in the tax faced by the lowest-tax affiliate within an MNE leads to an increase of about seven percent in internal borrowing at all other locations. Later work has shown that fundamentals in firm and country characteristics beyond taxes can explain internal debt usage (Egger et al., 2014), leading to more complex lending and borrowing flows within MNEs. It seems, however, that taxes are the most important determinant of internal debt financing. The paper by Huizinga, Laeven and Nicodème (2008) suggests that total debt financing (including external debt) of foreign subsidiaries exhibits a pattern consistent with tax rate differentials and not only internal debt is used to shift profits.

Although a large body of literature in economics has long discussed the implications of profit shifting within MNEs, the public debate about profit shifting gained fresh momentum when it became publicly known that MNEs like Amazon, Apple, Google or Starbucks can avoid taxes to a large extent and pay only around two to five percent tax on their income in most countries.² The recent OECD report on base erosion and profit shifting (BEPS) has recognized that profit shifting of MNEs is a "pressing and current issue for a number of jurisdictions" (OECD 2013). The report suggests that countries should intervene and reconsider the "tax treatment of intragroup financial transactions" (OECD 2013). The OECD becomes explicit in its "Action Plan" and suggests to "limit base erosion via interest deduction and other financial payments" (OECD 2014) by using so-called thin-capitalization rules (TCRs). These rules aim at preventing profit shifting by limiting the deductibility of interest payments for tax purposes.

Design and application of thin-capitalization rules

We can distinguish between three basic approaches to restrict interest deduction related to profit shifting through excessive debt financing: the arm's length



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² See Reuters (2013) or The Telegraph (2012).

principle, so-called earnings stripping rules and fixed debt-to-equity rules.³

First, some countries apply arm's length methods by comparing the capital structure of a firm entity to a counterfactual capital structure under the assumption that no related parties were involved in the financing of the firm entity. As such a counterfactual is, of course, unobserved and firm-specific, an individual assessment of the capital structure including the specific terms of a loan is necessary. If the tax authority considers that a loan from an unrelated party would have been smaller or would have involved a lower interest rate, then the deduction of interest payments from the corporate tax base is denied. Common criteria to assess whether the loan was on arm's length terms are, for example, whether the equity of a company is sufficient to satisfy its solvency requirements, to what extent the average debt-to-equity ratio of the industry differs from that of the company, or whether the company is able to obtain loans from third parties. Examples of countries relying on the arm's length principle to restrict interest deduction related to profit shifting are Austria, or Norway until 2013.

Interest-barrier or earnings stripping rules (ESRs) impose a general restriction on the deductibility of interest payments that are excessive relative to income. Some countries, like, for example, Germany since 2008 and Spain since 2012, limit deductibility irrespective of whether interest is paid to a related party or an unrelated lender. In other countries, like Norway, Finland or Japan, the ESR limits only related-party debt interest deduction. Under an ESR, net interest expenses exceeding a given percentage of taxable income⁴ are not deductible from the tax base in the year of their accrual.⁵ In most countries there are various exceptions to the general applicability of ESRs to ensure that only debt financing with the purpose of earning stripping is constrained. Over the last couple of years, a growing number of countries have introduced ESRs, either in addition to, or often replacing, existing regulation on TCRs. This recent trend might be owed to the impression that existing TCRs were not sufficiently strict to prevent debt shifting by MNEs. On the other hand, many European

countries had a need to reform their legislation after the 'Lankhorst-Hohorst' decision of the European Court of Justice (ECJ) in 2002. In that case, the ECJ came to the conclusion that the old German TCR violated the 'freedom of establishment' principle within the European Union as the old legislation discriminated against foreign investors. This led to various reforms of TCR legislation and finally to a number of new ESRs.⁶

The third approach, which is widely applied, is to set debt-to-equity rules following a "fixed ratio approach". The common feature under this approach is that interest deduction is denied if a firm's debt capital exceeds a certain proportion of its equity capital. The latter relation is fixed in countries' tax laws and often called safe haven or safe harbour debt-to-equity ratio, referring to the fact that interest remains fully deductible as long as the fixed proportion is not exceeded. Again, while some countries apply their safe haven rules only to related-party (i.e., internal) debt, others consider total debt. We provide a rich descriptive analysis of debt-to-equity rules around the world in the next section.

