



Taxation papers

Corporate effective tax rates in an enlarged European Union

by: Christina Elschner and Werner Vanborren



Taxation Papers are written by the staff of the European Commission's Directorate-General for Taxation and Customs Union, or by experts working in association with them. **Taxation Papers** are intended to increase awareness of the work being done by the staff and to seek comments and suggestions for further analyses. The views expressed in the **Taxation Papers** are solely those of the authors and do not necessarily reflect the views of the European Commission.

Comments and inquiries should be addressed to:
TAXUD TAXATION-PAPERS@ec.europa.eu

Cover photo made by Milan Pein

Despite all our efforts, we have not yet succeeded in identifying the authors and rights holders for some of the images. If you believe that you may be a rights holder, we invite you to contact the Central Audiovisual Library of the European Commission.

D (2009) 33071 - EN

This paper is available in English only.

Europe Direct is a service to help you find answers
to your questions about the European Union
Freephone number:
00 800 6 7 8 9 10 11

A great deal of additional information on the European Union is available on the Internet.
It can be accessed through EUROPA at: <http://europa.eu>.

For information on EU tax policy visit the European Commission's website at:
http://ec.europa.eu/taxation_customs/taxation/index_en.htm

Do you want to remain informed of EU tax and customs initiatives? Subscribe now to the
Commission's
e-mail newsflash at: http://ec.europa.eu/taxation_customs/common/newsflash/index_en.htm

Cataloguing data can be found at the end of this publication.

Luxembourg: Office for Official Publications of the European Communities, 2009

© European Union, 2009
Reproduction is authorised provided the source is acknowledged.

PRINTED ON WHITE CHLORINE-FREE PAPER

CORPORATE EFFECTIVE TAX RATES IN AN ENLARGED EUROPEAN UNION

Christina Elschner

(University of Mannheim, Germany)

and

Werner Vanborren

(European Commission)

April 2009

Abstract:

This paper offers an assessment of European corporate tax regimes using forward-looking indicators for corporate investment based on the Devereux-Griffith methodology. It draws on time series of average effective tax rates (EATR) using a detailed set of tax parameters for 27 EU Member States as well as some important non-EU countries. The analysis shows that over time the reduction in the corporate effective average tax rates (EATR) was lower than for the corporate statutory rates and the figures suggest that simple corporate tax base broadening by means of less generous capital allowances is not a sufficient explanation for this phenomenon. Finally, it is shown that the tax gap between the old and new EU Member States has grown over time and even accelerated after accession.

Key words: effective tax rate, effective tax burden, corporate taxation, company taxation.

JEL classifications: H25

Contact authors: elschner@uni-mannheim.de; werner.vanborren@ec.europa.eu. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They should not be attributed to the European Commission or the University of Mannheim, Germany. The paper is based on a project for the European Commission. The authors thank Jean-Pierre De Laet, Michael P. Devereux, Christoph Spengel, as well as the ZEW staff for their support of the project, and Gaëtan Nicodème, Thomas Hemmelgarn and Michael Overesch for their useful comments.

1 Introduction

In recent years there has been a renewed interest in taxation of corporate investment. Since the publication of the Company Tax Study¹, several initiatives have been taken on the European level to suggest ways of overcoming distortions in the Internal Market, particularly as regards investment decisions and competition². From the point of view of economic efficiency, tax systems should ideally be as "neutral" as possible in terms of economic choices. From this perspective, and in an international context, similar investments should not face markedly different effective levels of taxation purely because they are undertaken in different countries. Therefore, the size of effective tax rate differentials and the dispersion of effective tax rates deserve careful attention in order to analyse the role of taxes for investment decisions in the Internal Market.

At the same time there is growing awareness that EU policy measures should take into account the diversity in the European corporate tax landscape. To capture the dynamics of the tax burden on investment, it is of particular importance to understand how the tax systems in the Member States have developed over time. When policy makers want to evaluate the impact of taxation on economic activity and understand the usefulness and likely effects of their decisions, the information derived from statutory

¹ Company taxation in the Internal market - SEC(2001) 1681 (2001)

² COM(2001) 582 of 23/10/2001 and COM (2003) 726

corporate tax rates needs to be complemented by the elements composing the tax base in order to evaluate the effective tax burdens incurred.

Ideally, marginal effective tax rates are calculated using firm-level data. However, data samples exist for this type of calculation only in a few Member States. Furthermore, it is not possible to calculate forward looking measures with these samples. While backward-looking firm-level indicators may possibly give an accurate picture of the tax position of a particular company, they cannot give an accurate picture of the incentives generated by a particular tax regime as tax payments in any period may depend crucially on the past history of the company and hence may vary between companies which are otherwise identical. This makes international comparisons very difficult as the methodology does not allow for a single representative indicator for the country as a whole.

When the analysis of the impact of taxation on investment behaviour is the objective, and therefore the effects of tax legislation on future choices has to be captured, then only forward-looking indicators can illustrate the influence of taxation systems to the investment choices of companies and are therefore a useful policy tool when the research focus is on efficiency and competitiveness. The indicators analysed in this paper are based on such a forward-looking modelling approach and includes the relevant taxes triggered by corporate investment making abstraction of the influence of the economic conditions. Similar studies based on forward-looking rates have been conducted by the government of Canada, the Institute for Fiscal Studies (UK) and Yoo (OECD). The current study focuses on the effects of tax reforms over time and offers both a broad geographical scope and detail in the calculations.

This paper addresses the methodology used and presents estimates of the average effective tax rates (EATR) on investment in the 27 EU Member States over the period 1998 to 2007³. For comparison, it also presents similar estimates for 4 other European countries (Croatia, Turkey, Switzerland and Norway) and for 3 non-European countries (USA, Canada, and Japan). The calculations are based on a mix of assets and liabilities taking as a base case a manufacturing company. Nevertheless, sensitivity analysis carried out for the service sector has shown that the model is robust with respect to the relative ranking of countries.

The paper is organised as follows. The next section presents a description of the methodology underlying the measurement of the effective tax rates. In section 3, the effective tax burden on domestic investment under the general corporate tax regimes at the EU level is analysed for 2007. The analysis discusses the developments of the tax systems in the EU Member States over time in section 4. Section 5 presents the concluding remarks.

