# ZEW policy brief

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## Fiscal Investment Climate and the Cost of Capital in Germany and the EU

### Essential Issues

**Research Question and Relevance**

Encouraging private investment in the EU is currently a primary goal of the European Commission. However, the effectiveness of public policies to stimulate private investment – such as a European Fund for Strategic Investments, which was recently proposed by the president of the European Commission, Jean-Claude Juncker – may be undermined by poor conditions for private investment in individual member states. In particular, the tax systems may negatively impact private investment. A key metric used to evaluate the impact of taxation on investment is the cost of capital. The cost of capital is defined as the minimum pre-tax real rate of return on an investment, given a post-tax real rate of return of an alternative capital market investment. In this policy brief, we address the following questions. First, how does the fiscal investment climate in Germany, in terms of the cost of capital, currently compare to that of other member states of the European Union? Second, how has the cost of capital changed over the past 15 years? And third, what would be the effect of currently debated tax policy measures (e.g. the re-introduction of reduced-balance depreciation) on the cost of capital in Germany?

**Key Messages**

Measured in terms of the cost of capital, the investment climate in Germany currently ranks 24th out of the 28 EU member states. However, this represents an improvement over the year 2000, when Germany ranked 27th. In fact, among the EU-28, Germany has seen the most significant decline in the cost of capital between 2000 and 2014, from 7.7% to 6.5%. This decline is mainly attributable to considerable reductions in the country's corporate tax rate. The comprehensive corporate tax reforms enacted in 2001 and 2008 thus appear to have succeeded in improving the investment climate in Germany. Nevertheless, in comparison to most other EU member states, the cost of capital in Germany is still quite high. In order to further improve the investment climate in Germany, the (temporary) re-introduction of reduced-balance tax depreciation for movable fixed assets is currently being discussed. However, our analysis indicates that this would only slightly decrease the cost of capital from 6.5% to 6.3%. When we additionally account for the personal taxation of individual investors, a different picture emerges: The overall cost of capital in Germany currently amounts to 6.0%, and could be reduced considerably by taxing dividends and capital gains at lower rates than interest income.

# Methodology

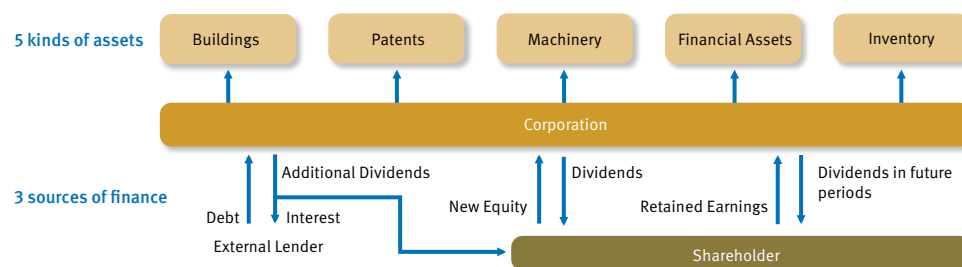To analyse the incentive effects of taxes on investment we use the methodology proposed by Devereux and Griffith. This approach is based on neoclassical investment theory and assumes that companies invest in capital as long as the (decreasing) marginal returns cover the marginal costs – that is, the cost of capital. The cost of capital is the minimum required pre-tax real rate of return from a hypothetical investment, given a post-tax real rate of return of an alternative capital market investment. The cost of capital is commonly used to analyse the effects of taxation on marginal investment decisions, such as on the scale of investment in a given country. If the cost of capital exceeds the real capital-market interest rate, which we assume to be 5%, this indicates that taxation exerts a negative effect on the volume of real investment. The model allows one to take into account the most relevant provisions of corporate tax systems in a systematic way, most notably the corporate income tax rate, depreciation allowances, local profit taxes, real estate taxes, and other non-profit taxes.

The Devereux & Griffith model assumes a forward-looking perspective in the sense that it models the tax burden as perceived by companies facing a hypothetical investment decision. As the hypothetical investment, the model considers a mix of five different kinds of assets and differentiates between three different methods of financing the investment.[1] Figure 1 illustrates the structure of the model.[2]

## Figure 1: Structure of the model



The analysis of the effects of taxation on investment decisions is based on the assumption that companies act in the interests of their shareholders in order to maximise their wealth. This requires taking into account personal taxes on dividends, capital gains, and on the return from an alternative investment in the capital market. This approach does, however, raise practical difficulties, as shareholders are likely to reside in different jurisdictions or may even be tax-exempt institutional investors. It is therefore unclear what the relevant personal tax system is. Thus, the central case examined in the following only accounts for corporate taxation. In a later step we additionally take into account taxation at the level of individual investors.

