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ANNEX 18

THE DEBT-EQUITY BIAS - CONSEQUENCES AND SOLUTIONS

1. INTRODUCTION: THE DEBT-EQUITY BIAS AND THE FINANCIAL CRISIS.

The tax deductibility of interest payments in most corporate income tax systems coupled with no such measure for equity financing creates at least two types of tax distortions (These problems are well-known and have been analysed in European Commission, 2010, chapter 4).

First, it may lead to too-high leverage. In the context of the previous crisis, the debt-equity distortions did not create the financial crisis but it leaned in the wrong direction and may have aggravated it (Shaviro, 2011; Shackelford, Shaviro and Slemrod, 2011; IMF, 2010; Hemmelgarn and Nicodeme, 2009). This could lead to liquidity constraints, especially in times when banks tend to restrict their credit supply. A well-designed tax base that reduces the leverage distortion could make companies less vulnerable to a short-term reduction in credit available on the capital market. There is indeed empirical evidence that the leverage of companies is indeed influenced by taxes. The debt-bias may also have lead to the issuing of hybrid instruments that blend characteristics of debt and equity, such as convertible bonds. These instruments qualify as debt and therefore allow for the deduction of interest paid but have equity-like characteristics. The instruments also tend to reduce the transparency and accountability of corporate financing policies. However, there are so far no empirical studies on the magnitude of these effects. Second, this distortion in financing exacerbates opportunities to shift and decrease reported profit via debt-shifting or the use of hybrid instruments.

Correcting the debt bias may therefore lead to beneficial effects. It is peculiar, in the present context of seeking corrective taxes to curb risk that the current corporate tax system actually contains tax distortions that do the opposite and provide incentives to take up too much debt.

The corporate tax bias interacts with several other non-tax determinants of corporate structure and with taxes at the personal and cross-border level. The next sections review these two aspects in turn. Next, we will analyze the extent and size of these distortions as well as their impact on welfare. We will stress the specific context of the financial sector. The following section will review policy options to correct this bias and will also stress some of the possible consequences. Several recent works have been carried out on this topic and we draw mainly on them. In particular, de Mooij (2011) and Graham (2011) offer a comprehensive discussion of the issue, while Shaviro (2011) studies the bias in the context of the financial crisis.

2. THE DETERMINANTS OF CORPORATE STRUCTURE.

The standard Modigliani-Miller (1958) theorem states that in the absence of agency and bankruptcy costs, of asymmetric information, of taxes, and under the assumption of market efficiency, a firm is indifferent between various sources of financing (either issuing stocks or

issuing debt)¹. In this environment, the value of an unleveraged firm is equal to the value of a leveraged firm: $V_L = V_U$.

In most corporate tax systems, however, debt-financing is favored via the tax-deductibility of interest payments. When this aspect is taken into account, the value of the leverage firm is equal to the value of the unleveraged firm, augmented by the tax shield value of debt. This tax shield equals the amount of debt times the corporate tax rate: $V_L = V_U + tD$. Hence, a company can maximize its value by being financed 100% by debt.

