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Corporate Taxation, Leverage, and Macroeconomic Stability

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A key challenge for economic policy today is to make the financial system more resilient. The literature finds that high indebtedness (or: leverage), both in the financial and in the real sectors, is a danger to macroeconomic stability and growth. Moreover, the design of the corporate tax system is an important determinant of leverage: in many countries interest paid on debt is tax-deductible while the return on equity is not, such that tax systems incentivize debt-type financing and, hence, leveraging. This article summarizes the debate about the implications of corporate taxation for leverage and economic stability. Proposals for addressing the debt bias of taxation are also presented.

Following the Global Financial Crisis, interest in the drivers of excessive leverage rose, based on the observation that indebtedness had massively increased during the buildup to the crisis. Several policy measures have been implemented since then, including the [Basel III](#) capital regulations that limit bank leverage ([Financial Stability Board 2015](#)), and macro-prudential policies aimed at preventing (sectoral) credit booms ([ESRB 2016](#)). While regulatory adjustments have helped reduce leverage within the financial sector, the global debt-to-GDP ratio excluding financial firms continues to rise ([Buttiglione et. al 2014](#)).

Leverage and macroeconomic stability

Current research has identified a destabilizing effect of excessive leverage. While the focus of the debate in Europe has centered on *public* debt in recent years, the origins of the Global Financial Crisis, which followed a housing boom, are found mainly in *private* credit ([Jordà et al. 2014](#)). [Schularick and Taylor \(2012\)](#) and [Jordà et al. \(2013\)](#) present evidence that credit growth – and hence leverage – is an important predictor of financial crises. While credit expansions are also important for boosting innovation, past financial crises show that financial instability is often the result of “credit booms gone wrong”. In a similar vein, [Brunnermeier and Schnabel \(2014\)](#) point out that lending booms and high leverage favor the emergence of asset price bubbles and deepen economic downturns – which can, in turn, harm the stability of the financial sector.

But why is a high share of debt-financing dangerous? The more indebted a firm is, the more sensitive it becomes to adverse shocks, such that its probability of default rises. When firms get more risky, banks extending credit to these firms can also become more vulnerable to shocks. In addition, [Adrian and Brunnermeier \(2011\)](#) show that bank leverage increases not only the individual probability of default, but also contributes to [systemic risk](#) and, thus, to financial instability.

The debt bias of taxation

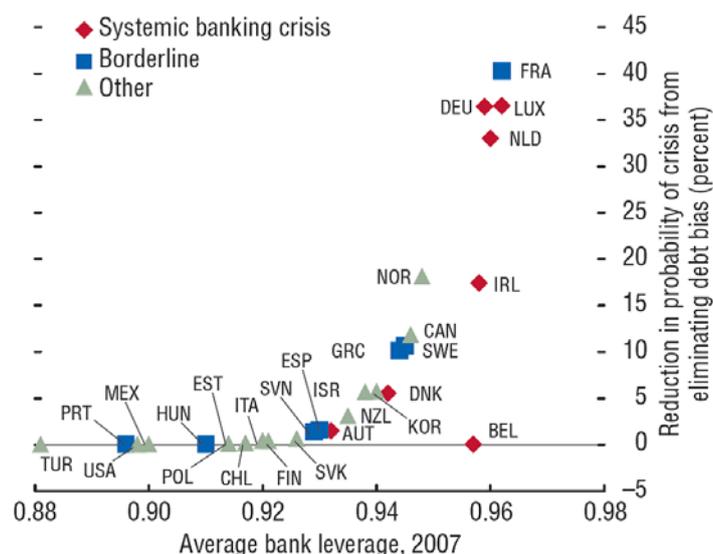
Regarding policy-related determinants of high leverage, different studies show that the design of the tax system is an important driver of firms' capital structure (Feld et al. 2013). Most countries' tax systems discriminate against equity because interest expenses on debt are tax-deductible, while a similar deduction for the cost of equity is rarely ever granted. Therefore, interest payments shield firm profits from taxes, such that a firm can increase its value by leaning its funding mix toward more debt instead of equity (Modigliani and Miller 1963).

In most EU-countries, tax systems significantly discriminate against equity, such that the debt bias of taxation is quite large (European Commission 2013, Figure 4.1). Hence, corporations are incentivized to take on excessive leverage over what would be optimal under a non-distortive taxation system (Financial Stability Board 2015). According to De Mooij (2012), the social welfare loss related to the debt bias of taxation is probably substantial, when considering not only the welfare costs related to distortive taxation, but also the negative externalities of the debt bias, like increased systemic risk and macroeconomic instability.