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1 The following weights are applied: a uniform 20% for the different types of assets (industrial buildings, machinery, patents, inventory, financial assets); sources of finance: 55% retained earnings, 10% new equity, and 35% external debt. Additional model assumptions: real capital market interest rate: 5%, inflation rate: 2%, economic depreciation rates: 3.1% for buildings, 17.5% for machinery, 15.35% for patents, 0% for inventory and financial assets

2 For further details on how the cost of capital is calculated, see Devereux, M.P. and R. Griffith (1999), The taxation of discrete investment choices, IFS Working Paper Series, W98/16, London; Devereux, M.P. and R. Griffith (2003), Evaluating tax policy for location decisions, International Tax and Public Finance, vol. 10(2), pp. 107-126; Schreiber, U. et al. (2002), Measuring the Impact of Taxation on Investment and Financing Decisions, Schmalenbach Business Review, vol. 54(1), pp. 2-23. For an overview of the economic model assumptions, see Spengel, C. et al. (2014), Effective Tax Levels using the Devereux/Griffith Methodology, Project for the EU Commission TAXUD/2013/CC/120, Final Report 2014, p. B-1.

## Research Results in Detail

**Corporate level**

In 2014 the cost of capital for real investment in Germany was 6.5%. The cost of capital thus exceeds the capital market interest rate, which we assume to be 5%, indicating that taxation exerts a negative effect on the volume of real investment in Germany. As a consequence, Germany currently ranks 24th in the EU-28. The main reason for this poor ranking is Germany's comparably high tax rate on corporate profits, which amounts to approximately 31% (corporate income tax plus the "solidarity surcharge" (*Solidaritätszuschlag*) and local profit taxes). By contrast, the average profit tax rate in the EU is 23.1%.[3]

Only the United Kingdom, Malta, Spain, and France currently have a higher cost of capital than Germany. Comparatively high tax rates on corporate profits are also a main cause of high capital costs in these countries.[4] The only exception here is the United Kingdom, where the real-estate tax burden is the highest in the EU, while corporate profit taxes in the UK are slightly below average, at 21%.

**Current Cost of Capital Ranking of EU Member States**

**Figure 2: Cost of capital (%) ranking of the EU member states (corporate level only), year 2014**



Estonia and Bulgaria top the country ranking with cost of capital figures of 5.2% and 5.3%, respectively. The low cost of capital in Estonia is mainly due to the fact that retained profits are not subject to corporate income tax; only distributed profits are taxed. Similarly, the low cost of capital in Bulgaria can mainly be attributed to the low corporate income tax rate of 10%, which is the lowest among all EU member states. In general, the countries that have joined the European Union since 2005 (the "accession countries" or "EU-13" in what follows) have a lower cost of capital than the old EU member states (5.7% versus 6.2% on average).

Our analysis highlights the fact that the corporate income tax rate is the main driver of the cost of capital in EU member states. Though the rules governing the corporate income tax base are also of relevance, as illustrated by the examples of Belgium, Croatia, and Italy, which rank third to fifth, all with a cost of capital of 5.4%. In Belgium and Italy corporations may deduct notional interest expenses

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3 For an overview of the corporate income tax rates and the overall profits taxes rates (including additionally surcharges and local profit tax rates), see Spengel et al. (2014), pp. A-1 et seq., table A-1.

4 Malta: 35%, Spain: 35.25%, France: 38.93%. In addition to the corporate income tax rate this includes surcharges levied on top of the corporate income tax and other profit taxes. See Spengel et al. (2014), pp. A-1 et seq., table A-1.

for equity capital from their corporate income tax base. This so-called "allowance for corporate equity" offsets the comparably high profit tax rates levied in these two countries (33.99% and 30.9% respectively).[5] In turn, Croatia offers comparably generous tax depreciation allowances for buildings, machinery and patents, in addition to a slightly below-average profit tax rate of 20%.[6]

