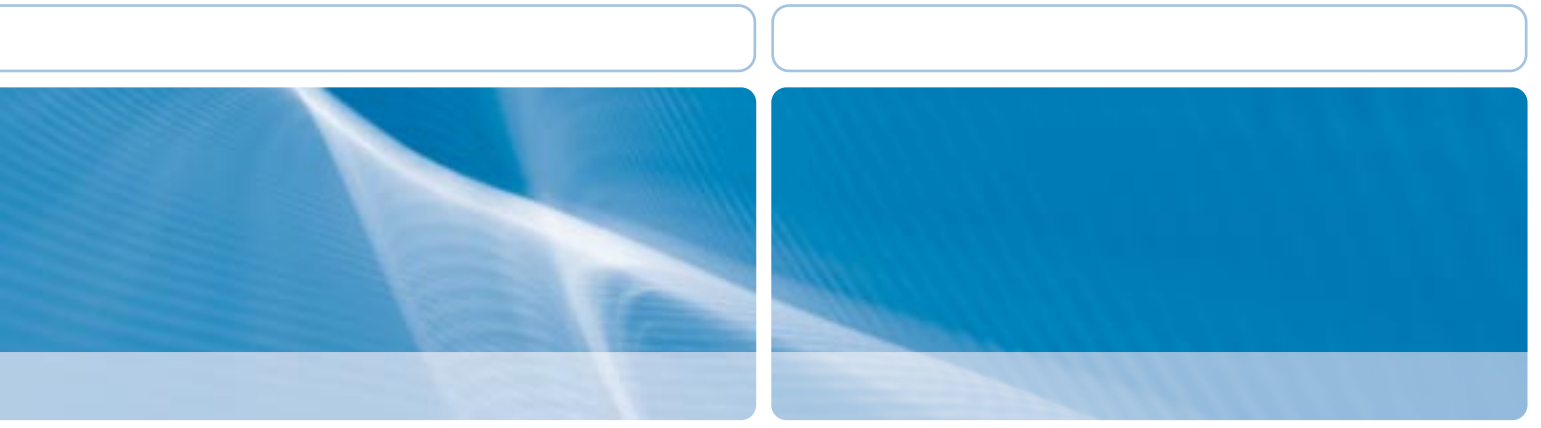


Restricting Interest Deductions in Corporate Tax Systems: its Impact on Investment Decisions and Capital Markets

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1. Executive Summary

1. Recently, some European Union member states implemented corporate tax rules restricting the deductibility of interest payments. Most prominently, Denmark extended its thin capitalization rule by an interest stripping rule restricting a firm's interest deductions to 80 percent of EBIT. Similar rules have been introduced in Germany and Italy since the beginning of this year.
2. The introduction of an interest stripping rule is a far-reaching shift in our tax system. While well-known thin capitalization rules deem interest payments on related-party debt to be disguised dividends in order to prevent dominant shareholders from exploiting the differential tax treatment of debt vs. equity, interest stripping rules consider high debt ratios as being tax abuse in itself. As a consequence, interest stripping rules restrict the deduction of interest payments regardless of whether the debt is held by a related or unrelated party. The impact on investment decisions in the corporate sector will therefore be much more pronounced than for thin capitalization rules.
3. The most important – although unwarranted – argument in favour of an interest stripping rule is that national Governments have to prevent the erosion of their domestic tax base. Allegedly, this has become even more important as increasing tax competition forces national Governments to reduce their statutory corporate tax rates. Interestingly, we will show that corporate tax revenues have been increasing slightly over the last 30 years for the majority of OECD countries, although statutory tax rates have decreased considerably over this period.
4. Most importantly, an interest stripping rule will increase the firm's cost of capital. This result holds even if we assume that the implementation of such a rule has only a negligible impact on the world market's interest rates. This increase will lead to reduced domestic investment activity and, hence, to reduced domestic employment.
5. The impact on cost of capital will be highest for those firms that have little ability to reduce their debt exposure because of equity-rationing. This is most likely the case for SMEs. Large multinational firms could mitigate the effect of the interest stripping rule by substituting debt with equity. However, even for these firms, a negative impact on the cost of capital remains as long as they continue their operations in the state implementing the interest stripping rule. Pertinent empirical evidence supporting this presumption is presented.
6. Interest stripping rules have an asymmetric pro-cyclical effect forcing companies to pay taxes even though their earnings before taxes may be negative. Such a situation is likely to arise, if a company is in a bad economic condition, for instance if its EBIT is positive but rather small. Even for a firm in such a situation that is not highly leveraged, interest payments may be higher than EBIT, leading to negative earnings before taxes. However, an interest stripping rule stating that only a given fraction of the EBIT is recognized as an interest expense, would lead to positive earnings in the tax computation and, hence, to a tax payment. For firms with liquidity constraints, this problem could threaten their existence.
7. Highly leveraged firms will also clearly be hit by the interest stripping rule. This is typically the case for private equity backed firms. However, it should be noted that the economic burden of this rule is borne by the national economy and not by the private equity investor. The latter will simply reduce the purchase price for new acquisitions in order to offset the negative impact of the interest stripping rule. On the markets, however, company values will decrease. Of course, to the extent that private equity funds were already shareholders before the interest stripping rule became effective, they will be hit by these negative effects.

1. Executive Summary

8. By extending the corporate tax base, the interest stripping rule subjects interest income to source-based taxation. It has to be considered that a considerable part of corporate debt is held by tax-exempted financial institutions on behalf of retirement savings accounts. Interest payments on this fraction of the corporate sector's debt are effectively accumulated over time on a tax free basis. By introducing source-based taxation on these returns, the value of the capital stock held by these financial institutions would be reduced considerably. To the extent that this effect is perceptible on the international capital markets, the prices of corporate loans would be negatively affected as well, leading to an additional increase in the firm's cost of capital.
9. In this paper we argue that interest stripping rules may create new obstacles to the free movement of capital in the European Union. It should be noted that an interest payment that is non-deductible under the interest stripping rule, is subject to corporate tax in the firm's state of residence. In the hands of the recipient, however, the payment is treated as interest income and, hence, it is taxable in the debtholder's state of residence. This contravenes the intention of the EU directive 2003/49/EC, which explicitly requires that interest payments should be subject to tax once in a member state. It is an open question whether under this perspective interest stripping rules are in accordance with the freedom of movement of capital according to the EU treaty.
10. Finally, if policy makers regard the interest stripping rule as a mechanism to reduce the tax differential between debt and equity, we show that there are clearly better instruments to do so. Most importantly, we indicate that the introduction of an allowance for corporate equity will be an alternative with very attractive economic features.

Recently, some European Union member states launched legislative initiatives restricting interest deductions from the corporate tax base. It should be noted that such restrictions are not completely new in corporate tax systems. In fact, in most tax systems thin capitalization rules have been known for many years⁽¹⁾. Such rules, although quite different in detail, under certain conditions class interest payments to controlling or related shareholders as disguised profit distributions. As debt contracts with related shareholders should not generally be regarded as being tax driven only, these rules usually contain safe harbour provisions. For instance, as long as the debt-to-equity ratio does not exceed a certain threshold, interest payments in most cases qualify as such, provided that the underlying debt contract passes an arm's length test. Therefore, such rules are labelled as thin capitalization rules.

This mechanism should prevent dominant shareholders from setting up tax loopholes by formally redefining equity income into interest income. Such an incentive arises in any traditional corporate tax system which discriminates against dividend distributions as compared to interest payments. Moreover, in an international context such rules should prevent multinational firms from shifting their corporate tax base from high tax countries into low tax countries. In fact, many double taxation conventions – or other pertinent rules – stipulate how to avoid double taxation in the case of interest payments which are deemed to be disguised dividends⁽²⁾.

Thin capitalization rules have gained new political attention recently. As we will show in Section IV. A, this may be due to an increased degree of tax competition in Europe, fed by politicians' fear of corporate tax revenues drying up. This fear, although unwarranted to a large extent as we will show, has generated a lot of activity aimed at increasing a jurisdiction's tax base. Despite thin capitalization rules already being in place, a new debate has started on how to prevent multinational firms from shifting a part of their local tax base from high tax to low tax states by setting up appropriate intra-group financial contracts. This debate was, perhaps, intertwined with another recent political debate concerned with the high leverage ratios in private equity transactions. As a short term consequence, some states started to redesign their thin capitalization rules, as we will show in the next Section. For instance, Denmark extended its thin capitalization rules by introducing an interest stripping rule where interest payments are only deductible up to a certain threshold, regardless whether the underlying debt is granted by a related party.

As a longer term consequence of income shifting activities by multinational firms, the European Commission established the Common Consolidated Corporate Tax Base (CCCTB) Working Group in 2004. This group is scrutinizing whether as an alternative to the current corporate tax system, in which the tax base is determined by the single European member states, the corporate tax base should be determined on the basis of a consolidated financial statement of a multinational group. The tax revenue coming from the taxation of this consolidated tax base would then be shared among the interested member states according to a number of principles not yet elaborated⁽³⁾. According to the most recent working document of the CCCTB working group, thin capitalization rules would also play a role in such a common European tax base framework⁽⁴⁾. Interest stripping rules, however, are not mentioned in this document. It is an interesting question whether the examples discussed here will lead to a broader discussion of such rules at the European level. As interest stripping rules may negatively affect capital flows across European member states, such rules are certainly an issue that has to be discussed at the level of the European Union.

⁽¹⁾ For an international overview on thin capitalization rules cf. the special issue of European Taxation (2005), pp. 367-450.

⁽²⁾ The European Court of Justice has scrutinized local thin capitalization rules under this perspective. Most importantly, in December 2002 the court ruled that the German thin capitalization rule is in breach with the freedom of establishment provisions. As a consequence, some member states as Germany, Spain or UK adjusted their thin capitalization rules. Cf. Whitehead (2006) and Devereux et al. (2006).

⁽³⁾ For more detailed information cf. http://ec.europa.eu/taxation_customs/taxation/company_tax/home_state_taxation/index_en.htm.

⁽⁴⁾ Cf. working document CCCTB/WP057\doc\en available on the website mentioned under footnote 3.

3. Recent Developments in Europe

3.1. Trend towards restricting interest deduction

3.1.1. Thin capitalization rules vs. interest stripping rules

As already mentioned, thin capitalization rules apply to related-party debt only. Hence, within a thin capitalization rule the deductibility of interest expense is limited up to a critical debt-equity ratio (or any other leverage threshold). A related party is considered to be a controlling or influential shareholder that is able to determine the financial policy of a firm; therefore, such a party can implement tax arbitrage structures. Typically, debt held by a third party related to this shareholder as well as debt directly or indirectly guaranteed by this shareholder will be considered as related-party debt as well. Although the legal definition of a controlling or influential shareholder is quite different in national tax systems⁽⁶⁾, the general approach of the thin capitalization rule is quite similar.

The important difference between thin capitalization rules and interest stripping rules rests on the fact that the latter is not confined to related-party debt. Hence, interest deductibility beyond a critical threshold is restricted, regardless of whether these interest payments are due to related or unrelated parties. Clearly, this makes a big difference, as any interest deductibility restriction under a thin capitalization rule could simply be avoided by substituting related debt by unrelated debt. This is not possible under an interest stripping rule, where the only way to prevent any restriction on interest deductibility is to substitute debt with equity.

As a first example for a country that augmented its thin capitalization rule with an interest stripping rule, the case of Germany could be mentioned. On top of restricting the deductibility of interest payments made to controlling shareholders Germany, starting from 2008, will restrict the tax deductibility of interest payments even if the debt-holder is an unrelated party. According to the German corporate tax reform act 2008, net interest payments will only be recognized as an expense in the tax computation up to an amount of 30 percent of EBITDA. However, this restriction does not apply to companies with net interest payments up to €1m or companies that are not affiliated⁽⁶⁾. Moreover, even for companies belonging to a group the restriction does not apply, if the debt-to-equity ratio of this company does not fall below the average debt-to-equity ratio of the whole group by more than 1 percent. Debt-equity-ratios are determined on the basis of the consolidated financial statements⁽⁷⁾.

Similarly, the Netherlands in 2004 introduced a thin capitalization rule that recognizes interest payments of more than €0.5m to a related party only to the extent that debt is not higher than three times equity. However, affiliated companies can opt for an alternative rule which states that there are no restrictions on the deductibility of interest payments as long as the company's debt-to-equity ratio does not exceed the debt-to-equity ratio of the whole group determined on the basis of the consolidated financial statements⁽⁸⁾. Also the new French thin capitalization rules contain a similar safe haven provision based on the average debt-to-equity ratio of the whole group⁽⁹⁾.