Implications for nonfinancial and financial firms

Empirical analyses suggest a sizable impact of taxation on firms' capital structure, both in the nonfinancial and financial sectors (Fatica et al. 2012, Langedijk et al. 2015). Overall, the literature identifies a positive link between corporate income tax rates and leverage. Summarizing information from 19 empirical studies, De Mooij (2011) concludes that the median tax elasticity of corporate leverage is 0.5, meaning that a 10% increase in the corporate tax rate (e.g. from 30 to 33%) leads to a 5% increase in leverage (e.g. from 60 to 63%).

Figure 1: Debt bias of taxation and the probability of crisis



Sources: IMF staff calculations using results in de Mooij, Keen, and Orihara (2013) and identification of systemic banking crises of Laeven and Valencia (2010).

Note: Average bank leverage ratio is defined as the ratio of total leverage to total assets.

Source: International Monetary Fund (2013) "Fiscal Monitor", Figure 3.1

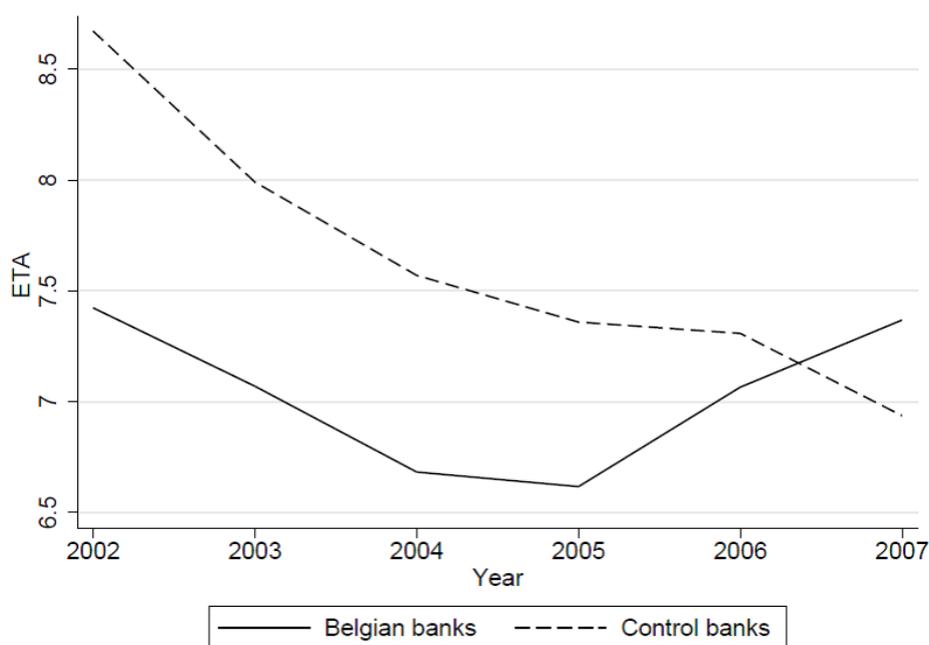
The debt bias of taxation also affects financial institutions. Prior to the Global Financial Crisis, financial firms were typically excluded from the analysis, the reason being that they face significantly different funding decisions than nonfinancial corporations: For example, banks are subject to regulatory capital requirements to which nonfinancial firms are not ([Langedijk et al. 2015](#)). Yet, banks often do not hold the minimum required capital, but rather operate under a higher capital ratio: [Gropp and Heider \(2010\)](#) show that the impact of corporate income taxes on the leverage of nonfinancial firms and banks is similar - as long as banks are not too close to the regulatory capital requirement. Similarly, [Hemmelgarn and Teichmann \(2013\)](#) present evidence that the capital structure of banks reacts to tax changes.

[Langedijk et al. \(2015\)](#) stress that the negative impact of the tax-induced debt bias is particularly critical for banks. Their findings suggest that reducing the preferential tax treatment of debt – and hence bank leverage - could significantly reduce the public costs of financial crises. In addition to the costs, the debt bias of taxation can also affect the probability of crises. Based on calculations from the IMF ([International Monetary Fund 2013](#)), Figure 1 illustrates that especially in those countries where banks were highly levered, eliminating the tax preference of debt could have reduced the probability of crisis.