**Development of Cost of Capital, 2000-2014**

In the EU the average cost of capital declined from 6.3% in 2000 to 6.0% in 2014.[7] As illustrated by Figure 3, in the old EU member states (EU-15), the average cost of capital declined to the same extent as in the accession countries (EU-13), though from a higher level. In Germany, the fall has been particularly pronounced, as the cost of capital declined from 7.7% in 2000 to 6.5% in 2014 – the sharpest reduction among all 28 EU member states. This decline is mainly attributable to the significant reduction in the corporate income tax rate, which was reduced from 40% for retained profits and 30% for distributed profits to a uniform 15% by 2014. Decreasing corporate income tax rates have also been the main driver of cost of capital declines in the other EU member states. Since 2000 the average corporate income tax rate in the EU-28 declined from 29.4% to 21.4%. In a small group of countries – France, Ireland, Italy, Lithuania , and Slovenia – the cost of capital was slightly higher in 2014 compared to 2000. Croatia was the only country with a significant increase in the cost of capital, from 4.2% in 2000 to 5.4% in 2014. This increase was caused by the elimination of an allowance for corporate equity in 2001 which had been in place since 1994.

**Figure 3: Development of the cost of capital (%) between 2000 and 2014 (corporate level only)**
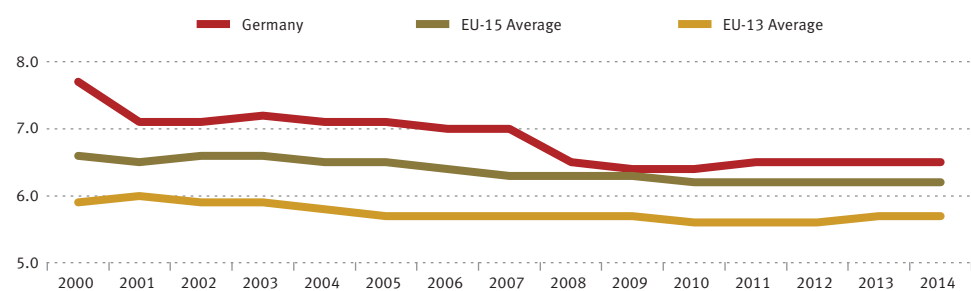


**Tax Policy Considerations**

How to design tax systems in order to eliminate, or at least mitigate, tax-induced distortions to the scale of investment, is a key concern in tax research. The exemption of retained profits from corporate income tax in Estonia constitutes one example of a corporate income tax that is neutral with respect to the volume of investment. An alternative approach is to allow corporations to deduct notional interest expenses for equity capital from the corporate income tax base ("allowance for corporate equity"), as is the case in Belgium and Italy. This ensures that corporate income tax does not negatively affect investment volumes if the notional interest rate equals the capital market interest rate. By contrast, a reduction in the corporate tax rate or an increase in the rate for tax depreciation may mitigate, but not fully eliminate, tax-induced distortions to the scale of investment. This has, however, been the preferred strategy for improving the fiscal investment climate among the EU member states in the past 15 years.

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5 For details, see Spengel et al. (2014), pp. A-4 et seq., footnotes 1 and 23 to table A-1.

6 Industrial buildings may be depreciated on a straight-line basis over 10 years; machinery and patents may be depreciated on a straight-line basis over just 2 years. See Spengel et al. (2014), p. A-16, table A-6, p. A-18, table A-7, p. A-21, table A-8.

7 Table 1 on page 7 reports the cost of capital in the individual EU member states for 2000 to 2014.

In Germany, a temporary re-introduction of reduced-balance depreciation at a multiple of the straight-line rate is currently being discussed. However, the lower the interest rate, the smaller the effect of the depreciation allowances on the cost of capital. Given the current low interest rates, the re-introduction of reduced-balance depreciation might not be as efficacious as envisaged by certain proponents of the measure. Indeed, the re-introduction of reduced-balance depreciation in Germany at three-times the straight-line rate (at the maximum 30%) for movable fixed assets would only slightly reduce the cost of capital from 6.5% to 6.3%, assuming a real interest rate of 5%.
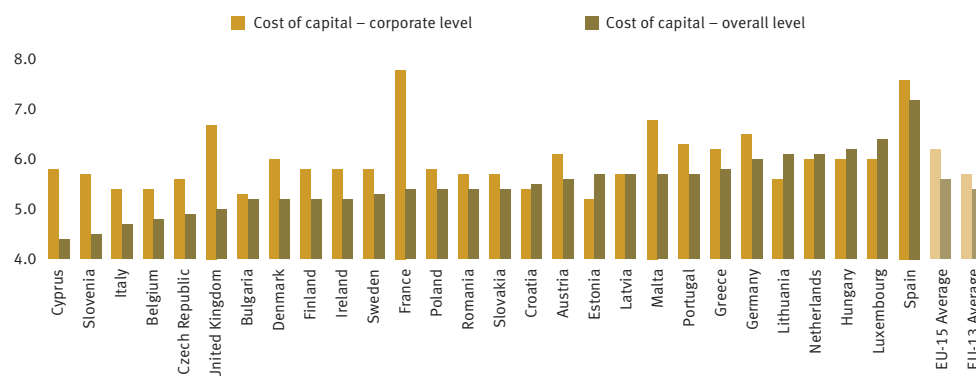
**Overall level**