⁽⁶⁾ Typically, to be considered a controlling or influential shareholder a voting right threshold of 50 – in some case only 25 – percent applies.

⁽⁶⁾ In the context of the German interest stripping rule (Zinsschranke) an affiliated company is a company that belongs to a group of companies, i.e. it is or it could be consolidated with one or more entities. Currently, there is substantial uncertainty about the precise meaning of this legal definition. Cf. for instance Ditsch/Zuber (2008).

⁽⁷⁾ For a more detailed description of this particular issue in the German tax reform 2008 cf. Schaden/Käshammer (2007).

⁽⁸⁾ For a more detailed description of the Netherlands' thin capitalization rule cf. Sunderman (2004).

⁽⁹⁾ Cf. Etienne (2007).

These cases are interesting as they show that there is a trend in European member states, under specific conditions, to restrict interest payment deductions in tax computations regardless of whether the beneficiary of these payments is a related party. Hence, in these states existing thin capitalization rules are amended by interest stripping rules, i.e. rules that are targeted towards a general restriction on interest deductibility. As we will see in the next Section, Denmark and Italy are going to effect such a substitution. An interest stripping rule can be regarded as an important shift in almost all corporate tax systems throughout the world. Hence, it is worth discussing the economic implications of such a shift. This will be done in Section 4.

As a final comment on this shift from thin capitalization rules to interest stripping rules, it should be emphasized that this regime switch goes along with an additional important issue. While traditionally interest payments that were not recognized under the thin capitalization rules were re-categorised as disguised dividend payments both at the level of the payer and the recipient, national governments are more and more opting for a carry-forward of the non-deductible part of interest payments. As a consequence, a non-deductible interest payment is subjected to corporate tax in the firm's residence state, while it is treated as taxable interest income in the debt-holder's state of residence. This contravenes the intention of the EU directive 2003/49/EC, which explicitly requires that interest payments should be subject to tax once in a member state. It is an open question whether under this perspective interest stripping rules are in accordance with the freedom of capital movement according to the EU treaty⁽¹⁰⁾.

3.1.2. Two Examples of Interest Stripping Rules

On June, 1st, 2007, the Danish Parliament adopted bill L213 that contains significant changes to the Danish corporate tax system with respect to the tax deductibility of interest payments. In fact, existing thin capitalization rules, according to which related party interest payments were limited by a four to one debt-to-equity ratio, have been extended by an additional interest stripping rule⁽¹¹⁾. According to the new act the deductibility of interest payments is further restricted by two additional rules. First, net interest expense exceeding DKK 20m (€2.7m) will be recognized for tax purposes to the extent that it does not exceed 6.5% of the tax value of qualifying assets of the firm. Second, net interest expense recognized for tax purposes is not allowed to exceed 80 percent of EBIT. As the company has to comply with both rules, the more restrictive of the two ultimately applies⁽¹²⁾.

As a corollary it should be noted that in determining the tax value of qualifying assets only 20 percent of the tax acquisition cost of foreign subsidiaries can be taken into account⁽¹³⁾. This makes the interest stripping rule considerably more restrictive for international groups. For this reason there are serious doubts that the Danish rule is in accordance with the principle of free movement of capital in Community law.

It should be noted that the Danish Parliament had already adopted an amendment to thin capitalization rules in 2006. This amendment deliberately aimed at restricting interest deductions in leveraged buy-out transactions backed by (foreign) private equity funds. As these funds are typically organized as partnerships, from a Danish tax perspective they were not regarded as a legal entity but as transparent vehicles.

⁽¹⁰⁾ This issue will be further investigated in Section IV. C. 2.e).

⁽¹¹⁾ This rule applies for interest expenses exceeding DKK 10m. Thin capitalization rules have been significantly changed with bill L119 in 2003. This act was a reaction to an adverse ruling of the European Court of Justice in 2002 mentioned under footnote 2; cf. Bjørnholm/Halminde (2004).

⁽¹²⁾ For a more detailed description of bill L213 cf. <http://www.bechbruun.com> and Pedersen (2008).

⁽¹³⁾ Moreover, some types of financial assets as well as the goodwill can not be considered at all. Cf. Pedersen (2008).

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As a consequence, the fund itself was not considered to be a controlling shareholder. And the single investor in the fund was not a controlling shareholder, either. Hence, any debt granted by such a fund was not covered by the Danish thin capitalization rule and therefore not limited by the 4:1 debt-equity-ratio. According to the new rules adopted in 2006, a tax transparent vehicle under certain circumstances could also be considered as an autonomous legal entity. Specifically, this is the case if the fund is governed by corporate rules, corporate agreements or articles of association. Once the fund is considered to be such a legal entity and it holds more than 50 percent of the voting rights in the Danish corporation, any debt granted or guaranteed by the fund since 2006 is considered to be intra-group debt and as a consequence is covered by the thin capitalization rule⁽¹⁴⁾. It is evident that the new rule implemented in 2007 will have a much broader effect which is by no means limited to private equity backed firms.

An even more restrictive interest stripping rule was finally approved on December, 21, by the Italian Parliament. In fact, according to Art. 1, no. 33, of the Italian budget law 2008 the existing thin capitalization rules will be replaced by a rule stating that interest expenses are tax deductible up to an amount of 30 percent of EBITDA regardless of whether the debt is granted by a related or an unrelated party⁽¹⁵⁾.

3.2. Allowance for corporate equity as a counter trend

We have shown above that there is a growing trend in European corporate tax systems to restrict the deductibility of interest payments. At the extreme this would lead to the transformation of our current system of taxing corporate income to a system of taxing comprehensive business income. A proposal of such a comprehensive business income tax (CBIT) was first made by the US Department of the Treasury (1992). Under a CBIT tax system the firm's EBIT is subject to taxation, i.e. no interest deductions are allowed. Because in such a system the desirable level of capital income taxation⁽¹⁶⁾ can be achieved by setting the corporate tax rate appropriately, no capital income taxation at the personal level is required. Of course, by introducing an interest stripping rule, our current corporate tax systems are still not equivalent to a CBIT tax system. Nevertheless, one can regard the interest stripping rules discussed as constituting a first step towards such a CBIT system. An opposite system would be a tax rule allowing corporations to deduct an imputed cost on equity employed, i.e. an allowance for corporate equity (ACE). Hence, in such a system an imputed return on equity as well as interest payments are exempted from corporate taxation. The ACE tax system goes back to research published by Boadway/Bruce (1984) and Wenger (1983) and was elaborated in detail by the IFS Capital Taxes Group (1991)⁽¹⁷⁾.

In order to understand the economic attractiveness of an ACE tax, one should bear in mind that economists measure the efficiency of a tax system in terms of its excess burden⁽¹⁸⁾. This is the economic cost induced by the fact that individuals and firms make decisions that they wouldn't have undertaken under a non distorting tax system⁽¹⁹⁾.

⁽¹⁴⁾ For more details cf. Pedersen (2007). An additional impact of considering a private equity partnership to be a controlling entity is related to the fact that interest paid to controlling shareholders under certain circumstances are subject to withholding tax in Denmark. Typically, this withholding tax applies if the controlling entity is resident in a jurisdiction considered to be a tax haven.

⁽¹⁵⁾ Cf. Legge n. 244 del 24 Dicembre 2007, G.U. n. 300 del 28 Dicembre 2007; the full text can be found at <http://www.parlamento.it/parlam/leggi/elelenum.htm>.

⁽¹⁶⁾ It should be noted that we define capital income as any investment returns, regardless of whether they stem from equity, debt or any other type of financial assets. Capital income accrues at the corporate level as net income and at the personal level as dividends, capital gains and interest.

⁽¹⁷⁾ The basic economic ideas behind the ACE tax system can also be found in the well known report of the Meade Committee (1978) proposing alternatives to the UK tax system. For a detailed description of the ACE tax system cf. also Devereux/Freeman (1991).

⁽¹⁸⁾ Clearly, as the tax system is used as a redistribution mechanism there may be a trade-off between efficiency and social considerations.

⁽¹⁹⁾ Cf. Auerbach (1985).

As far as capital income taxation is concerned, a tax system is assessed with respect to its impact on three important investment decisions: (i) the investor's saving-consumption decision, (ii) the firm's investment decision, and (iii) the firm's financing decision. A tax system that is non-distorting with respect to a given decision problem is called neutral with respect to this decision problem. As the excess burden of a neutral tax system is zero, such a system under pure efficiency considerations is preferable to any other tax system. Now, as Boadway/Bruce (1984) and Wenger (1983) have shown, an ACE tax system combined with a tax exemption for capital income at the personal level has the important economic feature that it is neutral with respect to all the three investment decisions mentioned above.

It is certainly because of these attractive economic features that over the last 15 years several countries have experimented with some ACE related elements at the level of corporate taxation. Austria, Brazil, Finland, Italy, Norway and Sweden introduced rules according to which the return on equity, or on a part of the equity, is effectively taxed at a lower rate than the excess return⁽²⁰⁾. A pure ACE tax system was introduced in Croatia in 1994, although the country changed to a standard corporate tax system in 2001⁽²¹⁾. In such a pure system, the imputed return on equity employed is exempted from corporate tax. Most recently, Belgium introduced an ACE rule in 2006. According to this rule, corporations can deduct an allowance for equity employed from their corporate tax base. This allowance is calculated as the book value of equity employed times a notional return, which is equal to an average Government bond rate and capped at a maximum rate of 6.5 percent. SMEs get a notional rate which is higher by 0.5 percentage points.

Also in other countries ACE systems are at least discussed. For instance, the German Council of Economic Advisors proposed the introduction of a dual income tax combined with some ACE based elements; a similar proposal has also been made for Switzerland⁽²²⁾. We will come back to this system in the next Section, where we discuss the economic impact of interest stripping rules as well as of an ACE system.

⁽²⁰⁾ As the details of these rules are rather complicated they are not discussed here; cf. Kiesewetter (1997). In the meantime the Austrian and Italian ACE elements have been dismantled. For a more recent overview see Klemm (2007).

⁽²¹⁾ For details cf. Wagner/Wenger (1996) and Keen/King (2002).

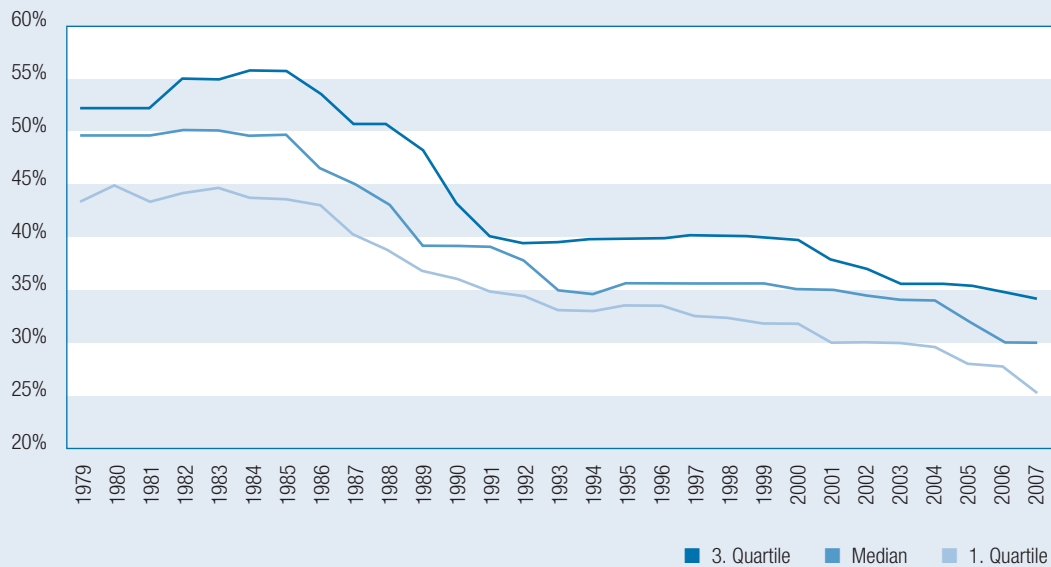
⁽²²⁾ Cf. Radulescu/Stimmelmayer (2007).