2 Methodology

The methodology used for the calculation of the effective tax rates is set out by Devereux and Griffith (1999, 2003), and has also been used in an earlier study by the European Commission⁴. The basic approach proposed by Devereux and Griffith (1999, 2003) is to consider a hypothetical incremental investment located in a specific country undertaken by a company resident possibly in the same country, but also possibly in

³ For more detailed results see Devereux et al. (2008).

⁴ A detailed discussion of the methodology as it is applied in this project is given by Schreiber/Spengel/Lammersen (2001).

another country⁵. Given a post-tax real rate of return required by the company's shareholder, it is possible to use the tax code to compute the implied required pre-tax real rate of return, known as the cost of capital⁶. The cost of capital can be seen as the internal rate of return required for the company in order to generate the same return as an alternative risk-free investment. The proportionate difference between the cost of capital and the required post-tax real rate of return is known as the effective marginal tax rate (EMTR)⁷. The difference between the cost of capital (i.e. the implied required pre-tax real rate of return) and the post-tax required real rate of return is a measure of the additional return required due to taxation: this is known as the effective marginal tax wedge⁸. This approach is based on the presumption that firms undertake all investment projects which earn at least the required rate of return. For a given required post-tax rate of return, the more severe the tax system, the higher is the cost of capital, and hence the less likely that any specific investment project will be undertaken.

A complementary approach is to consider discrete choices for investment, and in particular the discrete location choice. If two locations are mutually exclusive, then the company must choose between them. In this case, the impact of taxation on the choice is measured by the proportion of total income taken in tax in each location. Devereux

⁵ Issues of cross-border taxation are not considered in this paper.

⁶ In the absence of personal taxes, the company is assumed to be required to earn a post-tax real rate of return of 5%. The cost of capital is the implied required pre-tax real rate of return. The cost of capital is calculated for each of 15 different types of investment (5 assets, each possibly financed from 3 sources).

⁷ The EMTR is a straightforward calculation as the proportionate difference between the cost of capital and the post-tax real rate of return of 5%. The EMTR is not represented in the tables, since, in the absence of personal taxes, it does not provide more information than the cost of capital.

⁸ Assuming a required post-tax real rate of return of 5%, the difference between the cost of capital and 5% represents the effective marginal tax wedge, showing by how much the pre-tax real rate of return should be increased as a result of taxation in order to obtain the required post-tax return of 5%.

and Griffith (1999, 2003) proposed a measure of an effective average tax rate (EATR) to identify the effect of taxation on such discrete location choices. The EATR is the proportionate difference of the net present value of a profitable investment project in the absence of tax and the net present value of the same investment in the presence of tax⁹.

In both cases, the hypothetical investment takes place in one period and generates a return in the next period. It is assumed throughout that the tax system is expected to remain unchanged over the life of the investment. The impact of taxation depends on a number of features of the tax system, including the statutory tax rate, capital allowances, the treatment of foreign source income, wealth taxes paid by the company, as well as possibly the treatment at the corporate and personal level of dividends paid by the company, and wealth and capital gains taxes at the personal level¹⁰.

Several assumptions need to be made in order to define the hypothetical investment project as well as the economic conditions under which the investment takes place. In particular, the following assumptions hold:

- The investment is made in the manufacturing sector;

⁹ The effective average tax rate is in principle the relevant rate for analysing discrete investment choices, such as where to locate. The EATR is calculated for each of 15 different types of investment (5 assets, each possibly financed from 3 sources). However, now there is not only a post-tax real rate of return required by the shareholder, but also a fixed pre-tax real rate of return of 20%, while the minimum required post-tax real rate of return (in the absence of personal taxes) remains at 5%. This generates an investment project with a positive net present value. The EATR is a measure of the present value of taxes paid expressed as a proportion of the net present value of the income stream (excluding the initial cost of the investment).

¹⁰ The treatment of foreign source income and the influence of the personal income tax are beyond the scope of this paper.

- The shareholder is assumed to be able to earn a real rate of return of 5% on an alternative investment. If the alternative investment is not taxed, this is also the post-tax return required by the shareholder on the hypothetical investment analysed. Any tax on the alternative asset reduces the required post-tax rate of return on the hypothetical investment;
- The inflation rate is assumed to be 2% in all countries;
- Separate investments in five different assets are considered. They are as follows, together with the true economic depreciation rate assumed in each case (based on a Ifo Institute survey, Leibfritz 1989, and research performed in the framework of the Company Tax Study (2001)): intangibles (taken for tax purposes here to be the purchase of a patent) (depreciation rate of 15.35%); industrial buildings (3.1%); machinery (17.5%); financial assets (zero); and inventories (zero). In presenting averages over different forms of investment, these assets are weighted equally;
- Three sources of finance for investment in each asset are separately considered: retained earnings, new equity and debt. In presenting averages over different forms of investment, weights used are taken from OECD (1991): retained earnings 55%, new equity 10% and debt 35%;
- In principle, only corporate taxation is considered.

Common figures to all countries for the real rate of return, the inflation rate, the true economic depreciation on assets and the weights for investments and sources of

finance apply in order to identify differences in effective tax rates due to tax regimes, rather than due to differences in underlying economic conditions.

The types of parameters incorporated into the model are as follows:

- Statutory corporation tax rates, including surcharges and typical local tax rates on profit, as well as various special rates which apply to specific forms of income or expenditure;
- Corporate real estate taxes, net wealth taxes and other non-profit taxes on assets;
- Capital allowances for industrial buildings, machinery, intangibles (the purchase of a patent) and the tax treatment of financial assets and inventories.