There are however other theoretical reasons why debt and equity-financing may be distorted. First, highly-leveraged firms are more vulnerable and face bankruptcy costs (sometimes also called cost of financial distress) which increase with the level of debt. In such case, the optimal debt level is set to the point where the marginal benefit of an additional unit of debt (here the tax rate t) equals its marginal cost (here the marginal bankruptcy cost). Second, so-called agency costs may lead to an increased use of debt. Agency costs reflect conflicts of interest between shareholders and, on the one hand, managers and, on the other hand, bondholders. In the first case, asymmetry of information on the situation of the firm gives incentives to shareholders to promote debt financing as this restricts the Free Cash Flow available in the company.² This is because the Free Cash Flow usually derives from rent-generating activities and provides managers with funds to invest in wasteful investments. It also creates incentives for managers to make the firm grow beyond its optimal size, notably because their remuneration may be linked to the size of sales. Managers could promise to give back this Free Cash Flow to shareholders via higher future dividends but the dividend policy can easily be reversed. Therefore, by substituting debt for equity, managers are bound to pay out the cash flows because bondholders (who can be shareholders) have the right to take the firm to court. This can be a determinant of capital structure of companies (Jensen, 1986). In the second case, shareholders may have an incentive to convince managers to finance by debt because they can then shift part of the bankruptcy cost to bondholders. Third, debt issuance (alike dividend policy) has signaling effects. The direction of this effect is nevertheless disputed both theoretically and empirically. On the one hand, it can indicate that the firm is confident about its repayment capacity (Ross, 1977). On the other hand, it can indicate that the firm lacks internal resources and is dependent to debt markets, which can lead to adverse selection problems in the form of a lemons market for debt. This led to the pecking order theory of Myers and Majluf (1984) and Myers (1984) that firms will favor internal equity over debt and debt over external equity (because as new shares shall not be issued if a firm is undervalued, the issuance of new shares is interpreted as a sign that the company is overvalued). In that case, there would be too little borrowing in general but also an asymmetry with too little borrowing from good firms and too much from bad firms. Stiglitz and Weiss (1981) provide a model of credit rationing based on this adverse selection. However, de Mooij (2011) points to two potential problems. First, the same rationing could affect equity markets as shown by de Meza and Webb (1987) and tax discriminating in favor of debt would then increase the distortions. Second, the tax distortion favors mostly those firms that have access to credit and are highly leveraged. Graham and Leary (2011) show indeed that firms vary widely in their use

¹ In addition, its dividend policy shall not matter.

² Free cash flow is cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital (Jensen, 1986)

of debt. Taking data from Compustat annual files from 1974 through 2009, they show that highly-leveraged companies (quintiles 4 and 5 compared to quintiles 1 and 2) are “*significantly larger, older, have more tangible assets, lower market-to-book ratios, less volatile earnings, higher marginal tax rates and less R&D intensive*”. This is particularly true for firms with long maturity of debt. The relationship is however non-linear since *very* highly-leveraged firms (quintile 5) are smaller, younger, have higher market-to-book ratios and more R&D-intensive than those that are highly-leverage (quintile 4). At any rate, it shows that the across-the-board deductibility of interest can create distortions across types of companies.

3. IS THERE A RATIONALE FOR DISCRIMINATING?

Some of the aspects review here above may offer theoretical economic rationales for using the tax system to discriminate between debt and equity. As pointed by De Mooij (2011), however, the withering borderline between debt and equity instruments alters the relevance of these theories. No strong externality would call either for a bias in favor of debt. The financial crisis stressed rather the opposite.

In the majority of tax systems, the more so with the use of sophisticated instruments, the distinction between debt and equity is subject to the application of several criteria such as the degree of variability of the claim, the control of the size of the payment by the management, the priority put on cash-flows, the type of maturity (fixed or variable / infinite), etc. Devereux and Gerritsen (2010) show that there are no objective legal reasons to distinguish between both sources of financing. On the contrary, the rise in administrative complexity would rather call for a similar tax treatment. The distinction could possibly originate in an artificial distinction made by the traditional view that dividends were merely seen as the remuneration of capital while interest payments constitute a business cost.

As reported by EEAG (2011, chapter 5), the issue of high leverage in the banking sector has been subject to research. Some of the arguments to justify this high debt point to the role of debt to discipline managers (the agency cost discussed here above), the increased funding costs because equity is more risky, and a possible credit rationing. Admati et al. (2010) and Hellwig (2010) find that these fears are unlikely to materialize and that in such case they would internalize the externalities imposed on taxpayers and creditors. In addition, the pronounced use of sophisticated products by financial institutions allows them to take advantage of differences of treatment between taxation and regulatory purposes. This is the case for example of contingent convertible capital (also known as ‘CoCo’ or “contingent core Tier-1 capital”). This is a form of debt (and treated as such for tax purposes) that will convert into shares once the financial institutions capital requirement falls under a reference level. Some countries may count them as capital, leading to a double-benefit for the financial institution and an incentive to use such instruments.