4. Economic Discussion

4.1. Trends in corporate taxation

We first start by briefly summarising some important trends in corporate taxation. First, in many countries inside and outside Europe a sharp decline in statutory corporate tax rates has been experienced over the last years. According to Figure 1 the median corporate tax rate for a subsample of 19 OECD-countries was about 50 percent by the beginning of the eighties⁽²³⁾. For the years 2006 and 2007 the median was 30 percent, i.e. 20 percentage points lower. At a first glance, this may be taken as a consequence of increased international tax competition putting strong pressure on national governments, especially in traditionally high tax countries, to reduce corporate tax rates. A recent example in this context is the German corporate tax reform – effective from the beginning of the next year – cutting the statutory corporate tax rate from about 39 percent down to slightly below 30 percent. Italy too reduced its corporate tax rate from 33 percent down to 27 percent starting with the year 2008.

Figure 1: Distribution of statutory corporate tax rates (incl. local taxes) for 19 OECD countries over the period 1979 to 2007



Source: Devereux et al. (2002), table A1 updated with OECD data⁽²⁴⁾

It is interesting to note, however, that despite this reduction in statutory tax rates the share of corporate tax revenue in total tax revenues has increased over the period under consideration here, as can be seen in Figure 2⁽²⁵⁾. While the share in the median country was 9% in 1979, it increased to 13% in 2006. As the ratio for the first and third quartile country moves in the same direction, one can be pretty sure that this is a general trend applying to almost all 19 OECD countries under consideration here. Taking into account that total tax revenue as a share of GDP also increased over the last three decades, as can be seen from Figure 3⁽²⁶⁾, it follows that national Governments were able to more than offset the cuts in tax rates.

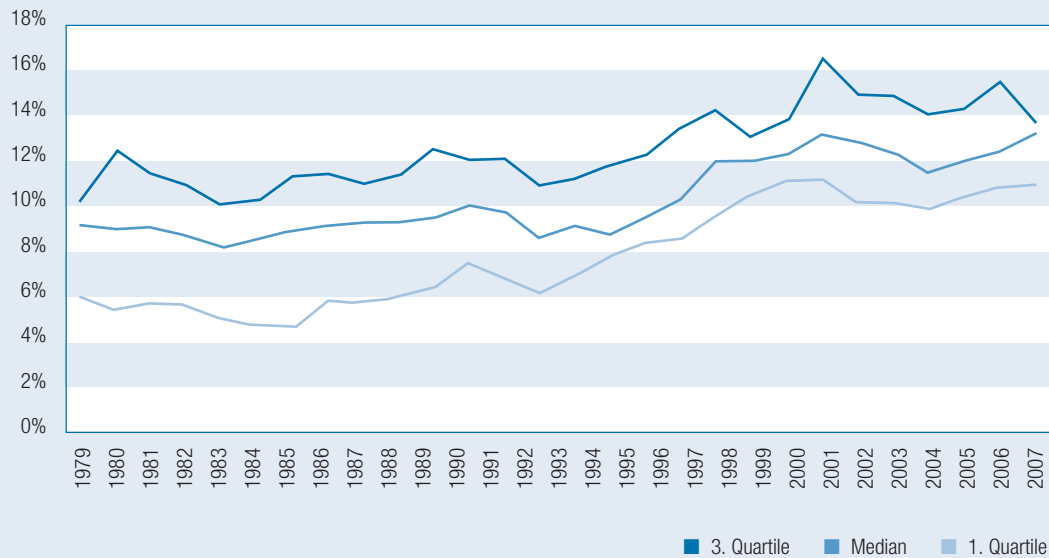
⁽²³⁾ For an overview of the raw data used in Figure 1 cf. Table 1 in the Appendix.

⁽²⁴⁾ Due to lack of historical records the following OECD countries are not included in the calculation: Czech Republic, Denmark, Hungary, Iceland, Korea, Luxembourg, Mexico, Poland, New Zealand, Slovak Republic and Turkey.

⁽²⁵⁾ For an overview of the raw data used in Figure 3 cf. Table 2 in the Appendix.

⁽²⁶⁾ For an overview of the raw data used in Figure 5 cf. Table 3 in the Appendix.

Figure 2: Corporate tax revenue (incl. local taxes) as a percentage of total tax revenues for 19 OECD countries over the period 1979 to 2006



Source: OECD

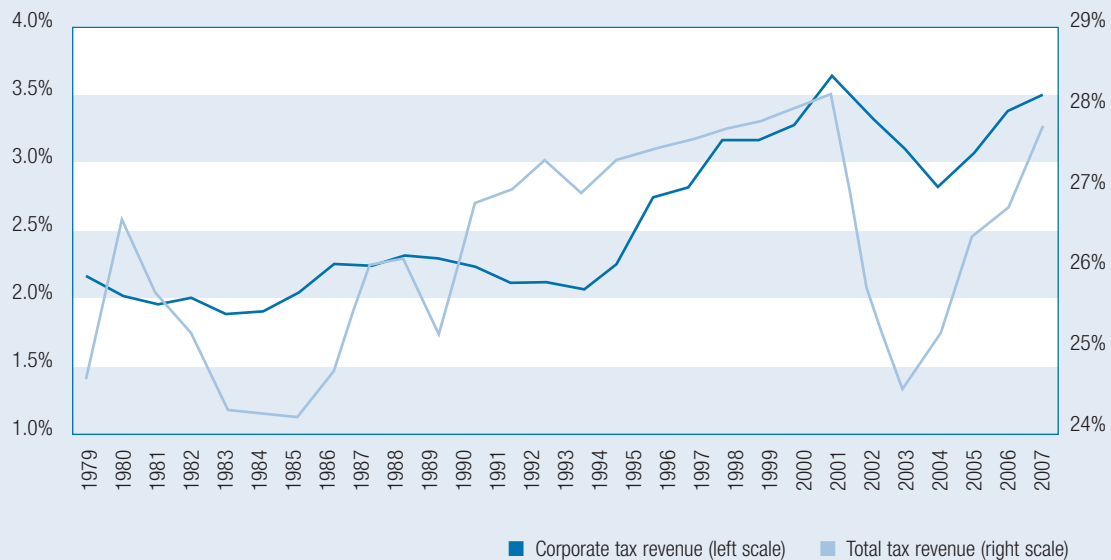
It might be of interest to scrutinize the means by which national Governments were able to implement this offsetting mechanism. First of all, one can think of a number of policies aimed at broadening the tax base. Moreover, Governments may have increased their efforts against tax evasion. And finally, it could also be that due to some fundamental economic factors an increasing fraction of national income is generated in the corporate sector. It seems, however, that one important explanation comes from national policies targeted towards a broadening of the tax base. The effect of this is that the average tax rate in the corporate sector will decrease substantially less than the statutory corporate tax rate. In fact, Devereux et al. (2002) offer some evidence in favour of this hypothesis. While according to Figure 1 the decline in the median statutory corporate tax rate was 20 percentage points, they show that the decline in the effective marginal tax rate over the period 1979 to 2005 was only 10 percentage points. A similar decrease can be recorded for the effective average tax rate⁽²⁷⁾.

According to their research the most important driver of this result is the fact that depreciation rules were tightened. They show that the median present value of depreciation allowances for the 19 OECD countries considered in Figure 1 was reduced by 5 percentage points over the period under consideration here. Therefore, by applying a decreasing statutory tax rate on an increasing tax base, the negative impact on the tax revenue will be less pronounced than it might seem by looking at the change in the statutory tax rate only. However, all other things remaining constant, a decrease in the effective average tax rate leads to reduced tax revenues generated in the corporate sector, at least in the long run.

⁽²⁷⁾ It should be noted that the effective average tax rate, which is a commonly used measure for the economic tax burden, is defined as the ratio of the discounted value of all tax payments to the discounted value of pre-tax capital income; cf. Devereux et al. (2002), p. 461. This is a different measure to that of the average corporate tax rate, which is the ratio of a firm's tax payment divided by the pre-tax income recorded in the financial statements. The average corporate tax rate is not a reliable measure for the economic tax burden, as this ratio may vary simply because of changing accounting rules or increasing cross-border activities of domestic firms.

4. Economic Discussion

Figure 3: Median total tax and corporate tax revenue (incl. local taxes) as a percentage of GDP for 19 OECD countries over the period 1979 to 2006



Source: OECD

As it is agreed in the literature that the effective average tax burden of the corporate sector has been reduced over the period under consideration here, the above mentioned base-broadening policies alone cannot explain the documented phenomena of an increasing tax burden on the corporate sector despite falling statutory tax rates. Clearly, a whole range of other base-broadening policy measures, including increasing efforts against tax evasion, might be relevant in this context. As pertinent examples one can mention the increasing degree of asymmetry in the treatment of losses against taxable income⁽²⁸⁾, the introduction of minimum tax provisions or the tax authorities combatting income shifting via transfer pricing. Finally, as previously mentioned, non tax related issues may also be relevant in explaining the observed patterns in corporate tax revenues⁽²⁹⁾. Pertinent arguments would be related to increased profitability in the corporate sector or to a shift of business activities from the non-incorporated sector to the incorporated sector⁽³⁰⁾. As it would be beyond the scope of this paper, we do not further investigate these issues.

Finally it should be mentioned that over the period under consideration here, several countries established or tightened their thin capitalization rules. Recently, some countries started to transform their thin capitalization rules into interest stripping rules, as explained in Section 3. These rules prevent companies deducting the full interest payment from their tax base, at least if the debt-to-equity ratio exceeds a critical threshold. Under the perspective offered in this Section, these rules can be regarded as a policy reaction to offset an expected revenue decrease caused by declining corporate tax rates. As pressures on national Governments to further decrease corporate tax rates may continue to apply, one can expect that the discussion on interest stripping rules will continue in the years to come. It is therefore the right time to scrutinize such provisions from an economic perspective. Hence, their impact on corporate investment decisions as well as on economic welfare will be discussed in the next Section.

⁽²⁸⁾ Cf. Auerbach (2006).

⁽²⁹⁾ Arguments in this direction are put forward by Auerbach et al. (2007).

⁽³⁰⁾ In fact, if a firm's profitability increases, the present value of pre-tax income increases as well. Hence, holding the effective average tax rate constant, the present value of tax payments will increase as well. Therefore, it could well be that because of an increase in the profitability of the corporate sector we have experienced increasing corporate tax revenues despite falling effective average tax rates.

4.2. Structural elements in corporate taxation

4.2.1. Double taxation of equity income

Almost all taxation systems are characterized by a dualism of corporate income taxation at the one side and personal income taxation at the other side⁽³¹⁾. From the investor's perspective, clearly, for any investment decision the whole tax consequences have to be taken into account. For instance, when buying shares in a corporation the investor has to take into account that the return on equity generated by the corporation is subject to corporate tax. Moreover, once this return is distributed to the shareholder, personal income taxation applies to this return. Hence, the total tax burden on such an investment is the sum of corporate as well as personal tax payment induced by it.

It is crucial to note that this total tax burden may be different depending on whether the investor is buying a corporation's shares or bonds. This is because the classical corporate tax systems, as implemented in the majority of OECD countries, define corporate income as equity income, i.e. income before taxes. Therefore, equity income is first taxed at the level of the company and then again, in case of distribution, at the level of the shareholder by including dividends – and maybe also capital gains – in the personal income tax base. As a consequence, classical corporate tax systems have a build-in double taxation issue with respect to equity income. This does not hold for interest income, as it is only subjected to taxation once, namely at the level of the personal income taxation of the debtholder. The distorting effects of such a taxation system are well known and were first scrutinized in the seminal paper of Harberger (1962). In order to avoid or at least to reduce this distorting effect, different measures have been implemented by national Governments. From a theoretical perspective, one solution would be a full imputation system, where corporate tax is treated as a prepayment of the personal income tax due by the shareholder. In the mid-nineties full imputation systems were quite common in Europe. For instance, large countries like France, Germany or Italy operated such a system; UK and Spain still have a partial imputation system⁽³²⁾. Today, Malta is probably one of the last states in the world operating a full imputation system. The majority of the states today operate a classical double taxation system, where the double taxation effect is mitigated via a reduced personal income tax rate applicable on dividend income⁽³³⁾. As in many states capital gains under some specific requirements are either taxed at preferential rates or even tax-exempted, the double taxation effect is further mitigated.

It should be noted that the demise of the full imputation systems in Europe was, to some extent, due to the fact that they had implemented asymmetric treatment of domestic and foreign shareholders. Typically, the tax allowances granted in a full imputation system accrued only to domestic shareholders with respect to dividends paid by domestic companies⁽³⁴⁾. In a landmark decision the European Court of Justice (Rs. C-319/02) on September, 7, 2004, ruled that differential taxation of dividend income from domestic and foreign companies conflicts with the principle of free capital movement. This ruling has been considered as a mortal blow for any imputation system in Europe⁽³⁵⁾.