TCR legislation is often very complex and its applicability depends on many conditions. In practice, many countries apply rules that combine elements of these three approaches to limit the deduction of interest expenses. The United Kingdom (UK) applies the arm's length principle to stipulate the amount of "acceptable" debt, and in addition restricts the deductibility of interest (even if the debt level is at arm's length) if the amount of the group's net debt exceeds 75 percent of the consolidated worldwide gross debt. As another example, the United States (US) apply both a fixed debt-to-equity rule (1.5:1) and an ESR (total interest expenses in excess of 50 percent of adjusted taxable income are not deductible). Finally, in many countries applying a fixed ratio approach, related-party lending is not subject to the TCR if the taxpayer can prove that the loan was provided on arm's length terms.

The use of thin-capitalization rules around the world

For the purpose of this report, we collected data on the existence and scope of TCRs for 172 countries from 1996 until 2012. We focus on TCRs that follow a "fixed ratio approach". This approach is most comparable for the years this report has collected data for and has been used by most countries around the world. The fixed ra-

³ Ruf and Schindler (2012) or Dourado and de la Feria (2008) distinguish between specific and non-specific TCRs where the fixed debt-to-equity approach falls under the first of those categories.

⁴ For example, 30 percent of earnings before interest, tax, depreciation and amortization (EBITDA) in the case of Germany, Spain, or Norway as of 2014, 25 percent of EBITDA in the case of Finland, and 50 percent of adjusted taxable income in Japan.

⁵ Most countries allow carrying forward the non-deductible amount of interest for several years and allowing deductibility in years where the earnings threshold is not reached. Countries differ substantially in the number of years for which carrying forward interest expenses is allowed (five years in Germany, seven in Japan, ten in Norway, 18 in Spain).

⁶ For instance, Germany and Italy replaced their old TCR legislation with ESRs in 2008, Spain in 2012, Portugal in 2013 and Greece in 2014.

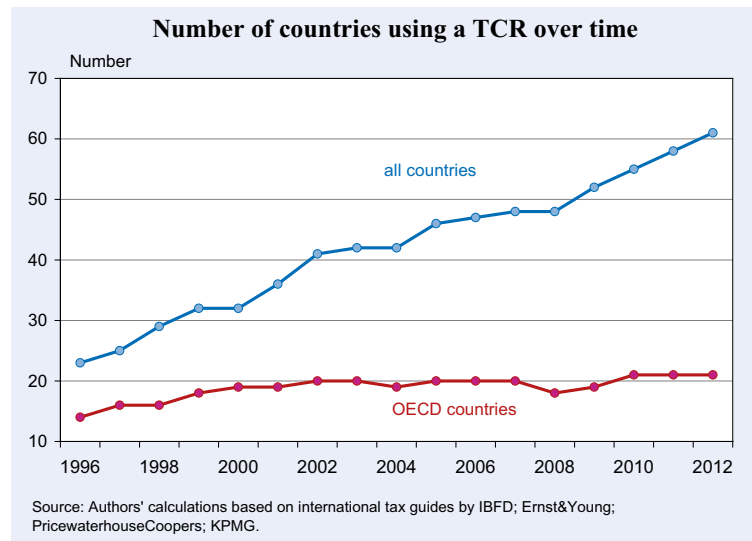
tio approach also seems to be the most straightforward way to limit the thin-capitalization of firms.

In order to make safe haven ratios comparable, we translate them into a threshold as follows. Let us take, for example, the Canadian safe haven ratio of 1.5:1 (debt to equity), which restricts the deductibility of interest paid on debt exceeding two times equity. This relation can be translated into a threshold $T_{CAN} = 2/(1.5+1) = 0.60$. Using this definition, higher values of T imply that a TCR is less strict. Lower values of T imply that a TCR is stricter. The extreme values are $T=0$ if interest is non-deductible for all debt and $T=1$ if interest deduction is never restricted. In 2012, relatively strict TCRs were applied by the US ($T_{US} = 0.6$), New Zealand ($T_{NZL} = 0.6$) or Portugal ($T_{PRT} = 0.66$). On the other hand, relatively lenient safe havens were applied in Luxembourg ($T_{LUX} = 0.85$), Denmark ($T_{DNK} = 0.8$), or the Czech Republic ($T_{CZE} = 0.8$).

Our dataset shows that in 2012, 61 countries had enacted a fixed debt-to-equity rule, while 111 countries have not. On average in our data, the value of the safe haven ratio as measured by T_{ALL} equals 0.933. Conditional on having some form of restriction, $T_{T \neq 1}$ equals 0.733.