4. INTERACTION WITH OTHER TAXES.

One possible rationale for favoring debt over equity via corporate taxation could lie in the analysis of taxation at shareholder and bondholder levels. Personal income taxes indeed discriminates as interest received is often taxed in full at personal income tax rates while capital

gains and dividends are often taxed at lower separate final withholding tax rates (Gordon, 2011)³. There is also evidence that the level of debt is negatively related to the personal tax penalty (Graham, 1999). According to Graham (2011), the empirical evidence implies that the PIT disadvantage is between 1/3 and 1/2 of the CIT advantage, so that overall the tax advantage of debt remains.

There is finally evidence that the tax advantage of debt fuels profit shifting activities. For example, Huizinga, Leaven and Nicodeme (2008) review economic literature that consider the debt finance of multinationals with either parent companies or subsidiaries in the United States⁴, Germany⁵, Canada⁶ and the EU⁷. This literature is consistent with tax minimization objectives of firms using their financial structure and interest and income flows across borders. Taking data from 32 European countries between 1994 and 2003, they find that a 10% increase in the tax rate increases leverage by 1.8%. For multinationals with two equal-size establishments in two countries, a 10% increase in the tax rate in one country leads to an increase in leverage of the company located in that country by 2.4% and a decrease in leverage in the affiliated foreign company by 0.6%, indicating debt-shifting.

In a related fashion, De Mooij (2011) looks at the effect of taxes on gross bank profitability and finds semi-elasticities of between -6 and -8.5, which is very large compared to non-financial firms and which makes him conclude that banks seem to engage in more tax avoidance than non-financial firms do.

5. EXTENT AND SIZE OF THE DISTORTIONS.

Because of the tax deductibility, most tax systems in Europe actually provide a subsidy when financing via debt. In other words, they bear a negative effective marginal tax rate (see graph hereunder). This indicates that projects that would not be profitable in the absence of taxation become profitable thanks to the subsidy. This creates a large distortion in investment.

³ Nevertheless, in many Member States, interest income from banks from special savings or investment accounts is exempt.

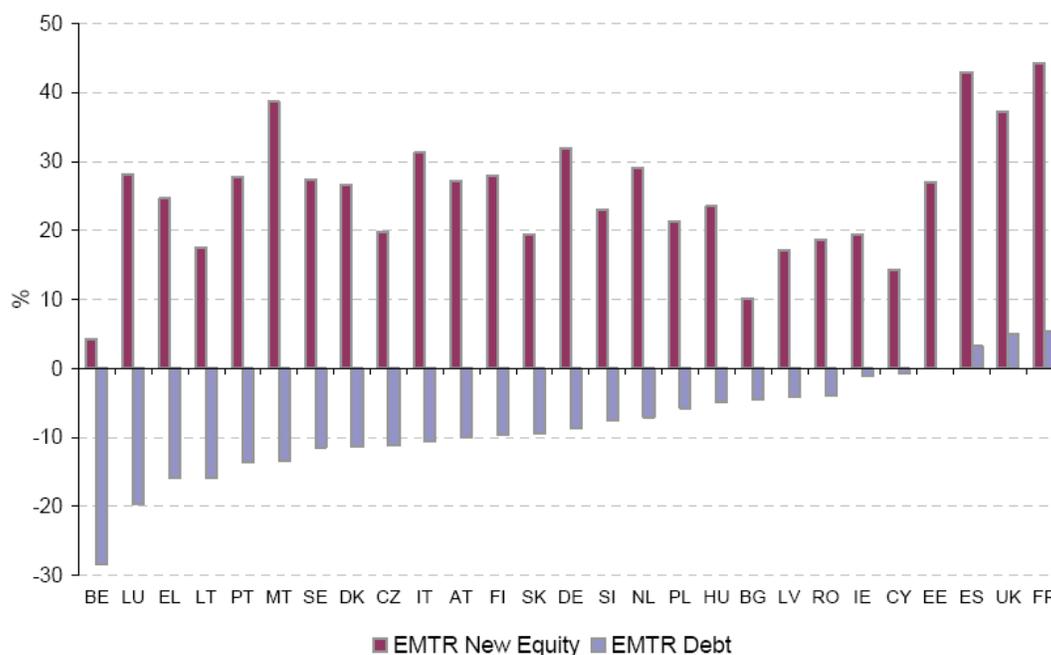
⁴ Hines and Hubbard (1990), Collins and Shackelford (1992), Froot and Hines (1992), Grubert (1998), Altshuler and Grubert (2003), Newberry and Dhaliwal (2001), Desai, Foley and Hines (2004), Mills and Newberry (2004).