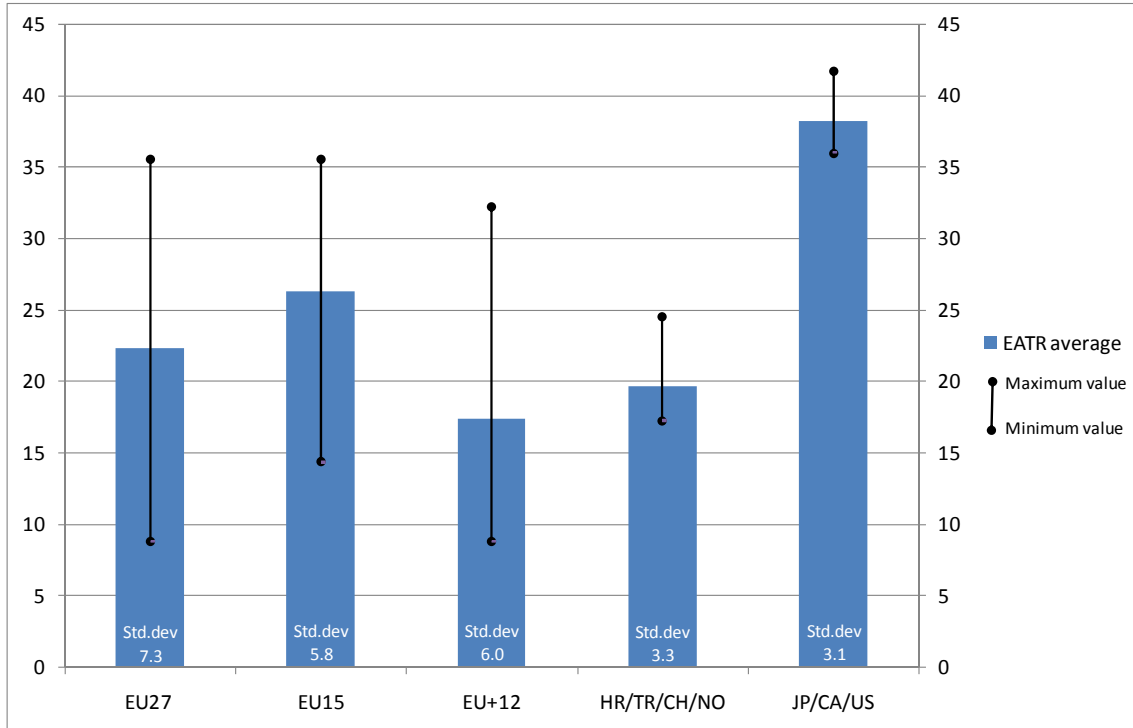
The focus of this paper is on discrete investment choices and locational investment decisions as captured by the effective average tax rate (EATR).¹¹

3 Effective tax burden on domestic investment under the general corporate tax regime at the EU level in 2007

Figure 1 presents an overview of the corporate EATRs in the European Union and further countries considered. For the EU27, the average EATR is 22.3%, but this overall average hides considerable dispersion in the EATR levels across the individual Member States. The EATR is the lowest in Bulgaria (8.8%) and the highest in Germany (35.5%). In the EU15, the EATR (26.3%) is considerably higher than in the new Member States referred to as the EU+12 (17.4%).

¹¹ For a discussion of cost of capital results see Devereux et al (2008) and Devereux/Lammersen/Spengel (2003).

Figure 1: Average of EATR in %, 2007



Looking at other European countries, the picture does not change substantially. The two EU candidates Croatia and Turkey show EATRs of 17.2% and 18.0% respectively. The EATRs in Norway and Switzerland are 24.5% and 18.8%. In contrast, the highly developed countries outside Europe – the United States, Canada, and Japan – have substantially higher tax levels than the average in Europe. Canada (36.0%) and the United States (36.9%) even show slightly higher EATRs than Germany, the European country with the highest EATR. Companies in Japan face by far the highest EATR with 41.7%.¹²

One can think of several reasons for the wide dispersion of effective tax levels. Size and the economic development of the countries can lead to higher EATRs for

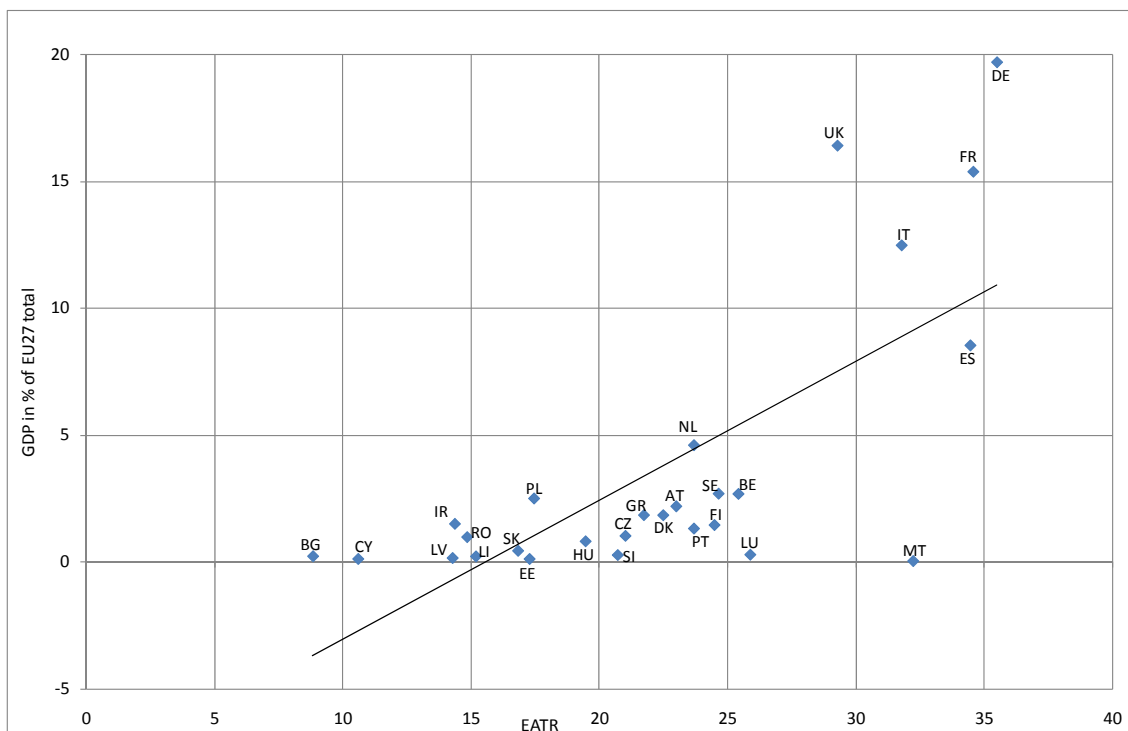
¹² The calculations for Switzerland, the USA and Canada were based on the Canton of Zürich, the State of California and the State of Ontario, respectively.

larger countries. In Figure 2 we therefore compare the GDP with the EATRs in the EU27. The graph shows that GDP and EATR are positively correlated, with a correlation coefficient of 0.72. The countries with a contribution of GDP to the EU27 totaling more than 10% show the highest EATR (Germany, France, Italy, and UK). The range is from 29.3% in the UK to 35.5% in Germany. Also Spain with a GDP of 8.5% of EU total has a high EATR of 34.5%. This finding is in line with theoretical literature (Bucovetsky (1991), Wilson (1991), and Haufler/Wooton (1999)) and empirical findings (Slemrod (2004), Huizinga/Nicodème (2006), Ghinamo/Panteghini/Revelli (2008)). However, the dispersion of EATRs is large for countries contributing less than 0.25% of the total European GDP¹³. Thus, for the small countries no conclusions can be drawn with respect to size and EATR level. Further, companies in the EU15 face higher EATRs than in the EU+12; the only exemptions are Ireland (14.4%) and Malta (32.2%)¹⁴. Although within Europe there might be tax competition at work since countries are rather small compared to other continents, corporate tax differentials between large and smaller countries may be sustainable because of the existence of agglomeration rents.