During the time period 1996 until 2012, 37 countries introduced a TCR. Figure 1 displays the total number of countries using a TCR over time (the blue line). It indicates that the number of countries relying on a TCR increased permanently. A TCR was only abolished in five cases over the time period.⁷ 21 countries made their legislation stricter (excluding introductions), and only six countries relaxed their rules.⁸ To see whether the countries introducing rules were mainly OECD countries, Figure 1 provides a separate line (the red one) for OECD countries only. Although almost half of OECD countries had already implemented a TCR in 1996, this share only increased slightly until 2012 to about 60 percent. It should be mentioned, however, that not only the number of OECD countries increased from

Figure 1



29 to 34, but also that countries like Germany or Italy appear in the data as having abolished their TCRs, although they replaced their rules with ESRs.

Many countries enacted their TCRs as part of comprehensive tax reforms. For example, in the German tax reform act from 2000 the government explicitly reasoned that taxes can be cut only if the tax base is broadened and tax loopholes are closed at the same time. Consistent with this view, Germany not only cut its statutory tax burden, but also set a stricter safe haven ratio implying a change in the threshold from 0.75 to 0.60. We may look at whether any systematic evidence of this tax-cut-cum-base-broadening can be found in our data. To do this, we define an indicator variable that equals unity if a country cut its statutory tax rate, and zero otherwise. We then define two indicator variables, one that takes the value one if a country made its TCR stricter, and one that takes the value one if a country introduced a TCR. We then run two pooled linear probability regressions of the tax cut dummy on the dummies capturing a TCR introduction or a TCR tightening. The results show that introducing a new TCR is associated with a 15 percent higher probability that the statutory tax rate is cut in the same year. Making existing TCR legislation stricter is even associated with a 22 percent higher probability that the TCR reform is combined with a tax cut.

While it would be beyond the scope of this report to provide a thorough analysis of which countries use TCRs, Figure 2 gives some insight into how TCRs relate to countries' statutory tax rates, conditional on countries having some TCR. There is a clear negative correla-

⁷ Germany, Italy and Spain abolished their TCRs, but replaced them with so-called earnings-stripping rules in 2008 (Germany and Italy) and 2012 (Spain). The Slovak Republic and Botswana abolished their TCRs in 2004 and 2007, respectively.

⁸ Australia, Bulgaria, Botswana, Czech Republic, Georgia, and Turkey relaxed their rules during the sample period.

tion between the statutory tax rate and the safe haven threshold. Countries with higher statutory tax rates seem to set stricter TCRs than countries with lower statutory tax rates. This is consistent with the pattern we would expect. Even though some countries with relatively low tax rates restrict interest deduction, the most restrictive safe haven ratios seem to be those of the US ($T_{US} = 0.60$) or New Zealand ($T_{NZL} = 0.60$), with statutory tax rates equal to $TAX_{US} = 0.38$, and $TAX_{NZL} = 0.28$ in 2012 (while the average tax rate in our sample is about 0.22 in 2012).

It might also be informative to take a look at whether countries using TCRs are also inclined to restrict transfer pricing (as the OECD action plan suggests to take comprehensive measures). We look at this issue by using and expanding the data from Lohse and Riedel (2013) to define a dummy variable that identifies countries with transfer pricing documentation requirements and others without. Using this indicator variable and regressing it on the debt-to-equity safe haven ratios shows that a more lenient TCR reduces the probability that a country's tax law stipulates transfer pricing documentation.

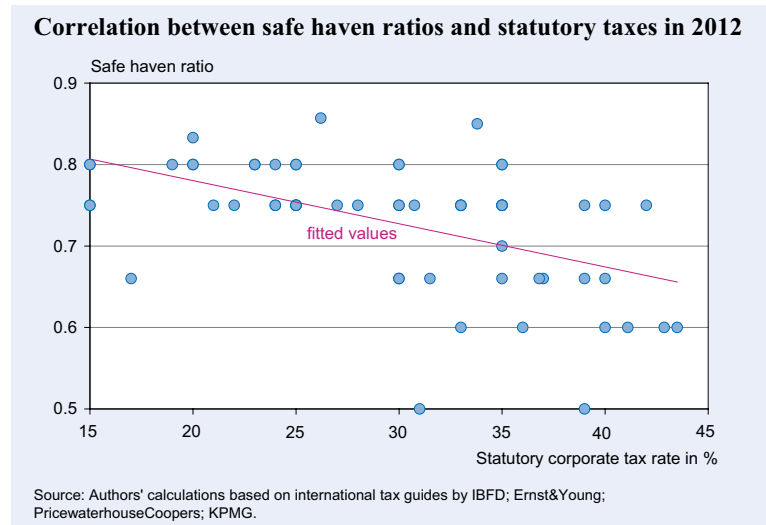
We can further distinguish between countries that apply their safe haven rules to internal debt, i.e., debt provided by related parties within the firm, or total debt, i.e., debt including external debt provided by external creditors. In our sample in 2012, 41 countries apply their TCRs to internal (related party) debt, and 20 countries apply them to total debt (including external debt).⁹