⁵ Ramb and Weichenrieder (2004) and Mintz and Weichenrieder (2005).

⁶ Jog and Tang (2001)

⁷ Moore and Ruane (2005).

Graph 4.1: Effective Marginal Tax Rate (EMTR) of debt vs. new equity financed investment in EU27 countries



Source: Source: European Commission (2010e).

Source: European Commission (2010)

Reacting to this benefit, the economic literature provides ample evidence that of a positive correlation between the level on leverage and the level of corporate taxation. It goes beyond the aim of this section to review the existing literature exhaustively. Such a review is proposed by De Mooij (2011) and uses 267 tax elasticities found in 19 studies to perform a meta-analysis. The mean tax elasticity across studies is 0.65 (the median stands at 0.51) but with a large standard deviation of 0.57. Interestingly, 78% of the regressions have results that are significantly different from zero. The results also indicate that the response increases over time and that the relationship may not be linear. Finally, internal debt seems more responsive than external debt to taxation and short-term debt is more responsive than long-term debt. Translated into their impact of debt to asset ratio, the consensus elasticity from De Mooij (2011) lie at 0.28 for broad measures of financial leverage⁸ and 0.17 for narrow measures.

De Mooij (2011) also uses a sample of 14,377 banks from 82 countries across Europe, Asia and the Americas between 2001 and 2009. He finds that on average, the leverage ratio of banks is 88.1%, compared to a ratio of between 40 and 60% for non-financial firms. This is strong indication that the leverage issue is more acute for banks. Next, he studies the impact of taxes on

⁸ i.e. including non-debt liabilities (reserves, accounts payable to creditors, insurance and non-interest bearing liabilities).

the capital structure of banks and finds effects of corporate taxation that are either similar or slightly lower than for non-financial firms. Such similarity is confirmed by Gropp (2011). Given the regulatory capital constraints imposed on financial institutions, this effect appears significant.

This large effect is not without consequences. Indeed, Adrian and Brunnermeier (2010) define systemic risk as CoVaR, the value at risk (VaR) of the financial system conditional on institutions being under distress. With this measure, the contribution of an individual institution to systemic risk is the difference between CoVaR conditional on the institution being under distress and the CoVaR in the median state of the institution. They show that leverage (alongside relative size and maturity mismatch) exerts an effect on systemic risk. In their regressions, they find that *“the coefficient of -0.164 for the leverage forecast at the two-year horizon implies that an increase in leverage (say, from 15 to 16) of an institution is associated with an increase in systemic risk of 16.4 basis points of quarterly asset returns at the 5% systemic risk level. For an institution that has \$1 trillion of total market-valued assets, this translates into \$164 billion of systemic risk contribution.”*(Adrian and Brunnermeier, 2010, page 23).

6. IMPACT OF WELFARE.

Because of the tax bias, debt financing creates a welfare cost. This welfare cost has been estimated by Weichenrieder and Klautke (2008) at between 0.08% and 0.23% of GDP, while Gordon (2011) estimates it at about 0.25% of GDP. As rightly pointed by De Mooij (2011), these estimates assume an average elasticity that applies to a representative firm and fails to take into account the heterogeneity of responses and hence the additional welfare costs due to misallocations. They also fail to include the larger welfare costs of the negative externalities of using debt such as the systemic risk, the probability of default and the social costs of business cycle fluctuations. Finally, they do not take into account the distortions created by debt-shifting activities and the misallocation due to international tax arbitrage as well as the administrative and compliance costs (De Mooij, 2011).