¹³ Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, Slovakia, Slovenia

¹⁴ There are many reasons for differences in tax levels. Listing these would go beyond the scope of the analysis in this paper.

Figure 2: Correlation of EATR (in %) and GDP (in % of EU total), EU27, 2007



To understand the mechanisms behind these observations, it is important to identify the tax parameters that technically drive the EATR levels in the EU27. The EATR reflects the present value of taxes in case the investment yields a pre-tax rate of return of 20%. Since the economic conditions are held constant for all locations, the effective tax levels are exclusively driven by the tax regulation in the considered countries. The higher the rate of return, the higher is the impact of the statutory tax rates and the lower the influence of tax allowances embedded in the tax base. Figure 3 shows both the combined statutory tax rate and the EATR for each country. The combined statutory tax rate comprises the corporate tax rate and any surcharges and local profit tax rates. Within the EU27, statutory tax rates range between 10% and 39.4% which is a higher span than for EATRs. Considering the old and new Member States, it is striking that all new Member States, except for Malta, have statutory tax rates below 25%; all

old Member States, except for Ireland, levy taxes at 25% and higher. Bulgaria and Cyprus have the lowest tax rates with 10%, followed by Ireland. The highest statutory tax rates apply in Italy (37.3%), Spain (38%), and Germany (39.4%). The two EU candidate countries Croatia and Turkey both tax corporate profits at 20%. Switzerland has a slightly higher tax rate of 21.3%, the Norwegian tax rate is 28%. The non-European countries all show significantly higher statutory tax rates comparable to the three highest taxing countries in the EU.

By comparing the statutory tax rates and the EATRs in Figure 3 it turns out that both indicators are closely correlated, which is not surprising as the EATR is calculated at a rate of return of 20% before taxes. For most countries the EATR is slightly below the statutory tax rates. This stems to a great extent from the fact that capital allowances for machinery, buildings, and intangible assets lead to postponed tax payments compared to an alternative investment so that the real investment is more advantageous than the alternative investment. In some countries, the EATR exceeds the statutory tax rates. In Ireland, the real estate taxes are particularly high compared to profit taxes. France levies a business tax (*taxe professionnelle*) on fixed assets. Cyprus applies a special tax on financial assets.

Only for Belgium, Estonia, and Italy, the EATR is considerably below statutory tax rates. This is mainly due to a specific tax regime for financial assets or differences in tax treatment according to the sources of finance, which both influence the results since we are considering a combination of five different assets financed through three different sources of finance. Belgium introduced a notional interest deduction in 2006. For equity finance, a deemed interest payment is deductible comparable to real interest

payments for debt finance. As a result, income is partly tax-exempt; the EATR thus drops significantly below the statutory tax rate (8.6 percentage points). In Estonia, corporate taxes are not levied until dividends are distributed. This leads to an equal low EATR level for investment financed by debt finance and retained earnings, while higher EATRs arise for new equity. Since new equity only accounts for 10% of total finance under the model, the average EATR over all assets and sources of finance is considerably lower than the statutory tax rate. In Italy, the local tax of 4.25% is not applied to financial assets, which results in a lower EATR.

Figure 3: Statutory corporate tax rates and EATR in %, 2007

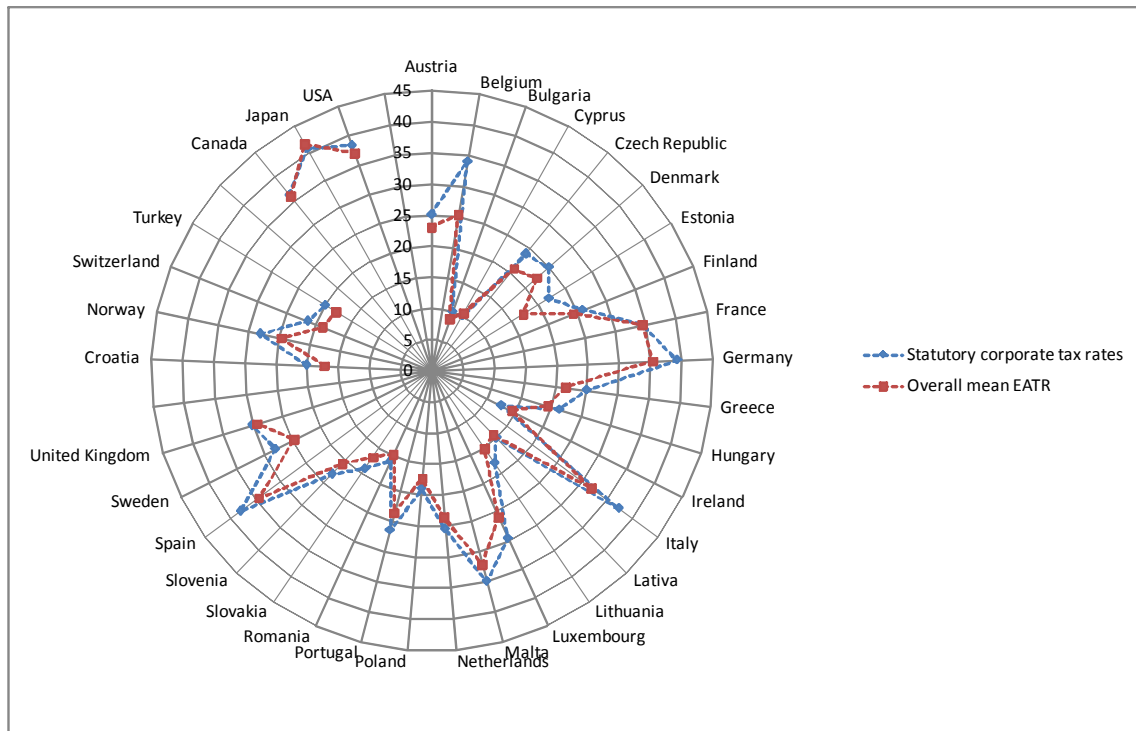


Figure 4 shows the averages of the EU27 per asset and sources of finance. Most apparent is the fact that investments financed with equity are taxed higher than debt-financed investments. This is related to the fact that interest payments for debt-financed investments are mostly fully deductible from the taxable base, i.e. only the residual