In the following, we additionally take into account shareholder taxation – namely, personal taxes on dividends, capital gains, and interest income. Figure 4 shows the cost of capital ranking of the EU member states on the corporate and the overall level. The investor is assumed to hold a substantial participation[8] and is subject to the maximum personal income tax rate (if the country has a progressive personal income tax).

Figure 4 shows that in most countries, the overall cost of capital is lower than the cost of capital when just the corporate level is considered. This is due to the following effect: When taking into account shareholder taxation in addition to corporate taxation, this involves that the taxation of the return of the alternative investment (the capital market investment) is accounted for. Recall that the cost of capital is the minimum required pre-tax real rate of return required by the investor given a post-tax real rate of return from the alternative capital market investment. The tax rate applied to the capital market return negatively affects the cost of capital. Put differently, the higher the tax rate applied to the capital market return is, the lower is the cost of capital.

**Current Overall Cost of Capital Ranking of EU Member States**

**Figure 4: Cost of capital (%) ranking of the EU member states (corporate and overall level), year 2014**



As shown by Figure 4, in some countries, the cost of capital at the overall level falls below the capital market interest rate of 5%. This indicates that compared to capital market investments, real investments are favoured by the tax system; the tax system thus generates positive incentives for real investment.

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8  In most countries, a uniform tax rate applies irrespective of the holding quota. In a few countries, tax payers that hold a participation exceeding a certain minimum holding quota (e.g. 25%) are taxed differently than portfolio investors. We consider the case of a substantial participation as the tax treatment of such an investor would most likely be considered by companies when taking investment decisions.

Most notably, in the case of Cyprus, the return from the alternative capital market investment (interest income) is taxed at higher rates than the returns from the real investment (dividends and capital gains), resulting in a cost of capital below the capital market interest rate. As a consequence, Cyprus jumps eleven places in the ranking and leads the country ranking when the overall cost of capital is considered. For the same reasons, France and the United Kingdom considerably improve their rankings, moving from place 28 and 25 to 12 and 6, respectively.

If, by contrast, interest income is taxed at a lower rate than dividends and capital gains, the overall cost of capital is generally higher than the cost of capital on the corporate level. This is the case, for example, in Estonia. As a consequence, Estonia falls considerably in the ranking, from the first to 18th place. In Germany, the cost of capital on the overall level currently amounts to 6.0% and is thus lower than when solely accounting for corporate taxation (6.5%). Nevertheless, Germany's position among its fellow member states is hardly affected (23rd instead of 24th place).

**Overall Cost of Capital, 2000-2014**

Whilst on the corporate level the cost of capital has declined more or less steadily over the past 15 years, the situation is not as clear cut when it comes to the cost of capital at the overall level. Figure 5 shows that on the overall level, the average cost of capital in the accession countries (EU-13) and average cost of capital in the old EU member states (EU-15), has developed in opposite directions.

Table 1 on page 7 illustrates the cost of capital in the individual EU member states for 2000 to 2014. In Germany, the cost of capital first declined considerably from 5.9% in 2000 to 4.4% in 2001 due to the replacement of the imputation system with a partial exemption of dividends and capital gains within the scope of a comprehensive tax reform. Interest income, however, remained fully subject to the progressive income tax schedule. In 2009, the cost of capital increased again to its level in 2000 as a consequence of the introduction of a uniform final withholding tax for capital income at a rate of 25% ("*Abgeltungsteuer*").