Addressing the debt bias of taxation

To mitigate the tax preference of debt over equity, several measures have been put forward. Building on the observation that corporate leverage increases with the tax rate, a first suggestion is to cut corporate tax rates ([Fatica et al. 2012](#)). This would decrease the value of the tax shield for debt. Yet, evidence from the US suggests that while corporate leverage significantly rises in response to tax increases, it does not respond to tax cuts ([Heider and Ljungquist 2015](#)). Consequently, cutting tax rates may not effectively reduce leverage.

Figure 2: Evolution of the equity ratio for Belgian banks and the control group of banks



Source: Schepens (2014) "Taxes and bank capital structure", Figure 1

When aiming at establishing tax neutrality between debt and equity, two main measures have been proposed: (1) an Allowance for Corporate Equity (ACE); and (2) a Comprehensive Business Income Tax (CBIT).

A number of countries, for example Belgium, Brazil, Italy, and Latvia have introduced an **Allowance for Corporate Equity (ACE)**. ACE systems mitigate the tax preference of debt over equity by allowing companies to deduct a notional interest rate on their corporate equity (Corit Academic 2014). For the Belgian case, [aus dem Moore \(2013\)](#) shows that the introduction of an ACE led to a reduction in leverage. [Panier et al. \(2013\)](#) confirm that nonfinancial firms - especially large and new ones - have become better capitalized in response to the reduction in the tax preference of debt. [Princen \(2012\)](#) finds that leverage of nonfinancial firms declined by 2-7%. [Hebous and Ruf \(2015\)](#) note that the Belgian ACE reduced leverage of multinational affiliates by 3-5 percentage points. In contrast, [Klemm \(2007\)](#) argues that, in Brazil, the introduction of a similar system led to higher dividend payments and an increase (instead of a fall) in debt-equity ratios, with dividends being paid through increasing debt. Nonetheless, this may be due to the peculiarities of the Brazilian tax system.

Regarding the effects of an ACE on financial firms, [Schepens \(2014\)](#) presents evidence that, following the introduction of an ACE in 2005, Belgian banks increased their equity ratios relative to other European banks (Figure 2). Since the ACE works as a tax shield for equity, it makes equity funding more attractive. It is important to note that it does not increase equity ratios by merely decreasing lending activities, which would negatively affect the real sector. Moreover, the tax relief for equity reduced banks' risk taking incentives, especially for the weakly capitalized banks ([Schepens 2014](#)). Due to its immediate impact on financial stability, [De Mooij \(2012\)](#) argues that an ACE seems even more promising in the banking sector than in the nonfinancial sector.

Yet, the introduction of an ACE also brings about complications: it narrows the tax base. If the resulting loss of revenue needs to be compensated for, increasing corporate income taxes could be an option. This, in turn, is a disadvantage for the country introducing the novel system in a globalized world where capital is internationally mobile ([Klemm 2007](#)). Possibilities to reduce revenue losses could include international tax coordination or limiting the allowance to *new* equity, as in Italy ([De Mooij 2012](#)).

Alternatively, the deductibility of interest paid on debt could be abolished under a **Comprehensive Business Income Tax (CBIT)**. In this case, the tax base increases, such that corporate income tax rates could potentially be lowered ([Fatica et al. 2012](#)). However, denying the tax-deductibility of interest payments could have negative effects on investment in the short term, as it makes debt-financing more expensive.

Several countries have implemented tax rules in the spirit of CBIT. For example, according to [Buettner et al. \(2012\)](#), about two-thirds of OECD countries have applied *thin capitalization rules* that restrict interest-deductibility for firms with high leverage. The authors find that these rules have helped to reduce the leverage of multinationals' subsidiaries. [Blouin et al. \(2014\)](#) stress that these capitalization rules are only effective if restrictions are automatic and do not allow for government interventions. Following a similar logic, *earnings-stripping rules* aim at limiting interest deductibility when net interest expenses exceed a certain threshold. They are applied in several European countries ([European Commission 2015a, 2014, 2013](#)).

Conclusion

In many countries, tax systems still incentivize over-indebtedness for both nonfinancial and financial firms. This issue recently showed up on the policy agenda in the realm of the debate about a European [Capital Markets Union](#): According to the [European Commission \(2015b\)](#), the tax-induced debt bias may add to European firms' tendency to heavily rely on debt and bank financing – which is shown to impair macroeconomic stability and growth.

The tax deductibility of interest payments has not been adequately addressed up until now, despite some countries' efforts to restrict the tax subsidies for debt ([European Commission 2013](#)). While the prevailing debt bias of taxation works against regulatory efforts made to reduce leverage, ACE systems support capital regulations in their pursuit for a more stable financial sector ([De Mooij et al. 2013](#)).

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