Consequences of thin-capitalization rules

A small, but growing number of papers in economics examine the consequences of anti-tax avoidance rules in general, and TCRs in particular. We may distinguish between three different strands of literature on the effects of TCRs: first, empirical studies analysing capital structure choice and TCRs; second, studies analysing the real investment effects of TCRs; and third, theoretical

⁹ See Table 1 in the paper by Buettner et al. (2012), indicating which type of debt the safe haven ratios were referring to in 2005. Some countries also allow for a preferential treatment of financial services firms or holding companies (Buettner et al. 2012, p. 931, for some examples). Such preferential treatment is not considered in this report.

Figure 2



studies analysing how countries choose TCRs and the consequences of TCRs in the context of tax competition models.

Early papers on the consequences of TCRs studied how these rules affect the capital structure choice of MNEs. Up to this point, virtually nothing had been known about whether these rules bind and effectively reduce debt financing and profit shifting of firms. One obvious reason for introducing a TCR is a country's intention to restrict excessive debt financing by restricting interest deductibility. From a theoretical perspective, once a firm's debt-to-equity ratio exceeds the safe haven ratio set by a TCR, any tax incentive associated with interest deductibility to use debt instead of equity should be gone. Hence, the straightforward empirical prediction is that a binding TCR induces firms to reduce their internal (or total) debt-to-capital ratios after a stricter TCR has been introduced.¹⁰ This has been confirmed in papers examining reforms of the German TCR (Weichenrieder and Windischbauer (2008); Overesch and Wamser (2010). Buettner et al. (2012) as well as Blouin et al. (2014) demonstrate that debt financing of foreign subsidiaries of German and US multinationals, respectively, responds to TCRs. A recent paper by Buettner, Overesch and Wamser (2014b) particularly emphasizes that, at the margin, internal debt financing no longer responds to taxes once foreign subsidiaries face a binding TCR. However, the results in Wamser (2014) suggest that TCRs specifying internal (related party) debt safe havens might be circumvented by substituting external for internal debt. Thus, even though TCRs on related party

¹⁰ Theoretically and empirically, we would expect that this is a one-time level effect.

debt seem to be effective in restricting internal debt financing for tax purposes, less clear predictions on how tax revenue and total debt is affected can be made.

Even fewer papers are concerned with the real consequences of TCRs. Schindler and Schjelderup (2012) show that restrictions on internal debt shifting increase the effective cost of capital at foreign affiliates of the MNE. Buettner, Overesch and Wamser (2014a) confirm this prediction by showing that investments of German MNEs in high-tax countries respond negatively to new or stricter TCRs.

Finally, some theoretical contributions explicitly model TCRs. Haufler and Runkel (2012) examine how countries compete for MNEs through taxes and TCRs. Assuming symmetric countries, their findings indicate that countries choose inefficiently low taxes and TCRs. Similar to models examining restrictions on profit shifting and tax competition, the paper also shows that a coordinated action to make TCRs stricter makes countries better off, but will intensify tax competition at the same time. When countries differ in size, their findings indicate that smaller countries (facing a more elastic tax base) set a more lenient TCR.¹¹ In a recent theoretical contribution, Mardan (2014) introduces TCRs in a model with credit constraint firms. The analysis shows that countries with weak financial markets will choose laxer TCRs.

Conclusion

This report has provided a survey on thin-capitalization rules (TCRs). In a growing number of countries, tax authorities see a need for such rules in their tax legislations, with the aim of reducing profit shifting by MNEs. Since the shifting of profits allows MNEs to avoid high taxes on corporate profits, policymakers across countries need to consider that uncoordinated measures against debt shifting will increase the effective tax burden of firms and lead to real investment responses, on average. Moreover, as the OECD report notes, “government actions should be comprehensive and deal with all the different aspects of the issue [...]” (OECD 2013). Those actions should not only include measures against all channels of profit shifting (e.g., transfer pricing), but also attempts to increase cooperation with tax haven countries.

¹¹ Exploring the bivariate relationship between country size and TCRs confirms such a pattern.