⁽³¹⁾ Of course, as a third important element, sales taxes (value added tax) have to be taken into account. We do not cover this type of tax in our paper.

⁽³²⁾ But smaller countries like Finland, Norway or Malta also had such a system. Cf. Devereux (1996).

⁽³³⁾ Cf. Bundesfinanzministerium (2007). As important exceptions one might mention UK, Japan and Canada, which still have a partial imputation system. Also, there are a few eastern and southern European countries where dividends are fully tax exempted. As opposed to this, Ireland and Switzerland do not grant a reduced tax rate on dividend income. Germany today is taxing interest income at the full personal marginal tax rate, while dividend income is taxed at 50 percent of this rate. Capital gains under some conditions are tax free. Starting from January 2009 Germany will introduce a flat-rate source tax of 25 percent on dividends, capital gains and interest income. This will dramatically increase the discrimination of equity income against interest income.

⁽³⁴⁾ One exemption is the double taxation convention between Germany and France, which implemented a system of reciprocal compensation which, in effect, almost eliminated any discrimination between German and French residents.

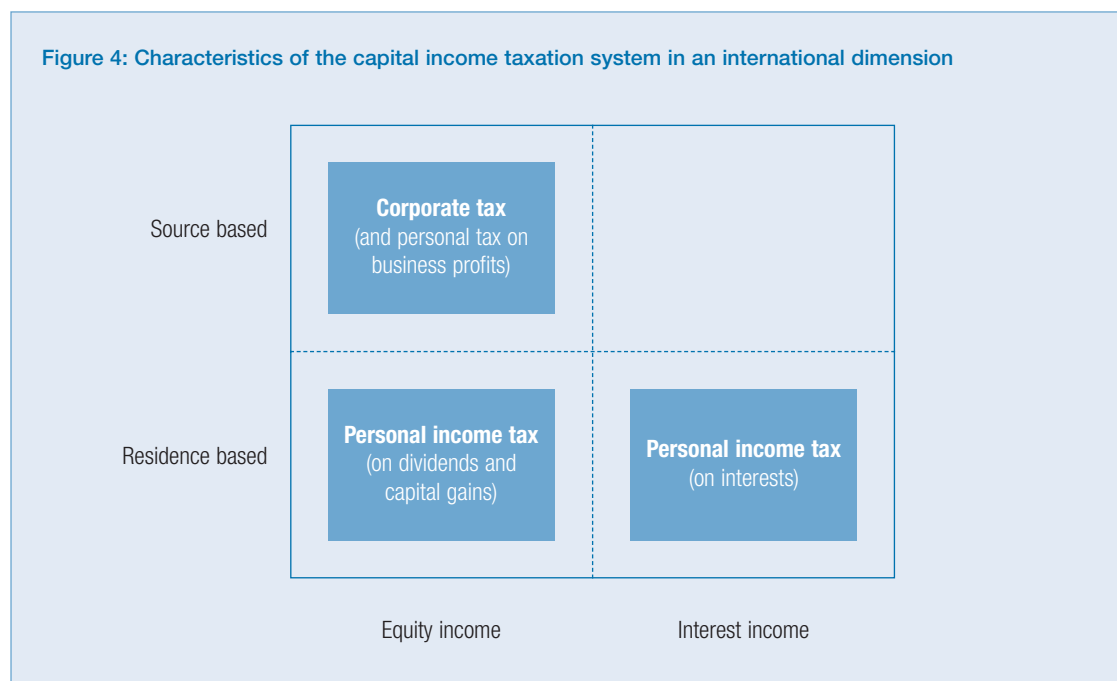
⁽³⁵⁾ In fact, France, as the last large European country operating a full imputation system, abolished this system in 2005.

4. Economic Discussion

4.2.2. Cross-border allocation of the tax base

The technical issues mentioned at the end of the preceding Section will not be scrutinized in detail here. However, what the ruling of the European Court of Justice showed was a basic conflict in an internationally integrated world. This conflict is related to the question how the tax base is allocated among different countries in the case where taxable income is generated by cross-border activities. In principle, the allocation follows the rule that business profits are taxed in the jurisdiction where these profits are generated (source-based taxation), while capital income accruing at the personal level, i.e. dividends, capital gains and interests, is taxed in the investor's jurisdiction of residence (residence-based taxation). A rough idea of these principles is given in Figure 4.

For the purpose of implementing this principle of allocation, many countries have signed double taxation conventions along the lines put forward by a model convention published by the OECD⁽³⁶⁾. According to this model convention one can say – broadly speaking – that business profits are subject to taxation in the jurisdiction in which the profits are generated through a permanent establishment. If the business is un-incorporated, the profits are subject to personal income tax in that jurisdiction, as it is mentioned in Figure 4. As a consequence, to the extent that corporate income stems from a foreign permanent establishment it is either exempted from taxation in the state of residence of the parent corporation (exemption method) or the income is subject to taxation there but the taxes paid in the foreign state can be deducted from the domestic tax payment (credit method).



⁽³⁶⁾ This model convention can be downloaded from the OECD website at <http://www.oecd.org>.

As opposed to this, the allocation of the tax base derived from capital income at the personal level is less clear⁽³⁷⁾. As far as interest income is concerned, one can say that in most of the cases the right of taxation rests with the jurisdiction of residence of the recipient. This residence-based taxation has also been recorded in the European Directive on the taxation of personal savings income (Council Directive 2003/48 EC), although the directive granted Belgium, Luxembourg and Austria an exception from this rule. In these countries a source-based withholding tax is applied to interest income⁽³⁸⁾. However, 75 percent of the revenue coming from this withholding tax has to be transferred to the investor's state of residence. This can be regarded as a tribute to the principle of residence-based taxation. Moreover, it should be noted that cross-border interest or royalty payments among EU tax resident associated corporations are exclusively taxed by the recipient's state of residence according to the EU Directive 2003/49/EC.

As far as equity income at the personal level, i.e. dividends and capital gains, is concerned, things are a little bit more intricate. Although the final taxation right over dividend payments is allocated to the jurisdiction of the investor's residence, the state of residence of the dividend paying company has the right to apply a tax rate that shall not exceed 15 percent⁽³⁹⁾. However, for the time being many countries apply a withholding tax higher than 15 percent, with the difference over 15 percent being refunded to the investor upon application. For capital gains, as long as they are not categorized as business profits, similar rules apply, although in practice in most cases these capital gains are not subjected to withholding tax. Whether they are taxed at all then depends on the tax rules of the investor's state of residence.

From these simplifying considerations one can see that any types of rules restricting the deductibility of interest payments at the corporate level have to be discussed taking account of two dimensions. First, such a rule potentially affects a firm's capital structure decision as it will increase the after tax cost of debt. Second, it shifts the residence-based interest income taxation system towards a source-based taxation system. In the next Section we will discuss the economic impact applicable to these two dimensions.

4.3. The economic impact of rules restricting the deductibility of interest

4.3.1. Introductory remarks

Capital income taxation affects individual decision making in at least three ways, as has already been mentioned in Section 3.2. First, it influences the investor's trade-off between saving and consumption. Second, it affects the firm's investment decision. And third, it has an impact on how a firm finances its investments. Under an economic perspective an optimal tax system should be designed in a way that minimizes the so called excess burden. This is the economic cost induced by the fact that individuals and firms make decisions that they wouldn't have undertaken under a non-distorting tax system⁽⁴⁰⁾.

⁽³⁷⁾ It should be remembered that we define capital income as any investment returns, regardless whether they stem from equity, debt or any other type of financial assets. Capital income accrues at the corporate level as net income and at the personal level as dividends, capital gains and interest

⁽³⁸⁾ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:157:0038:0048:en:PDF>

⁽³⁹⁾ If the recipient is a corporation that holds at least 25 percent of the capital of the dividend paying company, the tax rate shall not exceed 5 percent. According to the EU Directive 2003/123/EC and 90/435/EEC dividend payments among corporations based in the European Union will be exempted from any withholding tax as long as the recipient firm owns at least 15 percent (starting from January 2009 this threshold will be reduced to 10 percent) of the capital of the dividend paying firm. In this way any double taxation within the corporate sector of the European Union should be avoided.

⁽⁴⁰⁾ Cf. Auerbach (1985).

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There is an ongoing discussion among public economists on how tax systems may be changed in order to reduce their excess burden. In the context of this paper the discussion about the introduction of an ACE system should be mentioned. As shown in Section 3.2., a few European member states recently experimented with some elements of an ACE-based taxation system. The basic idea behind an ACE-system is to design corporate taxation in a non-distorting way with respect to the firm's investment decision. As companies decide upon their investment program on the basis of the project's net present value (NPV), the tax system should make sure that any given ordering among different investment projects does not depend on whether the ordering is made on an after-tax or pre-tax basis. From this it follows that, effectively, only the NPV, i.e. the economic yield of the project, should be subjected to taxation. As the last acceptable project is that with an NPV of zero, such a system has a marginal tax rate of zero; this makes sure that such a tax system has no distorting effects on the firm's investment decision.

There are different ways to implement such a system that taxes economic returns only. One option is a cash flow based taxation system, i.e. a traditional system with 100 percent depreciation rates, combined with a tax exemption for capital income at the personal level⁽⁴¹⁾. A 100 percent depreciation rate allows firms to set-off investment expenditure from their tax base in the year that the expenditure is incurred. As a consequence, the free cash flows of the firm, i.e. the sum of operating cash flows and capital expenditures, are taxed. As the NPV is nothing more than the sum of the present values of these free cash flows by applying the firm's cost of capital as the discount rate, the introduction of an x percent tax rate reduces all NPVs by x percent⁽⁴²⁾. Hence, the ordering of different investment projects according to their NPV is the same on a pre-tax as well as on an after-tax basis⁽⁴³⁾. However, the implementation of such a system might be rather risky. For instance, although the present value of the Government's tax revenues will not be negatively affected, in the early years there might nevertheless be a substantial reduction in these revenues. Moreover, as such a tax would be based on the firm's net operating cash flows and therefore net financial cash flows are not included in the calculation of the tax basis. Hence, a firm that is in bad economic conditions might have to meet interest payments which are larger than its net cash flows. Although such a company might be close to financial distress, it would nevertheless have to pay taxes.

⁽⁴¹⁾ It should be noted that the US President's Advisory Panel on Federal Tax Reform in its 2005 report proposed a business income tax; cf. <http://www.taxreformpanel.gov/final-report/>. This tax system is based on the taxation of a firm's cash flow. However, at the personal level a flat capital income taxation is proposed. Hence, from a theoretical perspective, this type of a business income tax would still distort the investment as well as the financing decision. Therefore, it could be regarded as a kind of mixture between a CBIT and a pure cash flow taxation system.

⁽⁴²⁾ In order to see this, consider the following example, where the corporate tax rate is T_c , the firm's cost of capital is k and a T -period investment project generates a free cash flow of $FCFF_t$ in period t .

The pre-tax NPV is defined as:
$$\sum_{t=0}^T FCFF_t (1+k)^{-t}$$

Considering that capital income at the personal level is tax-exempted, the after-tax NPV is given as
$$\sum_{t=0}^T FCFF_t (1-T_c) (1+k)^{-t}$$

Hence, it follows that the after-tax NPV is $(1-T_c)$ -times as high as the pre-tax NPV. This relationship would not hold, if capital income were to be taxed at the personal level, as in that case the impact on the cost of capital k would have to be taken into account.

⁽⁴³⁾ It should be noted, however, that neutrality with respect to the firm's investment decision under some restrictive assumptions would also arise if capital income were to be subjected to taxation at the personal level. In order to see this in the context of a simple example assume that the representative tax rate on personal capital income is TP , the corporate tax rate is TC , the firm's cost of capital is k and an investment project generates a perpetual free cash flow stream of $FCFF$ per period. The pre-tax NPV in this case would be $FCFF/k$, while the after-tax NPV would be $FCFF(1-TC)/[k(1-TP)]$. Again, the pre- and after-tax ordering of different projects would not change. The system, however, would not be neutral with respect to the investor's saving-consumption decision.

An alternative to such a cash-flow based taxation regime is to stick to our traditional system of taxing a corporation's equity income, but just adding one important element to it. Corporations would be given an allowance for the equity cost. Hence, they would be allowed to deduct an imputed (notional) cost of equity from their tax base. In that case the economic value added of a project, i.e. its NPV, is taxed making it equivalent to a system of pure cash flow taxation⁽⁴⁴⁾. As with the cash-flow-based taxation system neutrality only applies if the ACE system is combined with a tax exemption for capital income at the personal level.