**Figure 5: Development of the cost of capital (%) between 2000 and 2014 (overall level)**
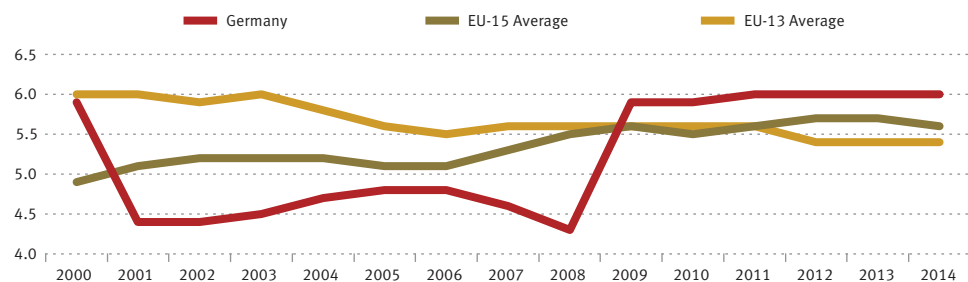


**Tax Policy Considerations**

A key approach to minimize tax-induced distortions of investment decisions is to ensure that the overall tax burden on the return from real investments (i.e. corporate and personal taxation) equals the tax burden on the return from alternative capital market investments. Under a flat tax system this may be achieved, for example, by exempting dividends and capital gains from personal income tax and taxing interest income at the same rate as corporate profits.

Thus, in order to reduce negative incentives of taxation on real investment (as opposed to capital market investments) in Germany, one approach would be to exempt dividends and capital gains from the final withholding tax ("*Abgeltungsteuer*") and to raise the rate of the final withholding tax to the rate applicable to corporate profits (i.e. the combined tax rate comprising of the corporate income tax, solidarity surcharge, and local business taxes). Assuming that the overall tax rate on

**Table 1: Cost of capital (%) in the EU member states**

**Corporate Level**

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 6.3 | 6.7 | 6.7 | 6.7 | 6.7 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 |
| Belgium | 6.5 | 6.4 | 6.5 | 6.2 | 6.2 | 6.2 | 5.1 | 5.0 | 4.8 | 4.8 | 4.9 | 5.1 | 5.2 | 5.3 | 5.4 |
| Bulgaria | 6.1 | 5.9 | 5.7 | 5.8 | 5.6 | 5.4 | 5.4 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 |
| Croatia | 4.2 | 5.8 | 5.8 | 5.7 | 5.8 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 |
| Cyprus | 6.6 | 6.5 | 6.6 | 5.8 | 5.8 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.6 | 5.6 | 5.5 | 5.8 | 5.8 |
| Czech Republic | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.9 | 5.8 | 5.8 | 5.7 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 |
| Denmark | 6.3 | 6.2 | 6.2 | 6.2 | 6.2 | 6.1 | 6.1 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.9 | 5.9 | 6.0 |
| Estonia | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 |
| Finland | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.3 | 6.3 | 6.3 | 6.3 | 6.1 | 6.2 | 6.4 | 6.3 | 6.0 | 5.8 |