income is taxed at the corporate level. In case of equity-financed investments, a deduction similar to the interest payment deduction is generally not available. Some countries, such as Belgium, do allow for a deemed interest payment in order to achieve neutrality of the source of finance. The difference between the EATR on debt financed investment compared to equity financed investment increases with the level of statutory tax rates as can be seen by comparing the results for the EU15 and the EU+12.

There is a small difference between the two equity-financed pillars in Figure 4. Investments financed by retained earnings bear a slightly lower EATR than investments financed with new equity. In general, profit at the corporate level is taxed independently from its further allocation. In most countries the EATR for retained earnings equals that for new equity. The difference stems entirely from the Estonian corporate tax system which does not tax retained earnings as can be seen from the pillars for the EU+12 in Figure 4.

Comparing the asset-specific EATRs, investments in intangible assets or in machinery bear the lowest EATRs. The highest EATRs apply for investments in financial assets. The EATRs clearly show the impact of the tax depreciation rules. Financial assets do not receive any capital allowances for tax purposes since there is no account for economic depreciation. The EATRs are the lowest for machinery and intangibles since for these two assets the depreciation allowances for tax purposes overcompensate in most countries the actual economic depreciation rate. Moreover, both assets reveal differences between the EU15 and the EU+12. Intangibles are taxed lower than machinery in the EU15, while the situation in the EU+12 is exactly the opposite. The EATRs for industrial buildings are higher not only because of a longer

depreciation period but also because a real estate tax for buildings applies in most countries.

Figure 4: EU averages of EATR by asset and source of finance, in %, 2007

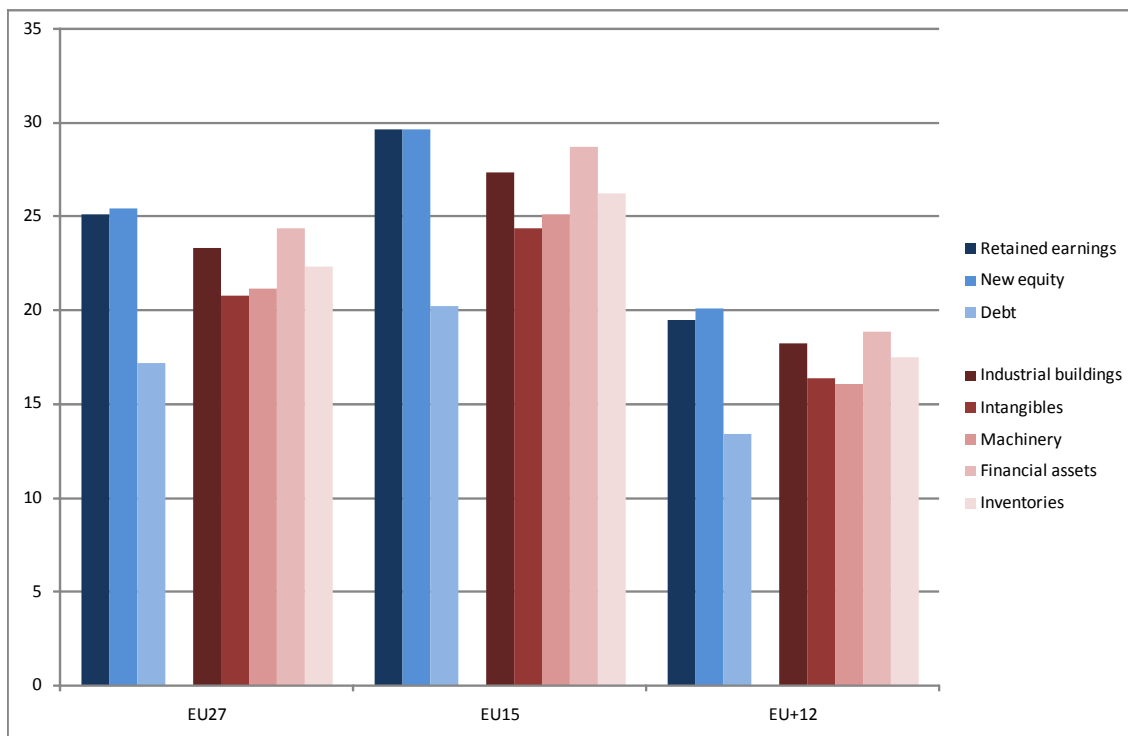
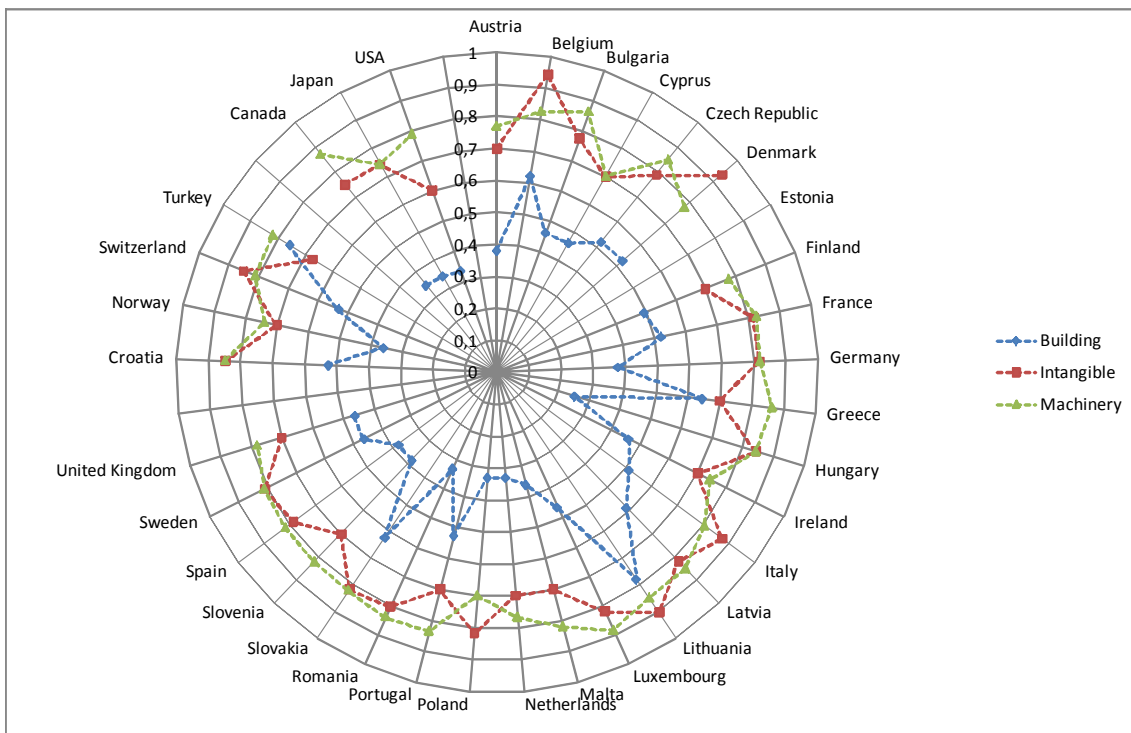