References

- Blouin, J., H. Huizinga, L. Laeven and G. Nicodème (2014), “Thin Capitalization Rules and Multinational Firm Capital Structure”, *IMF Working Paper* no. 14.
- Buettner, T., M. Overesch and G. Wamser (2014a), “Anti Profit-Shifting Rules and Foreign Direct Investment”, *CESifo Working Paper* no. 4710.
- Buettner, T., M. Overesch and G. Wamser (2014b), “Interest Deductibility and Multinationals’ Use of Internal Debt Financing”, *Mimeo*.
- Buettner, T., M. Overesch, U. Schreiber and G. Wamser (2012), “The Impact of Thin-capitalization Rules on the Capital Structure of Multinational Firms”, *Journal of Public Economics*, 96, 930–8.
- Buettner, T. and G. Wamser (2013), “Internal Debt and Multinationals’ Profit Shifting – Empirical Evidence from Firm-Level Panel Data”, *National Tax Journal*, 66(1), 63–95.
- Desai, M.A., C.F. Foley and J.R. Hines Jr. (2004), “A Multinational Perspective on Capital Structure Choice and Internal Capital Markets”, *Journal of Finance*, 59, 2451–87.
- Dourado, A. and R. de la Feria (2008), “Thin Capitalization Rules in the Context of the CCCTB”, Oxford University Centre for Business Taxation”, *Working Paper* no. 04.
- Egger, P., Ch. Keuschnigg, V. Merlo and G. Wamser (2014), “Corporate Taxes and Internal Borrowing within Multinational Firms”, *American Economic Journal: Economic Policy*, 6 (2), 54–93.
- Feld, L.P., J.H. Heckemeyer and M. Overesch (2013), “Capital Structure Choice and Company Taxation – A Meta Study”, *Journal of Banking and Finance*, 37 (8), 2850–66.
- Graham, J.R. (2003), “Taxes and Corporate Finance: A Review”, *Review of Financial Studies*, 16, 1075–129.
- Haufler, A. and M. Runkel (2012), “Firms’ Financial Choices and Thin Capitalization Rules under Corporate Tax Competition”, *European Economic Review*, 56, 1087–103.
- Huizinga, H., L. Laeven and G. Nicodème (2008), “Capital Structure and International Debt Shifting”, *Journal of Financial Economics*, 88, 80–118.
- Lohse, T. and N. Riedel (2013), “Do Transfer Pricing Laws Limit International Income Shifting? Evidence from European Multinationals”, *CESifo Working Paper* no. 4404.
- Mardan, M. (2014), “Why do Countries Differ in Thin Capitalization Rules: The Role of Financial Development”, *Mimeo*.
- Mintz, J. and M. Smart (2004), “Income Shifting, Investment, and Tax Competition: Theory and Evidence from Provincial Taxation in Canada”, *Journal of Public Economics*, 88, 1149–68.
- Mintz, J. and A.J. Weichenrieder (2009), *The Indirect Side of Direct Investment – Multinational Company Finance and Taxation*, MIT Press, Cambridge, MA.
- OECD (2013), *Addressing Base Erosion and Profit Shifting*, OECD Publishing, Paris.
- OECD (2014), *Action Plan on Base Erosion and Profit Shifting*, OECD Publishing, Paris.
- Overesch, M. and G. Wamser (2010), “Corporate Tax Planning and Thin-capitalization Rules: Evidence from a Quasi-Experiment”, *Applied Economics*, 42, 563–73.
- Reuters (2013), “Factbox: Apple, Amazon, Google and tax avoidance schemes”, *Reuters*, 22 May 2013, <http://www.reuters.com/article/2013/05/22/us-eu-tax-avoidance-idUSBRE94L0GW20130522>.
- Ruf, M. and D. Schindler (2012), “Debt Shifting and Thin-capitalization Rules – German Experience and Alternative Approaches”, Norwegian School of Economics (NHH), *Working Paper* 06.
- Schindler, D. and G. Schjelderup (2012), “Debt Shifting and Ownership Structure”, *European Economic Review*, 56, 635–47.
- The Telegraph (2012), “Google’s tax avoidance is called ‘capitalism’, says chairman Eric Schmidt”, *The Telegraph*, 12 December 2012, <http://www.telegraph.co.uk/technology/google/9739039/Googles-tax-avoidance-is-called-capitalism-says-chairman-Eric-Schmidt.html>
- Wamser, G. (2014), “The Impact of Thin-capitalization Rules on External Debt Usage – A Propensity Score Matching Approach”, *Oxford Bulletin of Economics and Statistics*, 76 (5), 764–81.
- Weichenrieder, A.J. and H. Windischbauer (2008), “Thin-capitalization Rules and Company Responses – Experience from German Legislation”, *CESifo Working Paper* no. 2456.