| France | 7.7 | 7.7 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | 7.7 | 7.7 | 7.7 | 7.0 | 7.0 | 7.1 | 7.4 | 7.8 |
| Germany | 7.7 | 7.1 | 7.1 | 7.2 | 7.1 | 7.1 | 7.0 | 7.0 | 6.5 | 6.4 | 6.4 | 6.5 | 6.5 | 6.5 | 6.5 |
| Greece | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.1 | 6.0 | 5.8 | 5.8 | 6.3 | 5.8 | 5.6 | 5.6 | 6.2 | 6.2 |
| Hungary | 6.2 | 6.2 | 6.2 | 6.2 | 6.1 | 5.8 | 5.8 | 5.9 | 5.9 | 5.9 | 5.9 | 6.0 | 6.0 | 6.0 | 6.0 |
| Ireland | 5.4 | 5.4 | 5.6 | 5.7 | 5.7 | 5.7 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 |
| Italy | 5.3 | 5.4 | 6.6 | 6.5 | 6.4 | 6.4 | 6.4 | 6.4 | 6.3 | 6.3 | 6.3 | 5.6 | 5.6 | 5.6 | 5.4 |
| Latvia | 6.1 | 6.1 | 5.9 | 5.8 | 5.7 | 5.7 | 5.7 | 5.7 | 5.6 | 5.6 | 5.1 | 5.2 | 5.2 | 5.2 | 5.7 |
| Lithuania | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.4 | 5.4 | 5.3 | 5.5 | 5.3 | 5.3 | 5.6 | 5.6 | 5.6 |
| Luxembourg | 6.4 | 6.4 | 6.1 | 6.1 | 6.1 | 6.1 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.9 | 5.9 | 6.0 | 6.0 |
| Malta | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 |
| The Netherlands | 6.9 | 6.6 | 6.6 | 6.6 | 6.6 | 6.4 | 6.3 | 6.1 | 6.1 | 5.8 | 5.8 | 5.8 | 6.0 | 5.8 | 6.0 |
| Poland | 6.3 | 6.2 | 6.2 | 6.1 | 5.7 | 5.7 | 5.7 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 |
| Portugal | 6.6 | 6.6 | 6.4 | 6.4 | 6.1 | 6.1 | 6.1 | 6.0 | 6.0 | 6.0 | 6.2 | 6.2 | 6.3 | 6.3 | 6.3 |
| Romania | 6.0 | 6.0 | 6.1 | 6.0 | 6.0 | 5.6 | 5.6 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 |
| Slovakia | 6.1 | 6.1 | 5.9 | 5.8 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.8 | 5.8 | 5.7 |
| Slovenia | 5.6 | 5.6 | 5.6 | 5.7 | 5.7 | 5.9 | 5.9 | 6.0 | 5.9 | 5.9 | 5.8 | 5.8 | 5.7 | 5.7 | 5.7 |
| Spain | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 | 7.5 | 7.5 | 7.5 | 7.5 | 7.3 | 7.5 | 7.7 | 7.6 |
| Sweden | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 5.8 | 5.8 |
| United Kingdom | 6.8 | 6.8 | 6.9 | 6.9 | 6.9 | 7.0 | 6.9 | 6.9 | 6.9 | 7.0 | 7.0 | 7.0 | 6.9 | 6.8 | 6.7 |
| EU-15 Average | 6.6 | 6.5 | 6.6 | 6.6 | 6.5 | 6.5 | 6.4 | 6.3 | 6.3 | 6.3 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 |
| EU-13 Average | 5.9 | 6.0 | 5.9 | 5.9 | 5.8 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.6 | 5.6 | 5.6 | 5.7 | 5.7 |