Figure 5 presents the present values of capital allowances for buildings, intangible assets, and machinery. These reflect the present value of the annual tax depreciations. The higher the present value, the higher is the tax reducing effect of the deduction. On average in the EU27, the present value of capital allowances is 0.47 for industrial buildings, 0.78 for intangibles, and 0.81 for machinery. The level is comparable in the other countries considered. Machinery is treated more or less homogeneously in all countries; the standard deviation amounts to 0.05. There are larger differences in the tax depreciation of intangibles with a standard deviation of 0.08. The most heterogeneous treatment is found for buildings; the standard deviation is 0.12 in the EU27. In contrast to the statutory tax rates, there is no clear distinction

between old and new Member States or between small and large countries. Countries with a considerably lower present value of capital allowances – i.e. with less generous conditions for tax depreciation – are Austria, Malta, the Netherlands, Poland, and Slovenia. Belgium, Denmark, and Lithuania are characterised by considerably more generous regulations for tax depreciation.

Figure 5: Present value of capital allowances (before CIT), 2007



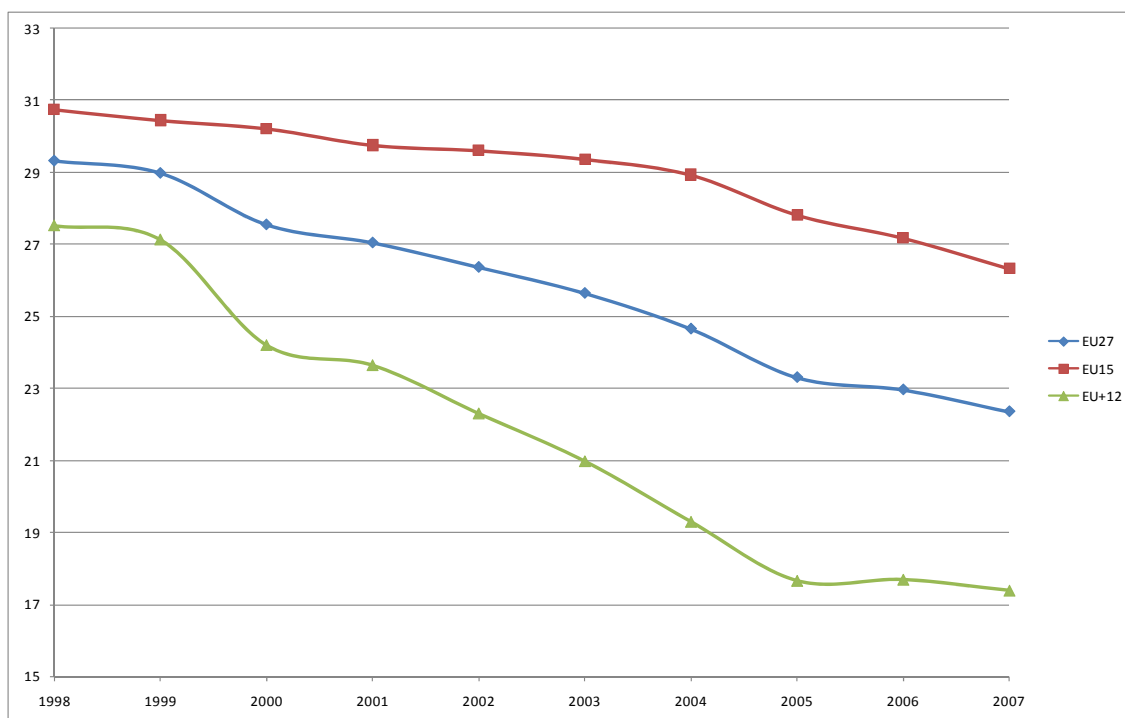
4 Development of the effective tax burden on domestic investment under the general corporate tax regimes in the EU between 1998 and 2007

Within the last ten years, one observes a considerable downward trend of tax levels. Figure 6 presents the unweighted EATR averages for the EU27 and for the new and the old Member States. In total, the average for all Member States decreased from 29.1% in 1998 to 22.4% in 2007. At the end of the nineties, the difference between old and new Member States still was comparably low with only 3.3 percentage-points differential. It increased, however, to 8.9 percentage points in 2007. While the EU15

curve shows a continuous decline over time, the EU+12 curve falls considerably from 1999 to 2005. From then on, the average of EATRs remains stable. In contrast, the downward trend was somewhat intensified from 2005 on in the old Member States.

The standard deviation of the EU Member States does not change dramatically over time. For the EU15, it decreases from 7.5 to 5.8, for the EU+12 it increases from 5.9 to 6.0 with, however, several ups and downs during the beginning of 2000. Overall, one can observe a higher consolidation in effective tax levels for the old Member States, the new Member States show more changes in their tax policies. Besides other reasons, this might also be driven by the fact, that in the EU15 there are several large countries that do not react on tax competition in the same way as small, usually more open, countries.