4.3.2. The firm's investment and financing decision

a) The impact of interest stripping rules on the cost of capital

Obviously, the most direct effect of any interest stripping or thin capitalization rule is on the firm's financing decision. Therefore, we will discuss this issue in this Section. It should be noted that we do not take into account indirect effects coming from price adjustments on the capital markets. This issue will be discussed in the next Section.

A firm will choose its capital structure in such a way as to maximise its market value. Unless the extremely restrictive conditions of the Modigliani/Miller-world hold, there will be a given mix of debt and equity that maximizes the firm's value or – which is the same thing – that minimizes the firm's weighted average cost of capital (WACC). However, the capital structure decision is rather complex and financial economists still do not have clear predictions with respect to the optimal outcome. What makes the issue difficult is that this decision is influenced by at least three factors. First, the relative tax treatment of debt versus equity is relevant. Second, debt ratios determine the financial risk of the company and, hence, the risk of default. Clearly, stockholders are concerned about the default outcome as it causes additional costs and, in extreme cases, they lose their property rights. Third, different debt-to-equity ratios cause different types of agency costs. A high debt ratio might be used as a control instrument as in this way the share of free cash flows available for additional investment projects is reduced. Hence, the discretion of management to finance negative NPV-projects is constrained⁽⁴⁵⁾. However, high debt ratios may also cause negative incentive effects, as management may be induced to increase the business' risk profile. Bringing all these aspects together it turns out that the firm's financing decision is, in fact, an extremely complex issue.

In what follows we concentrate simply on the tax effect. A one Euro equity return leaves the investor in a traditional double taxation system with an after-tax return of $(1-T_c)(1-T_{pe})$, where T_c is the corporate tax rate and T_{pe} is the effective personal tax burden on any equity income. Simultaneously, a one Euro debt return leaves the investor with an after-tax return of $(1-T_{pd})$, where T_{pd} is the effective personal tax burden on any interest income. From this one can define the Relative Tax Advantage Factor as $RTAF = \frac{(1-T_c)(1-T_{pe})}{(1-T_{pd})}$. As long as this factor is greater than one, equity finance would predominate over debt finance and vice versa. If a pure double taxation system is defined as one in which equity and interest income are taxed equally at the personal level, then $T_{pe} = T_{pd}$. In such a system the RTAF is smaller than one indicating a strong tax induced preference for debt financing. Of course, as mentioned above, this does not mean that the firm will operate with 100 percent debt, as other costs - not just taxes - will influence the financing decision as well.

⁽⁴⁴⁾ Wenger (1983) and Boadway/Bruce (1984) have been the first to show this. It should be noted that ideally the ACE-rate should be set equal to the firm's cost of equity. As this may be difficult to implement, one can use the market interest rate. In that case the risk premium is (falsely) disregarded which could potentially cause a distortion with respect to the firm's business risk profile. For a detailed discussion see Lammersen (2002).

⁽⁴⁵⁾ This so called theory of free cash flow was first proposed in the seminal paper of Jensen (1986). This theory yields good predictions with respect to stock price reactions on corporate announcements influencing the firm's leverage.

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The condition $T_{Pe}=T_{Pd}$ is never met in practice⁽⁴⁶⁾. As already mentioned, some of the double taxation systems grant preferential tax rates for dividend income with respect to interest income. Moreover, capital gains are also often taxed at preferential rates or even completely tax free. And finally, one should be aware that T_{Pe} also depends on the payout policy giving the firm an opportunity to reduce the present value of these tax payments by postponing dividend payments or, depending on the relative treatment of capital gains, by substituting dividend payments with stock repurchases. From that perspective, T_{Pe} will turn out to be smaller than it would seem at a first glance by just looking at statutory tax rates. However, similar considerations may also apply to T_{Pd} , especially because some part of corporate debt is held by tax exempted institutions. Taking this together it may be safe to say that in most tax systems in the industrialized world the condition $RTAF < 1$ holds.

Now, what happens if an interest stripping rule is introduced? Depending on the design of this rule, a given fraction of the interest expense is subjected to corporate taxes as well. Hence, beyond a critical leverage e^* the Relative Tax Advantage Factor will be written as $RTAF(e \geq e^*) = (1 - T_c)(1 - T_{Pe}) / [(1 - \alpha T_c)(1 - T_{Pd})]$, where α indicates the share of interest payments that are not deductible from the tax base⁽⁴⁷⁾. Of course, an interest stripping rule makes debt financing less attractive. However, this comes at the price that the cost of capital of the firm increases. In order to see this, note that a RTAF equal to 0.8 implies that the after tax return on an investment project is 25 percent higher if the investment is financed with debt. Ignoring all other costs associated with a given leverage decision, this means that the valuation difference between an all equity and an all debt financed project is 25 percent. If the RTAF is increased to 0.89 because of a thin capitalization rule, this valuation difference is reduced to 12.4 percent. Moreover, the valuation of the all debt financed project is reduced by about 10 percent.

Another way to see this effect is the following. The after-corporate-tax WACC of the firm is defined as $WACC = k_e w + k_d (1 - T_c)(1 - w)$, where w is the share of capital financed by equity and k_e is the investor's required return on equity and k_d the investor's required return on debt before personal taxes⁽⁴⁸⁾. This formula results from exactly the same consideration as above, just with the difference that tax effects at the investor's level are indirectly taken into account via the determination of the cost of equity k_e and the cost of debt k_d on the capital markets. Now, if interest payments are not fully deductible from the tax base, the formula changes to $WACC = k_e w + k_d (1 - T_c(1 - \alpha^w))(1 - w)$, according to the consideration set out above⁽⁴⁹⁾. To the extent that the pre-personal-tax cost of debt, i.e. k_d , is unchanged, the WACC of the firm increases for any $\alpha^w > 0$. As the cost of debt is determined on the world capital market, it might be safe to assume as an initial approximation that the world interest rate for corporate debt would be unaffected by the introduction of an interest stripping rule in a single state. As a consequence the company will reduce its investment activities, given that all other parameters are held constant. Projects that had a positive NPV before the introduction of the interest stripping rule, may turn out to have a negative NPV under the increased WACC.

⁽⁴⁶⁾ For a detailed analysis of this issue cf. Auerbach (2002).

⁽⁴⁷⁾ In reality, the determination of α may be rather difficult, as interest stripping rules allow a carry-forward of the non-deductible part of interest payments. Hence, over the life cycle of the firm it may well be that all interest payments are deductible. However, due to a postponement of the tax saving effect the present value of the tax shield of debt decreases. α should capture this effect.

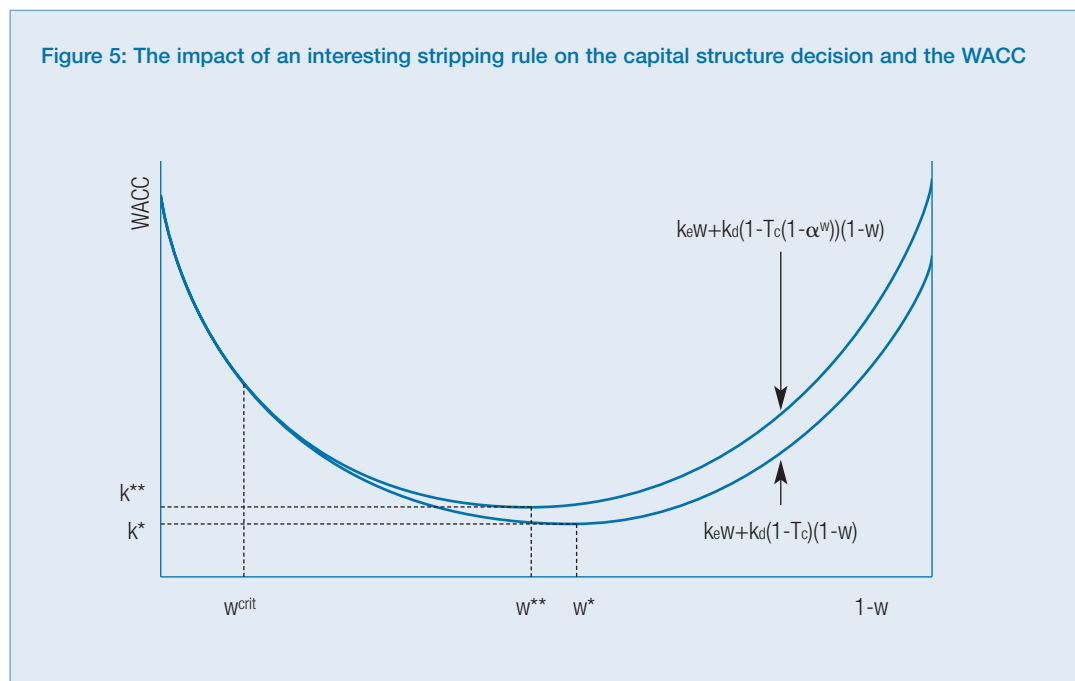
⁽⁴⁸⁾ This is the traditional WACC-formula that can be found in any corporate finance textbook; cf. for instance Brealey/Myers/Allen (2005).

⁽⁴⁹⁾ As the share of non deductible interest payments might depend on the equity ratio w we denote this share with α^w .

One might argue that the effect could be mitigated by adjusting the firm's capital structure in such a way that the interest stripping rule would no longer apply. For instance, if the rule has a safe harbour provision stating that interest payments up to 80 percent of EBIT are deductible, the firm could decrease its debt ratio making sure thereby that this threshold is not exceeded. Nevertheless, even in this case a negative impact on the firm's investment activity will result. This holds at least if we assume that the firm had chosen an optimal capital structure in the first place. By being forced to choose a new capital structure with higher equity, the WACC will in any case be larger than it was before the introduction of the interest stripping rule.

This can be seen in Figure 5. There the WACC-function with and without the interest stripping rule is drawn over an arbitrary interval of the debt-ratio $1-w$. It is assumed that the critical equity ratio is w^{crit} , i.e. if the equity ratio falls below this threshold interest deductibility is restricted. If no interest stripping rule applies the optimal equity ratio is w^* and the WACC is equal k^* . However, if the interest stripping rule applies the optimal equity ratio is $w^{**} > w^*$ and the WACC is equal $k^{**} > k^*$. Hence, the interest stripping rule not only forces the firm to increase its equity ratio, it leads also to a higher cost of capital. Moreover, Figure 5 also shows that it will hardly be optimal to reduce the equity ratio down to the critical threshold w^{crit} . In that case the impact on the WACC would be even more pronounced⁽⁵⁰⁾.

The economic idea behind this consideration is based on the fact that the capital structure of the firm is not irrelevant. This refers to the arguments presented above in the context of agency costs and insolvency costs. Hence, forcing the firm to change its capital structure just because of tax considerations imposes an additional cost; this has a negative impact on the valuation of the firm and, hence, on its investment activities.



⁽⁵⁰⁾ Of course, from Figure 5 it can also be seen that the impact of the interest stripping rule on the firm's cost of capital would be zero, if the optimal debt ratio were to be lower than the critical debt ratio implemented by this rule, i.e. if $w^* > w^{\text{crit}}$ holds.

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It should also be noted that the negative impact of the interest stripping rule cannot be prevented by granting a reduced tax rate on interest income in personal taxation. This would only reduce the required pre-tax return from the perspective of the domestic investor. The pre-tax cost of debt, however, is determined on the international capital market, where the behaviour of the domestic investors should not have a strong influence.

As a final issue in this context, we should look at the impact of the interest stripping rule on the firm's value. As mentioned before, we discuss this by neglecting all indirect effects, i.e. those effects coming from any price adjustments on the capital market. Of course, if we assume all pre-tax cost of capital components to be constant, the interest stripping rule leads to a higher cost of capital and, hence, to a lower valuation of the firm. However, the impact is no longer clear if we take into account that an interest stripping rule may be accompanied by a lower corporate tax rate. In fact, if we assume that T_c is the corporate tax rate before the introduction of the interest stripping rule and T'_c the corporate tax rate afterwards, by assuming that the firm generates a constant annual EBIT, the value of the firm before the introduction of the interest stripping rule is $V_0 = \text{EBIT}(1 - T_c) / \text{WACC}[T_c]$, while the value afterwards is $V'_0 = \text{EBIT}(1 - T'_c) / \text{WACC}[T'_c]$. Now, the condition $V_0 > V'_0$ only holds if the condition $\text{WACC}[T_c] / \text{WACC}[T'_c] < (1 - T_c) / (1 - T'_c)$ is met. As $\text{WACC}[T_c] < \text{WACC}[T'_c]$ and $T_c > T'_c$ holds, it can be seen that depending on the extent of the tax reduction and the degree to which the interest stripping rule is binding, an increase as well as a decrease in the firm's value may occur. From that perspective, one could argue that the sign of the wealth effect generated by the interest stripping rule is not clear. Correspondingly, the impact on the investment activity would not be determined in a straightforward manner as the higher cost of capital under the interest stripping rule would go along with a higher after tax return in the firm's business activities because of the reduced corporate tax rate.