7. POLICY OPTIONS TO CORRECT THE DEBT BIAS.

Several policy options are on the table to correct the tax bias towards debt financing. Some of them are already used in practice, intentionally or not. For example, reducing corporate tax rates decreases the value of the tax shield for debt. Another option is to implement thin capitalization rules. The favourable tax treatment of debt offers opportunities for corporate groups to pursue debt-shifting strategies to minimize their total tax burden. To counter these avoidance strategies, countries have increasingly adopted thin capitalization rules. Thin capitalization rules are formal restrictions on the deductibility of interest paid to by corporations that have excessive debt compared to their equity or assets. They vary widely in terms of their definitions and scope but their use has developed dramatically since the 1990s. They may lead to the disallowance of (excess) interest deductibility or, in some cases, to requalification as dividends. Several papers have found them effective to curb leverage (see e.g. Buettner et al., 2006). Shaviro (2011) also proposes worldwide interest allocation rules for multinationals but notes the technical difficulties of this. He also mentions the possibility of applying full dividend exemption or imputation. We

have seen however that this may not suffice to correct the debt bias. In addition, it is only a corrective measure which does not target the core of the problem at the corporate level.

In principle, two alternative corporate tax systems exist that might eliminate the distortion between debt and equity by treating both sources of finance in the same way: an Allowance for Corporate Equity (ACE) or a Comprehensive Business Income Tax (CBIT)⁹. The ACE would grant a deduction for return on equity (new or total equity) as it is the case for interest paid and would hence reduce or abolish the tax advantage of debt. The CBIT system would achieve the same result by denying interest deductibility at the corporate income tax. ACE and CBIT have been discussed extensively in the economic literature (see e.g. De Mooij and Devereux, 2009, 2011).

If designed in a revenue-neutral way, the CBIT would increase the tax base and allow decreasing the tax rate. Many recent policies have advocated in favor base-broadening-cum-rate-cut policies. This reasoning is largely based on the fact that the efficiency losses measured by deadweight losses are proportional to the square of the tax rate. It is also based on the idea that profit-shifting, investment and location of companies are somewhat linked to corporate tax rates. In such case, one shall advocate for a CBIT. Several aspects are however missing in this analysis. First, the application of CBIT by other countries erodes the competitive benefit of a lower tax rate, assuming that other countries will reduce their own. Second, while there are indications that profit-shifting activities are mostly driven by the statutory tax rates, investment and location could be driven by effective (respectively marginal and average) tax rates, which include other elements of the tax system. Next, the analysis differs if there are rents. This is because only the tax rate will affect the rents. Increasing the base and decreasing the rent shift therefore the tax burden from rents towards normal return. If rents are immobile (e.g. they are location-specific), this would create macroeconomic losses. If rents are mobile (e.g. they are company-specific), a CBIT could attract those rent-making companies and create macroeconomic benefits. A CBIT is not without problems. As pointed by Shaviro (2011), CBIT carries some difficulties such as how to treat pre-existing debt and how to treat shareholder capital gains upon selling equity as exemption could create opportunities for tax avoidance. In addition, suppressing the interest deductibility can impact on hedging. It would also increase the cost of capital and, all else equal, decrease firms values (Graham, 2011). The effect on bankruptcy is also unclear. On the one hand, reducing leverage reduces the probability of defaulting but on the other hand, the increase in the cost of capital would increase the probability of defaulting. In the precise context of the financial sector taxation, De Mooij (2011) points to a possible undertaxation under a CBIT. This is because under a CBIT, interest paid is not deductible but interest received would not be taxed. The (untaxed) difference is exactly the margins of banks on the deposits-loans activity. Borrowers would face the full tax burden, including the bank's margin. It would in addition create a distortion between untaxed domestic banks and taxed foreign ones.