**Overall level (corporate level and shareholder level)**

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 5.7 | 6.1 | 6.1 | 6.1 | 6.1 | 5.6 | 5.6 | 5.6 | 5.6 | 5.5 | 5.5 | 5.6 | 5.6 | 5.6 | 5.6 |
| Belgium | 6.3 | 6.3 | 6.3 | 6.1 | 6.1 | 6.1 | 4.5 | 4.4 | 4.2 | 4.2 | 4.3 | 4.5 | 4.3 | 5.7 | 4.8 |
| Bulgaria | 7.9 | 7.5 | 5.7 | 6.9 | 6.7 | 6.2 | 6.2 | 6.0 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.1 | 5.2 |
| Croatia | 4.2 | 5.9 | 5.9 | 5.9 | 5.9 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.5 | 5.5 | 5.5 |
| Cyprus | 4.0 | 4.1 | 4.4 | 5.4 | 5.4 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.2 | 5.7 | 4.9 | 4.4 | 4.4 |
| Czech Republic | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.2 | 5.1 | 5.1 | 5.0 | 5.0 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 |
| Denmark | 4.0 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.0 | 4.1 | 4.1 | 4.5 | 4.8 | 4.8 | 5.0 | 5.2 |
| Estonia | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.8 | 5.8 | 5.8 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 |
| Finland | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.9 | 5.7 | 5.7 | 5.7 | 5.5 | 5.5 | 5.7 | 5.5 | 5.3 | 5.2 |
| France | 5.5 | 5.5 | 5.4 | 5.4 | 5.3 | 5.3 | 5.2 | 5.3 | 5.2 | 5.1 | 4.4 | 4.4 | 5.5 | 4.8 | 5.4 |
| Germany | 5.9 | 4.4 | 4.4 | 4.5 | 4.7 | 4.8 | 4.8 | 4.6 | 4.3 | 5.9 | 5.9 | 6.0 | 6.0 | 6.0 | 6.0 |
| Greece | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.1 | 6.0 | 5.8 | 5.8 | 6.3 | 6.0 | 5.9 | 5.9 | 6.1 | 5.8 |
| Hungary | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 4.6 | 4.7 | 5.8 | 5.8 | 5.8 | 6.2 | 6.0 | 6.2 | 6.2 | 6.2 |
| Ireland | 5.2 | 5.6 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.8 | 5.8 | 5.9 | 5.9 | 5.8 | 5.2 |
| Italy | 5.6 | 5.7 | 6.9 | 6.8 | 6.4 | 6.4 | 6.4 | 6.4 | 6.2 | 6.5 | 6.5 | 5.8 | 5.9 | 5.4 | 4.7 |
| Latvia | 6.1 | 6.1 | 5.9 | 5.8 | 5.7 | 5.7 | 5.7 | 5.7 | 5.6 | 5.6 | 5.1 | 5.2 | 5.2 | 5.2 | 5.7 |
| Lithuania | 6.0 | 5.7 | 5.7 | 5.9 | 5.9 | 5.9 | 6.0 | 6.0 | 5.9 | 6.1 | 5.9 | 5.9 | 5.9 | 6.2 | 6.1 |
| Luxembourg | 4.2 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 6.3 | 6.3 | 6.3 | 6.2 | 6.2 | 6.2 | 6.2 | 6.4 | 6.4 |
| Malta | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 5.7 | 5.7 | 5.7 |
| The Netherlands | 3.6 | 6.7 | 6.6 | 6.6 | 6.6 | 6.4 | 6.3 | 6.1 | 6.1 | 5.9 | 5.9 | 5.8 | 6.0 | 5.8 | 6.1 |
| Poland | 6.7 | 6.5 | 6.5 | 6.4 | 5.3 | 5.3 | 5.3 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 |
| Portugal | 5.6 | 5.6 | 6.4 | 5.3 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.2 | 5.7 | 5.8 | 5.7 | 5.7 |
| Romania | 6.1 | 6.1 | 6.1 | 6.1 | 6.0 | 5.2 | 5.0 | 5.4 | 5.4 | 6.3 | 6.3 | 5.4 | 5.4 | 5.4 | 5.4 |
| Slovakia | 6.9 | 6.9 | 5.9 | 6.4 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.4 | 5.4 |
| Slovenia | 6.0 | 6.0 | 6.0 | 6.1 | 6.1 | 6.3 | 5.3 | 5.3 | 5.0 | 4.9 | 4.9 | 4.9 | 4.8 | 4.5 | 4.5 |
| Spain | 2.1 | 2.0 | 2.0 | 2.2 | 2.2 | 2.2 | 2.2 | 4.3 | 7.1 | 7.1 | 7.0 | 7.0 | 7.1 | 7.2 | 7.2 |
| Sweden | 4.0 | 4.0 | 4.0 | 4.0 | 5.3 | 4.1 | 4.1 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.3 | 5.3 |
| United Kingdom | 4.9 | 4.9 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.1 | 5.2 | 4.9 | 4.9 | 4.8 | 5.1 | 5.0 |
| EU-15 Average | 4.9 | 5.1 | 5.2 | 5.2 | 5.2 | 5.1 | 5.1 | 5.3 | 5.5 | 5.6 | 5.5 | 5.6 | 5.7 | 5.7 | 5.6 |
| EU-13 Average | 6.0 | 6.0 | 5.9 | 6.0 | 5.8 | 5.6 | 5.5 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.4 | 5.1 | 5.4 |

corporate profits amounts to 30.95%,[9] this would be associated with a cost of capital of 4.5%. In this case, the cost of capital falls below the capital market interest rate because of the rules governing tax depreciation and the valuation of inventory. In turn, a 50% exemption on dividends and capital gains from a final withholding tax levied at a rate of 30.95% would be associated with cost of capital just slightly above the capital market interest rate (5.1%).

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9  This is based on the assumption that the multiplier for the local profit tax (*"Gewerbesteuer"*) is 432%.

## Project Profile

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**Publications**

The cost of capital calculations presented in this policy brief were prepared by researchers at ZEW within the scope of the TAXUD/2013/CC/120 project, carried out on behalf of the European Commission. They have been published within the scope of the 2014 report "Effective tax levels using the Devereux/Griffith Methodology", which can be downloaded at:
http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/final_report_2014_taxud_2013_cc_120.pdf.
Return and Risk of Human Capital Contracts, ZEW Discussion Paper No. 13-108, Mannheim.