Figure 6: EATRs in EU Member States in % and over time, 1998-2007



As was outlined before, the EATR highly depends on the statutory tax rates and so the decline in EATRs over time must be mostly driven by cuts of the statutory tax rates. The sum of rate cuts in percentage-points exceeds the sum of changes in EATR (8.7 vs. 7.0 on EU average). This might be a hint that tax rate cuts came along with base broadenings. The present values of capital allowances, however, remained stable over time on average. Several countries broadened their taxable base by allowing for less generous capital allowances in the long run.¹⁵ There are also countries which improved the possibilities for capital allowance.¹⁶ Yet in tendency, capital allowances were worsened in countries with higher statutory tax rates.

There are several further reasons why the EATRs did not decrease to the same extent as the statutory tax rates: First, this effect is technically driven. Within the EATR we consider several sources of finance, one of which is debt finance which is less dependent on the statutory tax rates. Taking only investments financed with equity into account, the decrease in EATR is -7.4. Second, considerable tax reforms took place during the last ten years. Eg. in Germany, there was a clear tax rate cut for retained earnings, but less pronounced for other sources of finance. Third, there were increases in non-profit taxes, in particular in Ireland and Finland.

The highest rate reductions in all countries took place in 2000 and in 2005. Bulgaria had the highest declines of statutory tax rate (-27 percentage-points) and

¹⁵ Decreasing generosity of capital allowances in the ten-year period: industrial buildings: Austria, Germany, Hungary, and Slovenia; intangibles: Austria, Slovenia, and UK; machinery: Austria, Czech Republic, Denmark, Finland, France, Ireland, Poland, Slovenia.

¹⁶ Increasing generosity of capital allowances: industrial buildings: Czech Republic, Lithuania, and Slovakia; intangibles: Czech Republic, Hungary, Lithuania, and Slovakia; machinery: Greece, Hungary, Lithuania, Luxembourg, and Slovakia.

EATR (-23.9 percentage-points). Most countries show similar levels of the decline in statutory tax rates and EATR. Germany, however, had a clear tax rate cut of 17 percentage-points over time but only a decrease of 5.7 percentage-points in EATR. Until 2000, Germany applied a split rate system for corporate income. The corporate tax rate was 45% (40% in 1999 and 2000) on retained earnings. It was reduced to 30% in case the profits were distributed. From 2001 on, all profits were taxable at 25%. Considering the EATR on retained earnings separately, the decline was 11 percentage-points (50.5 to 39.5 over all assets). This effect becomes less important if one considers the weighted average over all sources of finance.

In three countries, there are increases in EATR over time: Ireland, Hungary, and Sweden. Ireland was obliged to raise the corporate tax rate for the manufacturing sector to 12.5%, moreover, the effective rate of real estate tax increased. Hungary introduced a solidarity tax of 4% on corporate income tax due in 2007. Sweden held the corporate income tax rate constant at 28% but reduced an incentive for new investments. A profit periodisation reserve (periodiseringsfond) postpones the taxation of parts of the profit for five years. In 1998-2000, up to 20% of the profit could be used for the reserve. Since then, the maximum is 25%. As from 2005, a standardised yielded interest is assumed which decreases the proportion of postponed tax payments and raises the overall tax rate. Only one country had stable effective tax rates: Malta did not change the taxation system during the last ten years. Considering the ranking of Malta during the years, the overall trend of declining effective tax levels becomes evident. In 1998, Malta ranked 16th; in 2007, Malta ranks 24th.

As can be seen from the preceding outlines, tax reforms in the last decade were not only characterised by simple tax rate cuts but also by several approaches yielding at financing neutrality or at higher investment incentives. The following outline tries to classify the tax reforms and to extract several trends in taxation, going beyond the simple discussion of effective tax levels.

With respect to tax rate cuts, countries differ between those cutting in one big step and those cutting in several smaller steps. Over the last ten years, most countries decreased the corporate tax rates three or four times. Three countries came up with changes in their tax rates every two years or even more often. Poland and Bulgaria reduced the rates continuously in five and seven steps, respectively. In Germany, the corporate tax rate was modified five times in ten years: a slight decrease of the rate on retained earnings in 1999, the introduction of a new corporate income tax system in 2000 with considerable decrease of the statutory rate applicable now on all profit and a one-year increase of the corporate income tax rate in 2003 for the financing of flood damages. Three countries did not change their corporate income tax rates at all: France, Malta and Sweden. The French corporate tax system, however, is characterised by annually modified social surcharges. Large tax rate cuts in one step took place in Austria (2005, -9 percentage-points), in Belgium (2003, -6 percentage-points), and in Luxembourg (2002, -7 percentage-points).

Few countries levy substantial non-profit taxes on corporations. There is, however, no clear trend of a reduction or extension of this type of tax. The French tax

professionnelle on tangible fixed assets remained more or less stable over time.¹⁷ Italy and Hungary levy local taxes based on the value-added of production. The rate is constant in Italy, but decreased slightly in Hungary.

Several countries treat interest income or investment financed with equity differently, either by granting allowances for equity financing or by limiting the deduction of interest. The intuition behind the former systems is that under general taxation investment financed with debt bears a lower tax burden than investment financed with equity. Italy applied a dual income tax system. From 1998 to 2001, a reduced rate of 19% on the ordinary return applied (except on financial assets), the residual income was taxed at the general rate. Austria applied a similar system between 2001 and 2004 for investments in new assets. Belgium introduced the notional interest deduction in 2006 which effectively exempts an ordinary return by allowing the deduction of a notional interest and taxes the residual income at the general tax rate. All these measures result in a decrease of EATR for investment financed with equity.

In Germany and Spain, the local taxes do not allow for the full deduction of interest, thus EATRs for investment financed with debt bear a higher tax burden. Cyprus levies an additional tax on interest income. Moreover, Ireland has a higher corporate tax rate on this kind of investment. Both result in higher EATRs for investments in financial assets.

¹⁷ However, the part of the *taxe professionnelle* taxing the lump sum, which is not implemented in the model, was reduced to zero.