It should be noted, however, that this wealth effect, as well as the corresponding impact on investment activities, is different for each firm, depending on its capital structure. Hence, for some firms the impact might be positive, for others not. Holding everything else constant, and taking into account the discussion of the capital structure adjustment presented above, the wealth effect would be highest for those firms that are most flexible in adapting their capital structure. Hence, regardless of whether the overall wealth effect is positive or negative, the competitive conditions for those firms that have most difficulties in adapting their capital structure will be negatively affected when compared to those firms that are financially more flexible⁽⁶¹⁾.

b) The impact of thin capitalization rules as warning signal

It should be noted that, basically, the same considerations apply to thin capitalization rules. However, the impact of these rules certainly is weaker, as thin capitalization rules affect only debt granted by related shareholders. Hence, the firm could simply substitute outside debt for related-party debt. As long as outside debt has the same cost as related-party debt, there will be no impact on the cost of capital of the firm. Even though it cannot simply be assumed that this is always the case, the impact of a thin capitalization rule is expected to be less pronounced than the impact of an interest stripping rule. From this perspective it is a warning signal for interest stripping rules that empirical studies give a clear indication that even thin capitalization rules negatively influence domestic investment activity.

⁽⁶¹⁾ One might argue here that SMEs tend to be those firms that have more difficulties in adjusting their capital structure.

The impact of thin capitalization rules has been extensively analyzed by Buettner et al. (2006a). By setting up a formal model they show that the basic prediction set out here, namely that the cost of capital rises and that investment activity is negatively affected, is also valid for thin capitalization rules. Moreover, they present some interesting empirical results. As a first result they show that debt ratios of subsidiaries of multinational firms significantly increase with higher national tax rates⁽⁶²⁾. This is not surprising as the tax advantage of debt financing increases in corporate tax rates because of the double-taxation imposed on equity income⁽⁶³⁾. In countries with thin capitalization rules the leverage is about 5 percent lower, confirming the theoretical considerations presented above. Moreover, they show that a firm's level of investment when faced with thin capitalization rules decreases as tax rates rise. This corroborates the view, that especially in high tax countries a thin capitalization rule significantly affects the leverage of the firm and, thereby, its cost of capital, leading to lower investment activity.

Moreover, the negative impact of a thin capitalization rule is not really mitigated by the fact that this rule applies to internal debt only. In fact, Buettner et al. (2006b) show that tax rate sensitivity of external and internal debt is pretty similar. As an additional point they show that the use of internal debt by multinational firms is far less pronounced than is often presumed. The mean ratio of internal to external debt is 0.68, i.e. about 40 percent of the debt employed comes from internal sources. Desai et al. (2004) report for US multinational firms that the vast majority of debt comes from external sources. Taken together these results strongly indicate that national Governments will pay a high price in the form of a reduced capital stock, if they try to tax a larger fraction of a multinational's tax base by extending thin capitalization rules to interest stripping rules. As a consequence, the alleged positive impact on the national Government's budget will be rather limited.

c) The impact on SMEs

In the preceding section we have argued that even though firms might be able to mitigate the impact of an interest stripping rule by reducing their leverage, most probably there will still be a negative impact on the investment level of these firms. It should be noted, however, that a substantial fraction of the corporate sector is probably not able to adapt its capital structure flexibly. This may be particularly true for SMEs, which are often exposed to equity rationing, especially in those cases where family owners are reluctant to share control with external shareholders. Moreover, this type of owner often needs regular dividend payments for private consumption purposes. If an SME has difficulty adapting its capital structure and the current leverage is already beyond the limits set by the interest stripping rule, this firm will bear the full impact of the increase in the cost of capital. As a consequence, it will reduce its investment activity to a greater extent than it is the case for other firms, like multinationals, which are able to absorb a part of this effect via an adjusted capital structure. Given the significance of SMEs for most European economies, national Governments should take great care when designing interest stripping rules. Indeed, it seems rather strange that a tax measure that was supposedly invented in order to counter perceived tax evasion by multinational firms, in the end turns out to have the harshest impact on SMEs.

⁽⁶²⁾ This confirms other studies showing that the firm's financing decision is rather sensitive to statutory corporate tax rates; cf. for instance Gordon/Lee (2001).

⁽⁶³⁾ Reminder that the RTAF is a decreasing function in the corporate tax rate TC.

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d) The pro-cyclical effect of interest stripping rules

As a next point it is important to note that interest stripping rules potentially generate pro-cyclical effects, especially in the case of an economic downturn. Such an effect at least arises to the extent that firms are liquidity constrained. To see this assume that a firm is in a bad economic condition, i.e. the EBIT and the cash flows are low and, as a consequence, interest expense multiples (e.g. interest expense divided by operating cash flow) are high. In such a situation it may well be that the income before taxes is negative, which means that in a traditional system the firm would not have to pay any taxes. However, with an interest stripping rule this may be different. Assume that the EBIT is positive, but net interest payments are larger than the EBIT implying a negative income (loss) before taxes. If only a fraction of these interest payments are deductible, it could well be that the income before taxes in the tax computation is positive. As a consequence, the firm would have to pay taxes although its net income is effectively negative⁽⁵⁴⁾. One can easily imagine situations in which the cash flow of the firm is not sufficient to meet this tax payment. From this, one can see that interest stripping rules could lead to a pattern of tax payments that, where profits are low, is negatively correlated with the firm's net income. Clearly, for liquidity constrained firms this could be a problem that would threaten their continued existence. Again, one might expect that liquidity constraints are more relevant for SMEs than for large multinationals. In general, these considerations show that an interest stripping rule is a clear breach of the principle of economic capacity based taxation.

As an additional point it should be mentioned here that an interest stripping rule makes financial policy planning rather difficult. As the EBIT, and to a lesser extent also the EBITDA, is subject to large fluctuations, it could well be that even firms with rather low leverage are hit by the interest stripping rule in bad years.

e) The interest stripping rule as a potential impediment to free movement of capital

As a final comment on the shift from thin capitalization rules to interest stripping rules, it should be emphasized that this regime switch goes along with an additional important issue. Traditionally, interest payments that were not recognized under the thin capitalization rules were re-classified as disguised dividend payments. In that case the company had to restate its profit calculation and the interest paid to the related shareholder were re-classified as dividends. Hence, both at the level of the firm as well as at the level of the investor the payment was effectively deemed to be a dividend and treated as such. As double taxation agreements normally treat disguised dividend payments in the same way as declared dividends, even in a cross-border context no discrimination issues arose.

However, over the last years many European Union member states started to modify their thin capitalization rules. Among other things they switched from re-categorising the excess interest payments to related shareholders as disguised dividend payments to a system where they simply impede the deduction of the excess interest payments. The excess payment can be carried forward and offset against profits in future periods provided that the critical interest threshold set by the thin capitalization rule has not been fully used up in those periods. According to Kessler (2007) in the year 1997 about one third of the EU member states practiced this deduction impediment combined with a carry-forward, while in the year 2007 three quarters of the member states had such a rule in place. Interest stripping rules in any case go along with a carry-forward of the non-deductible part of interest payments.

⁽⁵⁴⁾ This asymmetric pro-cyclical effect of an interest stripping rule was one of the major criticisms expressed by the Economic Council of the German Ministry of Finance against the German corporate tax reform 2008; cf. Wissenschaftlicher Beirat beim Bundesministerium der Finanzen (2006).

The consequence of such a deduction impediment is that at the investor level the payment is treated as interest income, while at the level of the corporation the payment is in the first place treated as equity income. If the interest payment can be offset against future profits then it will be treated as an accrued interest expense in subsequent periods.

The general economic impact of not allowing a full deduction of interest payments has already been analyzed in the preceding part of this Section. The point that will be emphasized in this Subsection is related to cross-border interest payments. As already mentioned, in the case where interest payments are re-categorised as disguised dividend payments no issue arises, as according to double taxation conventions these payments are treated as dividend payments both at the level of the corporation and the investor. If, however, the interest payments were not to be deductible from the firm's profits and were instead to be carried forward, as would be the case with excess interest payments in the context of an interest stripping rule, the problem arises that the payment is treated as an interest return at the level of the investor, but as an equity return at the level of the corporation (at least in the year of payment).

This asymmetric treatment may have an adverse tax impact in a cross-border context. It should be noted that on the basis of the exemption method practiced by many member states⁽⁶⁵⁾, dividend payments earned by a domestic company and coming from foreign activities are exempted from corporate taxation. If the dividend comes from an associated company resident in another member state, it is even exempted from any withholding tax⁽⁶⁶⁾. As opposed to this, foreign interest payments earned by a domestic company are subject to domestic corporate taxation, although they were already subjected to corporate taxation in the state of residence of the dividend paying firm due to the interest stripping rule⁽⁶⁷⁾. Hence, a double taxation issue at the corporate level arises. This may conflict with the aim of Council Directive 2003/49/EC on the taxation of interest and royalty payments, which states that it "is necessary to ensure that interest and royalty payments are subject to tax once in a Member State". The directive further states that "the abolition of taxation on interest ... payments in the Member State where they arise, ..., is the most appropriate means ... of ensuring the equality of tax treatment as between national and cross-border transactions; it is particularly necessary to abolish such taxes in respect of such payments made between associated companies of different Member States as well as between permanent establishments of such companies." Under this perspective it is probable that interest stripping rules contravene the declared intention of the EU directive 2003/49/EC set up in order to enhance the free movement of capital among member states.

4.3.3. Market impact and policy considerations

So far we have discussed the impact of an interest stripping rule on the firm's financing and investment decisions disregarding any capital market reactions. This will be done in the following.

a) The impact on private equity financing

According to the analysis presented in the preceding Section it is clear that the impact of an interest stripping rule is greatest on those firms that operate with high leverage. Private equity backed firms typically belong to this group. Hence, we should briefly discuss what the impact might be of an interest stripping rule on this type of corporate finance.

⁽⁶⁵⁾ Cf. Section IV. B. 2.

⁽⁶⁶⁾ Cf. footnote 39.

⁽⁶⁷⁾ It is irrelevant in this context that the interest payment is exempted from withholding tax in case both firms are associated; cf. footnote 38.

4. Economic Discussion

In general it could be argued that the cost of capital of the private equity target firm increases, if an interest stripping rule comes into effect, as shown in the preceding Section. Private equity firms will react to this by reducing the price offered for the target company. In fact, there is empirical evidence that the purchase price multiples in private equity transactions are positively correlated with the debt multiples used in these transactions⁽⁶⁸⁾.

Now, to the extent that this reduction in the purchase price only reflects the reduction in the present value of the debt's tax shield, one can consider this as a pure redistribution effect between shareholders, including the private equity investor, and the tax payer. However, theoretical arguments as well as empirical evidence suggest that there will be an additional component in the price reduction caused by allocation effects. In fact, it has already been argued at the beginning of the preceding section that a firm's capital structure is not irrelevant even if tax considerations were to be eliminated. Most importantly, the capital structure is used as an incentive mechanism for the management. While in publicly held corporations this type of incentive mechanism is rather neglected, private equity backed firms use it very intensively⁽⁶⁹⁾. In fact, it can be regarded as a common element in private equity backed firms that their internal financing capacity is very much downsized in favour of external (capital market based) financing. An important means to achieve this goal is to increase leverage considerably. It should be emphasized that the reason for doing so is not only a tax consideration, but is also aimed at implementing a control and incentive mechanism for the management. Although there is still a debate on the relative importance of different value drivers in private equity transactions, it is commonly accepted that active corporate control exercised by the private equity firm is an important element. Hence, by artificially increasing the cost of debt, the implementation of this specific value driver becomes more costly thereby reducing its value impact.

As a consequence, one can say that interest stripping rules will have a negative impact on the presumed positive capital allocation effects of private equity financing. The private equity firms themselves, however, will mitigate the impact of this negative effect on the returns on their investments by reducing the purchase price⁽⁷⁰⁾. Hence, the implementation of such a rule hits incumbent shareholders. To the extent that these are local shareholders, the negative effects of an interest stripping rule are, once again, borne by the domestic economy.