If designed in a revenue-neutral way, an ACE would achieve the opposite result than a CBIT by decreasing the tax base and increasing the rate. The discussion hereabove applies mutatis mutandis and again depends on the type of rents. An ACE does not need to be designed in a revenue-neutral manner. For example, the Belgian reform towards an ACE left the corporate tax

⁹ Initially proposed by the US Treasury in 1992.

rate unchanged and was a way instead to replace specific regimes affecting the tax base. In such case, De Mooij (2011) calculates that the fiscal cost is about 15% of CIT revenues or about 0.5% on average and when increased investment and employment effects are factored in. The cost also depends on whether the ACE applies to new investment only or to the total stock of capital, in which case an ACE can represent a windfall. A non-neutral ACE reform also carries important political economy aspects as it can be perceived by the public opinion as a gift to companies. An ACE also offers some important additional advantages. First, by allowing companies to deduct their cost of capital, it does not tax the normal return to capital and taxes rents only. It is therefore non-distortive for investment. It therefore bears similar properties as a cash-flow tax. An interesting variant of the ACE is the Allowance for Corporate Capital which allow for the deductibility of a notional risk-free return to capital irrespective of whether it is in the form of equity or debt. It corresponds to the idea of a Business Enterprise Income Tax (BEIT).¹⁰

Despite the advantages of financing neutrality, ACE or CBIT reforms can be found only in very few Member States.¹¹ The economic analysis shows however that moving to such systems could potentially bring substantial benefits in terms of reducing leverage, systemic risk and profit-shifting. In this context, an ACE seems to carry the more interesting features.

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¹⁰ Boadway and Bruce (1984), Kleinbard (2007, 2011). Both ACE and CBIT systems are appealing due to their efficiency properties with regard to the financing decisions of companies. In a way, a ACC corresponds to a combination of the two systems, i.e. a system that imposes limitations in the deductibility of interest but allows for a partial deduction in the return on equity, to respect revenue-neutrality. A combined reform of a partial ACE and a partial CBIT mitigates the discrimination between debt and equity in both directions. At the same time, the implications for corporate tax revenue are offsetting. Therefore, one can design a reform package of a partial ACE and partial CBIT that is revenue-neutral for the government and which is still neutral with respect to the financial structures of companies. First, this would preserve financing neutrality. Secondly, it would reduce possible negative effects of each of the pure ACE or CBIT systems. De Mooij and Devereux (2009, 2011) look at the design of corporate tax bases with respect to financing neutrality using ACE and CBIT systems as well as a combination of the two. The investigation of the tax distortions of investment financing and the possible measures against these distortions have been analyzed in a simulation model. The authors present simulations of different reform options, as well as comparing the implementation of ACE and CBIT as pure systems with a combination of both. These different types of reforms are investigated both for the case of individual implementation by each EU country - with the others sticking to their current tax systems - and for the case of a simultaneous implementation by all Member States. Under the assumptions of the model, it is shown that combining the two ACE/CBIT systems leads to the same neutrality in investment financing as each single reform but also improves welfare, both in the case of unilateral reforms and of EU-wide reforms.

¹¹ Belgium implemented an ACE system; Italy had ACE elements in its tax system but removed them after a short period. Germany limited interest deductibility which is a move towards CBIT. Italy has also limited the deductibility of interests thus moving towards a CBIT. Estonia has a CBIT system which does not allow interest deduction. Austria had implemented an ACE system from 2000 until 2003. It was replaced by a favorable tax treatment for retained earnings from 2004 until 2009 for individuals. As from 2010, an indirect instrument for encouraging the accumulation of equity of businesses of individuals (a tax free profit amount) was introduced. Finally, Latvia introduced an ACE as from 1 January 2009, in the case where a company is not distributing dividends partially or fully, taxable income is reduced by the amount of interest, which the company would have to pay for an equal loan.

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