With respect to the disposition of earned income, there were two systems at the corporate level over time that taxed retained profits differently from distributed profit. Until 2000, Germany levied a higher tax on retained earnings than on distributed profits on the corporate level. There were several other countries applying a comparable system on the shareholder level; however, Germany was the only country applying different rates for corporations. Since 2000, Estonia taxes corporations opposite to the German system. Profits are not taxed until they are distributed to the shareholder.

Conclusions

Corporate investment in the EU Member States is subject to a lower effective tax burden than in Japan, Canada and the USA. Within the EU, the difference in tax levels between the old EU15 and the new Member States is considerable. Most of the new Member States present even lower corporate effective tax levels than the candidate countries. Between the 'old' Member States, there is less dispersion in the effective tax levels than between the new Member States.

Countries with a contribution of 10% or more to the EU27 GDP show the highest effective tax rates. The lowest effective tax levels on corporate investment can be found in Eastern part of Europe and in the Nordic countries.

Overall, statutory tax rates and effective tax rates are closely correlated in the EU. However, some countries have introduced particularities in their tax system which break the correlation and drive the EATR either up or down compared to the statutory rates. These particularities relate mainly to discriminatory treatment between different types

of financing or between different types of assets. In the old Member States, intangibles is the most tax-favoured asset, while for the new Member States it is machinery.

For the period considered, a significant downward trend in the effective corporate tax levels can be observed on the EU level. Over the same time period, the differential in effective tax levels between the old EU Member States and the new Member States almost tripled, due to intensified tax cuts in the new Member States after EU accession. Moreover, while the dispersion in effective tax levels in the old EU15 was significantly reduced over time, it remained stable for the new member States. While the old EU15 presents higher consolidation of tax levels, the new Member States experience more changes in tax policies over time.

On average, the effective tax levels in the EU have not come down by the same level as the corporate tax rates. The figures, however, suggest that simple corporate tax base broadenings by means of less generous capital allowances is not a sufficient explanation for this phenomenon. Besides few changes in capital allowances results are driven by significant reforms of corporate tax systems and the abolition of incentives in some countries.

The effective tax rates indicators analysed in this paper are forward-looking indicators. The approach considers an investment in a specific country by a company in the same country. Specific regimes, such as tax facilities for SME investment are beyond the scope of the paper. The detailed analysis of cross-border tax treatment of investment is not taken into account.

References

- Becker, J., C. Fuest and T. Hemmelgarn (2006), *Corporate tax reform and foreign direct investment in Germany: Evidence from firm-level data*, CESifo, Working Paper 1722.
- Bond, S.R., M.P. Devereux and A. Klemm (2007), *The effects of dividend taxes on equity prices: a re-examination of the 1997 UK tax reform*, Oxford University Centre for Business Taxation Working Paper 07/01.
- Brennan, M. J. (1970), *Taxes, market valuation and financial policy*, National Tax Journal 23, 417-429.
- Bucovetsky, S. (1991), *Asymmetric Tax Competition*, Journal of Urban Economics 30, 167-181.
- Devereux, M.P., C. Elschner, D. Endres, M. Overesch, U. Schreiber, and C. Spengel (2008), *Corporate Effective Tax Rates in an Enlarged European Union*, Report prepared for the European Commission.
- Devereux, M.P. and R. Griffith (1999), *The taxation of discrete investment choices*, Institute for Fiscal Studies Working Paper 98/16 (Revision 2).
- Devereux, M.P. and R. Griffith (2003), *Evaluating tax policy for location decisions*, International Tax and Public Finance, 2003, 10, 107-126.
- Devereux, M.P., L. Lammersen, and C. Spengel (2003), *Corporate Taxes and Economic Efficiency in Europe*, National Tax Journal, Proceedings of the 95th Annual Conference on Taxation, 226-235.
- European Commission (2001), *Company Taxation in the Internal Market*, COM(2001) 582 final, Luxembourg: Office for Official Publications of the European Communities.
- Ghinamo, M., P.M. Panteghini, and F. Revelli (2008), *FDI Determination and Corporate Tax Competition in a Volatile World*, CESifo Working Paper No. 1965.
- Giannini, S., C. Maggiulli (2002), *The effective tax rates in the EU Commission Study on corporate taxation: methodological aspects, main results and policy implications*, CESifo, Working Paper 666
- Hall, R.E. and D. Jorgenson (1967), *Tax Policy and Investment Behavior*, American Economic Review 57.
- Haufler, A. and I. Wooton (1999), *Country Size and Tax Competition for Foreign Direct Investment*, Journal of Public Economics 71, 121-139.
- Huizinga, H. and G. Nicodème (2006), *Foreign Ownership and Corporate Income Taxation: An Empirical Evaluation*, European Economic Review 50, 1223-1244.

Institute for Fiscal Studies Capital Taxes Group (1990), *An Allowance for Corporate Equity*, London: IFS.

King, M.A. and D. Fullerton (1984), *The Taxation of Income from Capital*, Chicago: University of Chicago Press.

Klemm, A. (2005), *Corporate tax rate data*, The Institute for Fiscal Studies.

Leibfritz, W. (1989), *Taxation of Capital Income in the Federal Republic of Germany*, in: *Factors in Business Investment*, Funke, M. (Ed.), Berlin, pp. 148-172.

Meade Committee (1978), *The Structure and Reform of Direct Taxation*, London: Allen & Unwin.

Nicodème, G. (2007), *Comparing effective corporate tax rates*, *Frontiers in Finance and Economics*, volume 4 nr 2, 102-131.

OECD (1991), *Taxing Profits in a Global Economy*, Paris: OECD.

Patry, A., J. Lester and D. Lemay (2007), *An International Comparison of Marginal Effective Tax Rates on Business Investment in the Manufacturing Sector*, Department of Finance Canada.

Ruding Committee (1992), *Report of the Committee of Independent Experts on Company Taxation*, Brussels: European Community.

Slemrod, J. (2004), *Are Corporate Tax Rates, or Countries, Converging?*, *Journal of Public Economics* 88, 1169-1186.

Schreiber, U., C. Spengel, and L. Lammersen (2002), *Measuring the Impact of Taxation on Investment and Financing Decisions*, *Schmalenbach's Business Review* 54, 2-23.

Wilson, J.D. (1991), *Tax Competition with Interregional Differences in Factor Endowments*, *Regional Science and Urban Economics* 21, 423-451.

Yoo, K.-Y (2003), *Corporate Taxation of Foreign Direct Investment Income 1991-2001*, OECD Economics Department, Working Paper 365.