To the extent that debt is also used as an important control instrument in non private equity backed firms, the same considerations would apply to those firms. Hence, it could be expected that the introduction of an interest stripping rule would have an adverse price effect on stock prices in general.

b) Tax-base shifting and the impact on retirement savings

An interest stripping rule shifts a part of the tax base generated by interest income from the state of residence of the investor to the state of residence of the corporation or its permanent establishment. Moreover, as long as double taxation agreements are not adjusted, it could even be that interest payments are a part of the corporate tax base in the firm's state of residence as well as of the personal income tax base in the investor's state of residence.

⁽⁶⁸⁾ Cf. Kaserer et al. (2007).

⁽⁶⁹⁾ For a detailed exposition of this argument cf. Jensen (1989).

⁽⁷⁰⁾ Of course, this is an ex-ante reaction that works only for those investments that have not yet been undertaken before the interest stripping rule became effective. For existing investments the private equity firm is fully hit by the negative value impact of the interest stripping rule.

Such a tax base shift overlooks the fact that most countries have implemented rules that effectively reduce the taxation of retirement earnings or even eliminate it. In many cases, contributions to pension funds can be deducted from the tax base, while the return earned in the retirement period will be taxed. This system of deferred taxation effectively makes sure that the return on these contributions is exempted from any taxation. Hence, it is equivalent to a system where a retirement contribution is made out of after tax earnings and the return paid at the retirement age is tax exempt. As pension funds and life insurance companies account for a significant part of national savings, this is an extremely important issue.

Now, a substantial part of the capital allocated in the corporate sector is held by these financial intermediaries. As far as corporate debt is concerned, the classical corporate tax system ensures that interest income earned by these intermediaries will be accumulated over time on a tax free basis. For equity income this does not hold, as there some corporate tax will not be eliminated. Now, a shift from residence-based taxation of interest income to source-based taxation (or at least a mixture of both), would reduce the value of the capital stock held by these institutions considerably. If such a regime switch takes place for a significant part of world wide savings accounts, a perceptible increase in the pre-tax cost of debt would be the consequence. Again, this would have a negative impact on investment activities; this impact would not be confined only to those countries implementing an interest stripping rule, but would extend to the world economy.

In order to see that the partial tax free accumulation of retirement savings did not arise by chance, one should pay attention to the following consideration. Why do so many countries have rules that effectively exempt (a fraction of) retirement savings from taxation? Most probably this is due to the well known effect that any capital income taxation reduces the household's saving propensity. By exempting at least a part of individual savings from taxation, this effect should be mitigated. Historically, different countries have tried different instruments to achieve this goal. A prerequisite for these measures to be effective is residence based taxation of interest income. If the interest stripping rule is the beginning of a trend towards shifting the interest income tax base from the investor's state of residence to the firm's state of residence, significant consequences for the design of our retirement savings systems would arise. The recently observed trend in the European Union towards a system of deferred retirement income taxation would certainly be offset by implementing a source-based tax burden on interest income.

c) The interest stripping rule as a first step towards a CBIT system?

Going back to the discussion presented in Section 4.3.1 it could be argued that one simple way to eliminate the distorting effect of a traditional double taxation system on the firm's financing decision would be to tax capital income equally at the level of the corporation⁽⁶¹⁾. As an extreme example, one could imagine a Comprehensive Business Income Tax (CBIT), where a firm's EBIT is subjected to corporate taxation. Supposedly this would lead to an equal treatment of debt and equity, at least under the proviso that both income types are exempted from any personal taxes.

⁽⁶¹⁾ Cf. for this discussion also Auerbach et al. (2007).

4. Economic Discussion

Clearly, the interest stripping rules under consideration here cannot be regarded as a CBIT system as they do not take into account any changes in the taxation of interest income at the personal level. But even if we regard this rule as an intermediate step towards a pure CBIT system, one should be very careful in analyzing the economic effects of such a transformation of our tax system. Most importantly, a CBIT tax would not be neutral with respect to the firm's investment decision, as has already been mentioned in Section 4.3.1. In fact, economic analysis in the context of simulation models shows that a CBIT most probably leads to a higher cost of capital, lower investment activity and lower employment⁽⁶²⁾.

d) The advantages of an ACE system

As mentioned in Section 4.3.1. a distortion in the leverage decision can also be avoided in the context of a system incorporating an allowance for corporate equity (ACE) combined, again, with a tax exemption for capital income at the personal level. The fundamental economic advantage of an ACE system is the fact that it is neutral with respect to the firm's investment decision. This means that deciding upon an investment program on a pre-tax basis would lead to the same result as deciding upon it on an after-tax basis. It is extremely interesting that economic analysis in the context of simulation models generates positive results for such an ACE system. In fact, it has been shown that such a system would lead to a lower cost of capital and higher investment activity⁽⁶³⁾.

Of course, this is not the place to give a comprehensive overview on the welfare effects of such a system. Moreover, the analysis becomes quite intricate, if effects from international tax competition are taken into account. However, if the introduction of an interest stripping rule is regarded as a discussion on the fundamental principles of our tax system, it would be important to extend this discussion in a direction where other reform approaches with attractive economic features are also taken into account.

⁽⁶²⁾ Cf. Radulescu/Stimmelmayer (2007).

⁽⁶³⁾ Cf. Radulescu/Stimmelmayer (2007) and additional literature mentioned there.

Recently, some European Union member states implemented corporate tax rules restricting the deductibility of interest payments. Most prominently, Denmark extended its thin capitalization rule by an interest stripping rule restricting a firm's interest deductions to 80 percent of EBIT. Similar rules have been introduced in Germany and Italy by the beginning of this year.

The introduction of an interest stripping rule is a far-reaching shift in our tax system, as the deduction of interest payments against the corporate tax base is restricted, regardless of whether the beneficiary is a related party or not. In this paper we have argued that an interest stripping rule is a clear breach of the principle of economic capacity based taxation, thereby generating severe negative economic consequences.

Most importantly, an interest stripping rule will increase the firm's cost of capital. The impact will be highest for those firms that are least able to reduce their debt exposure because of equity-rationing. This is most likely the case for SMEs. But even if equity-rationing is not a problem, the outcome will be an increased cost of capital and, as a consequence, reduced investment activity. Moreover, the breach of economic capacity based taxation becomes evident in an additional feature of any interest stripping rule, namely its pro-cyclical effect. As we have shown in this paper, such a rule could force a company, which is in a bad economic state, into a liquidity problem, as a tax payment might be due despite a negative economic before-tax income. Again, this pro-cyclical effect is more likely to occur for SMEs rather than large multinational firms, as SMEs tend to be more liquidity-constrained.

The negative impact on the firm's cost of capital goes along with decreasing enterprise values, as we have argued in the paper. This effect hits incumbent shareholders only. On top of this effect, domestic investors are also negatively affected because an interest stripping rule shifts residence-based taxation of interest income towards source-based taxation. As a substantial part of corporate debt is held by tax-exempted financial intermediaries on behalf of retirement accounts, the value of the capital stock backing future retirement income will be hit as well. To the extent that this effect is perceptible on the international capital markets, an additional increase in the firm's cost of capital will arise.

Finally, we argue that interest stripping rules may create new obstacles to the free movement of capital in the European Union. In order to understand this it should be noted that an interest payment that is non-deductible under the interest stripping rule, is subject to corporate tax in the firm's state of residence. In the hands of the recipient, however, the payment is treated as an interest income and, hence, it is taxable in the debtholder's state of residence. This contravenes the intention of the EU directive 2003/49/EC, which explicitly requires that interest payments should be subject to tax once in a member state.

After all, we strongly emphasize an open discussion on the future of our corporate tax system. Policy makers should consider that there may be better means available by far than an interest stripping rule when it comes to reducing equity/debt tax discrimination. Most importantly, the introduction of an allowance for corporate equity should be considered as an alternative measure, given that such a system has very attractive economic features. Ultimately the objective of this paper is to contribute to and encourage the economic and political debate on European corporate taxation.

6. Literature

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7. Appendix

Table 1: Statutory corporate tax rates (incl. local taxes) for 19 OECD countries over the period 1979 to 2007

Year	AUS	AUT	BEL	CAN	FIN	FRA	GBR	GER	IRE	ITA	JAP	NET	NOR	POR	SPA	SWE	SWI	UK	US
1979	50%	50%	43%	60%	60%	50%	62%	43%	45%	36%	53%	48%			33%			52%	50%
1980	50%	50%	45%	60%	60%	50%	62%	43%	45%	36%	53%	48%			33%			52%	50%
1981	50%	50%	45%	60%	60%	50%	62%	43%	10%	36%	55%	48%			33%			52%	50%
1982	50%	61%	45%	60%	60%	50%	62%	43%	10%	39%	55%	48%	51%	55%	33%	60%	35%	52%	50%
1983	50%	61%	45%	60%	60%	50%	63%	43%	10%	46%	55%	48%	51%	55%	33%	60%	35%	50%	50%
1984	50%	61%	45%	60%	60%	50%	63%	44%	10%	46%	56%	43%	51%	55%	35%	60%	35%	45%	50%
1985	50%	61%	45%	60%	60%	50%	63%	44%	10%	46%	56%	43%	51%	55%	35%	60%	35%	40%	50%
1986	50%	61%	45%	60%	60%	45%	63%	44%	10%	46%	56%	42%	51%	55%	35%	52%	35%	35%	50%
1987	50%	61%	43%	60%	50%	45%	63%	44%	10%	46%	55%	42%	51%	46%	35%	52%	35%	35%	38%
1988	39%	61%	43%	60%	50%	42%	63%	44%	10%	46%	55%	42%	51%	46%	35%	52%	35%	35%	38%
1989	39%	39%	43%	60%	50%	39%	63%	40%	10%	46%	53%	35%	51%	40%	35%	57%	35%	35%	38%
1990	39%	39%	41%	60%	40%	37%	58%	40%	10%	46%	50%	35%	51%	40%	35%	45%	35%	34%	38%
1991	39%	39%	39%	60%	40%	34%	59%	40%	10%	48%	51%	35%	51%	40%	35%	30%	35%	33%	38%
1992	39%	39%	39%	60%	36%	34%	59%	40%	10%	48%	51%	35%	28%	40%	35%	30%	35%	33%	38%
1993	33%	39%	39%	35%	25%	33%	58%	40%	10%	52%	51%	35%	28%	40%	35%	30%	35%	33%	39%
1994	33%	34%	40%	34%	25%	33%	54%	40%	10%	52%	50%	35%	28%	40%	35%	28%	35%	33%	39%
1995	36%	34%	40%	36%	25%	37%	57%	40%	10%	52%	50%	35%	28%	40%	35%	28%	35%	33%	39%
1996	36%	34%	40%	36%	28%	37%	57%	40%	10%	53%	50%	35%	28%	40%	35%	28%	35%	33%	39%
1997	36%	34%	40%	36%	28%	42%	57%	40%	10%	53%	50%	35%	28%	40%	35%	28%	35%	31%	39%
1998	36%	34%	40%	36%	28%	42%	56%	40%	10%	41%	46%	35%	28%	37%	35%	28%	34%	31%	39%
1999	36%	34%	40%	36%	28%	40%	52%	40%	10%	41%	41%	35%	28%	37%	35%	28%	34%	30%	39%
2000	34%	34%	40%	36%	29%	38%	52%	40%	10%	41%	41%	35%	28%	35%	35%	28%	34%	30%	39%
2001	30%	34%	40%	36%	29%	36%	38%	38%	10%	40%	41%	35%	28%	35%	35%	28%	34%	30%	39%
2002	30%	34%	40%	36%	29%	35%	38%	35%	10%	40%	41%	35%	28%	33%	35%	28%	34%	30%	39%
2003	30%	34%	34%	36%	29%	35%	40%	35%	13%	38%	41%	35%	28%	33%	35%	28%	34%	30%	39%
2004	30%	34%	34%	36%	29%	35%	38%	35%	13%	37%	40%	35%	28%	28%	35%	28%	34%	30%	39%
2005	30%	25%	34%	36%	26%	34%	38%	32%	13%	37%	40%	32%	28%	28%	35%	28%	34%	30%	39%
2006	30%	25%	34%	36%	26%	34%	39%	29%	13%	33%	40%	30%	28%	28%	35%	28%	21%	30%	39%
2007	30%	25%	34%	36%	26%	34%	39%	25%	13%	33%	40%	26%	28%	19%	33%	28%	21%	30%	39%

Source: Devereux et al. (2002), Table A1, updated with OECD data

Table 2: Corporate tax revenue as a percentage of total tax revenue for 19 different OECD countries over the period 1979 to 2006

Year	AUS	AUT	BEL	CAN	FIN	FRA	GER	GRE	IRE	ITA	JAP	NET	NOR	POR	SPA	SWE	SWI	UK	US
1979	10%	5%	7%	13%	5%	8%	9%	5%	7%	13%	29%	9%	9%	0%	10%	4%	8%	9%	15%
1980	12%	5%	6%	13%	4%	9%	8%	6%	5%	13%	31%	11%	17%	0%	10%	3%	8%	10%	14%
1981	11%	5%	6%	11%	5%	9%	8%	6%	6%	13%	29%	12%	21%	0%	10%	4%	9%	11%	12%
1982	10%	4%	7%	8%	5%	9%	8%	6%	5%	14%	28%	12%	22%	0%	9%	4%	9%	12%	10%
1983	9%	4%	7%	9%	5%	8%	8%	4%	4%	14%	28%	11%	19%	0%	9%	4%	9%	13%	8%
1984	9%	4%	7%	10%	5%	8%	8%	4%	4%	15%	30%	10%	22%	0%	9%	4%	9%	14%	10%
1985	9%	5%	7%	10%	4%	8%	10%	4%	4%	14%	30%	12%	22%	0%	9%	4%	9%	15%	10%
1986	9%	5%	8%	9%	5%	9%	10%	6%	4%	16%	29%	13%	18%	0%	9%	6%	9%	13%	10%
1987	10%	5%	8%	9%	4%	9%	8%	7%	4%	16%	32%	14%	9%	0%	10%	5%	9%	13%	11%
1988	11%	5%	8%	10%	4%	9%	8%	6%	4%	14%	34%	13%	8%	0%	10%	6%	10%	13%	12%
1989	13%	5%	8%	10%	5%	10%	9%	7%	4%	15%	34%	12%	7%	6%	13%	5%	9%	15%	12%
1990	14%	5%	7%	8%	6%	10%	8%	8%	6%	15%	30%	12%	12%	11%	14%	4%	10%	12%	12%
1991	14%	5%	7%	7%	6%	8%	7%	6%	7%	14%	29%	12%	13%	12%	12%	4%	10%	10%	11%
1992	14%	6%	6%	6%	5%	9%	6%	7%	8%	15%	26%	11%	10%	11%	10%	4%	10%	8%	11%
1993	13%	5%	7%	7%	1%	9%	6%	7%	9%	13%	23%	11%	11%	10%	9%	6%	9%	7%	12%
1994	14%	4%	8%	8%	2%	9%	5%	9%	10%	13%	23%	13%	11%	10%	8%	7%	9%	8%	13%
1995	15%	5%	8%	9%	7%	9%	5%	9%	10%	13%	24%	13%	12%	11%	8%	7%	9%	10%	14%
1996	15%	6%	9%	10%	8%	10%	6%	7%	11%	14%	26%	16%	13%	12%	9%	7%	9%	11%	13%
1997	15%	7%	10%	12%	10%	11%	7%	9%	11%	14%	24%	18%	16%	14%	12%	7%	9%	14%	13%
1998	15%	7%	11%	12%	12%	11%	7%	13%	12%	10%	22%	17%	13%	14%	11%	6%	9%	13%	12%
1999	16%	6%	11%	12%	13%	12%	8%	14%	14%	11%	21%	16%	14%	15%	12%	6%	11%	12%	12%
2000	20%	7%	11%	13%	16%	13%	8%	17%	13%	10%	21%	17%	21%	16%	14%	9%	12%	12%	11%
2001	15%	9%	11%	10%	12%	15%	3%	15%	14%	12%	20%	16%	21%	15%	13%	7%	14%	12%	9%
2002	17%	7%	11%	10%	12%	13%	5%	15%	15%	11%	20%	14%	19%	15%	14%	5%	12%	10%	9%
2003	17%	7%	10%	11%	10%	11%	6%	14%	15%	9%	21%	12%	19%	12%	14%	6%	11%	10%	11%
2004	18%	7%	11%	12%	11%	12%	8%	15%	14%	10%	23%	13%	23%	13%	15%	7%	11%	10%	13%
2005	19%	7%	12%	12%	10%	12%	8%	16%	13%	10%	25%	15%	27%	13%	16%	8%	12%	11%	15%
2006	7%	7%	13%	12%	10%	14%	10%	14%	14%	11%	14%	14%	28%	17%	9%	9%	12%	13%	16%

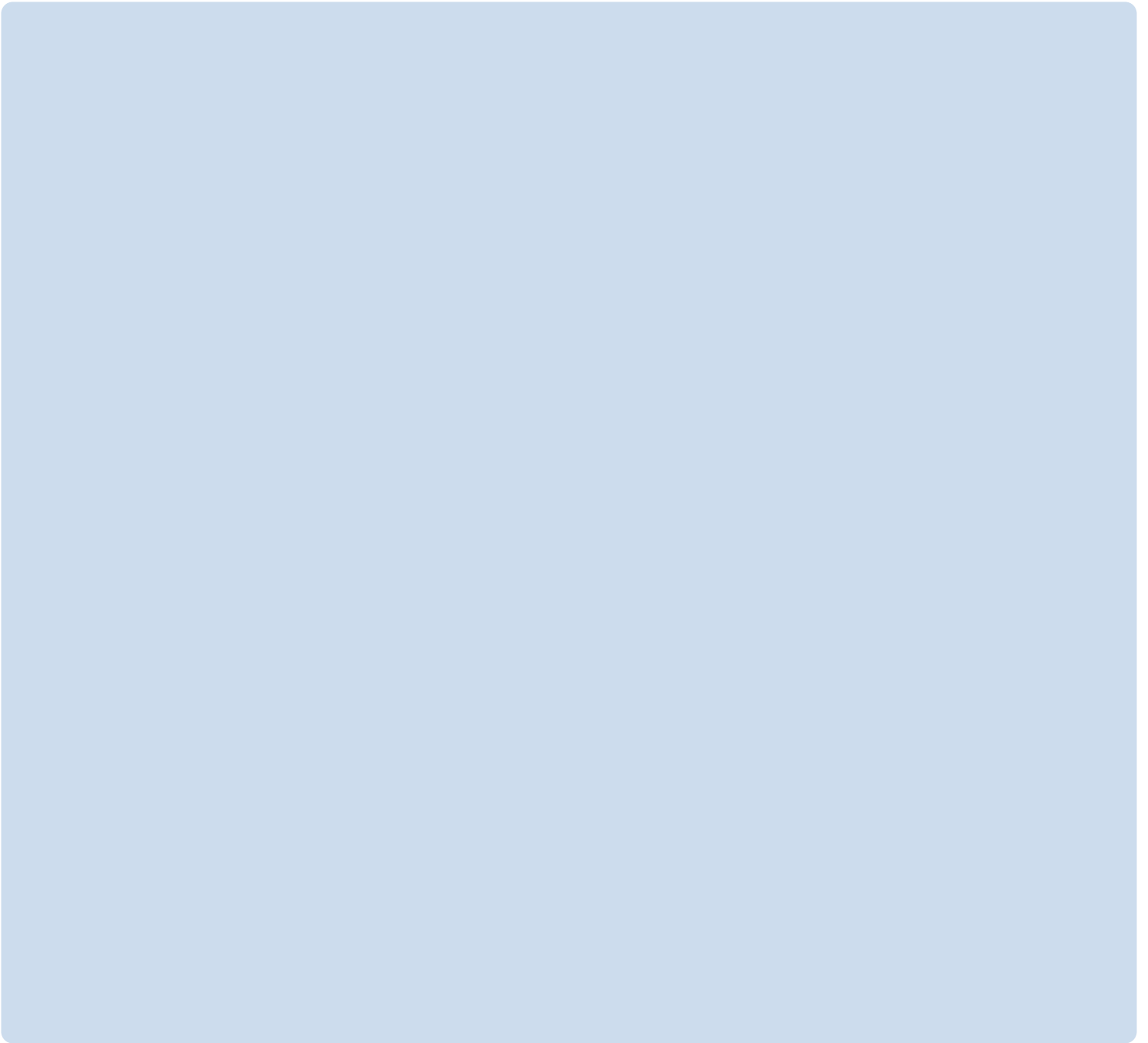
Source: OECD data (www.sourceoecd.org)

7. Appendix

Table 3: Corporate tax revenue as a percentage of GDP for 19 different OECD countries over the period 1979 to 2006

Year	AUS	AUT	BEL	CAN	FIN	FRA	GBR	GER	IRE	ITA	JAP	NET	NOR	POR	SPA	SWE	SWI	UK	US
1979	3%	1%	2%	3%	1%	2%	2%	1%	2%	2%	5%	2%	3%		1%	1%	2%	2%	3%
1980	3%	1%	2%	4%	1%	2%	2%	1%	1%	2%	6%	3%	6%		1%	1%	2%	3%	3%
1981	3%	1%	2%	3%	2%	2%	2%	1%	2%	3%	5%	3%	7%		1%	1%	2%	3%	2%
1982	3%	1%	2%	2%	2%	2%	2%	1%	2%	3%	5%	3%	7%		1%	2%	2%	4%	2%
1983	2%	1%	2%	2%	2%	2%	2%	1%	1%	3%	5%	3%	6%		1%	2%	2%	4%	1%
1984	3%	1%	2%	3%	1%	2%	2%	1%	1%	3%	6%	2%	7%		1%	2%	2%	4%	2%
1985	3%	1%	2%	3%	1%	2%	2%	1%	1%	3%	6%	3%	7%		1%	2%	2%	5%	2%
1986	3%	1%	2%	3%	1%	2%	2%	1%	1%	4%	6%	3%	6%		2%	2%	2%	4%	2%
1987	3%	1%	2%	3%	1%	2%	2%	1%	1%	4%	7%	4%	3%		2%	2%	2%	4%	2%
1988	3%	1%	2%	3%	1%	2%	2%	1%	1%	3%	7%	3%	2%		2%	3%	2%	4%	2%
1989	4%	2%	2%	3%	1%	2%	2%	1%	1%	4%	7%	3%	2%	1%	3%	2%	2%	5%	2%
1990	4%	1%	2%	3%	2%	2%	2%	1%	2%	4%	7%	3%	4%	2%	3%	2%	2%	4%	2%
1991	4%	1%	2%	2%	2%	2%	2%	1%	2%	4%	6%	3%	4%	3%	3%	2%	2%	3%	2%
1992	4%	2%	2%	2%	2%	2%	1%	1%	2%	4%	5%	3%	3%	2%	2%	1%	2%	2%	2%
1993	3%	1%	2%	2%	0%	2%	1%	1%	3%	4%	4%	3%	3%	2%	2%	2%	2%	2%	3%
1994	4%	1%	2%	2%	1%	2%	1%	1%	3%	4%	4%	3%	3%	2%	2%	3%	2%	2%	3%
1995	4%	1%	2%	3%	2%	2%	1%	2%	3%	3%	4%	3%	4%	2%	2%	3%	2%	3%	3%
1996	4%	2%	3%	3%	3%	2%	1%	2%	3%	4%	5%	4%	4%	3%	2%	3%	2%	3%	3%
1997	4%	2%	3%	4%	3%	3%	1%	2%	3%	4%	4%	4%	5%	3%	3%	3%	2%	4%	3%
1998	4%	2%	3%	4%	4%	3%	2%	2%	3%	3%	4%	4%	4%	3%	2%	3%	2%	4%	3%
1999	5%	2%	3%	4%	4%	3%	2%	3%	4%	3%	3%	4%	5%	4%	3%	3%	2%	4%	3%
2000	6%	2%	3%	4%	6%	3%	2%	4%	4%	3%	4%	4%	9%	4%	3%	4%	3%	4%	3%
2001	4%	3%	3%	3%	4%	3%	1%	3%	4%	4%	4%	4%	9%	3%	3%	3%	3%	4%	2%
2002	5%	2%	3%	3%	4%	3%	1%	3%	4%	3%	3%	3%	8%	3%	3%	2%	3%	3%	2%
2003	5%	2%	3%	3%	3%	2%	1%	3%	4%	3%	3%	3%	8%	3%	3%	3%	3%	3%	2%
2004	6%	2%	3%	4%	4%	3%	2%	3%	4%	3%	4%	3%	10%	3%	3%	3%	2%	3%	2%
2005	6%	2%	3%	4%	3%	3%	2%	3%	3%	3%	4%	4%	12%	3%	4%	4%	3%	3%	3%
2006	2%	4%	4%	4%	3%	3%	2%	2%	4%	3%	5%	3%	12%	4%	4%	4%	3%	4%	3%

Source: OECD data (www.sourceoecd.org)





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