THE EFFECTIVE TAX BURDEN OF COMPANIES

IN THE MEMBER STATES OF THE EU

– THE PERSPECTIVE OF A MULTINATIONAL INVESTOR –

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EXECUTIVE SUMMARY

Aim of the study and applied approach

This study presents estimates of the effective levels of company taxation in the 15 Member States of the EU. The study is established from the perspective of a multinational investor and provides relevant qualitative and quantitative information about the company tax regimes in the EU Member States which are in force in 2001.

The main aim of the study is to compute and to compare effective marginal tax rates (EMTR) on domestic investment in all 15 EU Member States. A secondary aim is to work out the impact of the different tax drivers on the effective tax burden, i.e. to analyse how the EMTRs of the Member States are influenced by the tax systems, the different types of profit and non-profit taxes, the tax bases and the tax rates. The computation of the EMTR and the quantitative analysis is based on the well known approach of King and Fullerton which is also used, for example, in international tax burden comparison by the OECD and the European Commission. We refer to a typical manufacturing company as a base case. This company – which has the legal structure of a corporation – is characterised by a particular combination of investments and forms of finance. We considered five different types of investment: intangibles, industrial buildings, machinery, financial assets and inventories. The financing policy considered three sources of finance: new equity capital, retained earnings and debt.

The calculations take into account the most relevant tax provisions. Relating to company taxation, we considered the corporation tax, additional profit taxes and non-profit taxes, the tax rates and the most relevant aspects of the tax base. Chapter B presents a brief and well structured overview on the company tax regimes in the EU Member States.

Overview on results

The results are signalling a great variation between the EMTR in the EU Member States. For our base case manufacturing company we compute an overall EU-average EMTR of 18.13%. This figure appears to be relatively low. But since debt-financing in addition to equity-financing is considered, a relatively high amount of tax savings can be attributed to interest deduction by the company. There are several countries that come out well above or below this average. The range is wide. Indeed, the average EMTR per individual country ranges from 6.76% (Greece) to 30.11% (France). Alternative assumptions about the structure of investment as well as the financing policy can result in even larger differences.

More than by anything else the ranking is influenced by differences between the statutory tax rates on profits, i.e. the rates of corporation tax including local profit taxes and surcharges. It is striking that the two countries (Germany and Luxembourg) with the highest statutory tax rates on profits also belong to the group with the highest overall EMTR. It is also interesting to note that Sweden, Finland, and Ireland, which have the lowest statutory tax rates on profits, are all among the five countries with the lowest EMTR. We refer to Table C.4.

A comparison of the aggregate profit tax rates and the EMTR for each country – we refer to Table C.6 – unveils another interesting aspect. It appears that for all countries except four (Austria, France, Greece and Italy) the average EMTR for retained earnings and new equity varies only a few percentage points from the statutory tax rate on profits. This leads to the conclusion that in a normal case (i.e. not taking into account special investment incentives) the composition of the tax base does not have a great impact on the effective tax burden. The level of the tax rate is the truly important factor for the difference in tax burden.

However, with respect to the situations in Austria, France, Greece and Italy, this statement cannot be generally applied to all Member States. France levies a high portion of non-profit taxes which considerably increase the effective tax burden. Austria and Italy apply a so-called concept of dual income taxation which explicitly favours equity financing. Greece applies a significantly lower tax rate on investment income. Therefore, in Austria, Greece and Italy, the effective tax burden is considerably lower than the statutory tax rate on profits.

Taxation of company finance

From the point of view of the corporation our calculations clearly indicate that the most tax-efficient method of finance is debt rather than retained earnings or new capital. We also conclude that the debt-equity ratio, and hence the weight of debt in the source of finance, has a significant influence on the effective tax burden. On the other hand, distribution policy has no impact on the EMTR at the level of the corporation due to equal treatment of distributed profits and retained earnings. We refer to Table C.10.

However, we did not consider taxation on profit repatriation such as withholding taxes on dividends and interest and the method for eliminating international double taxation on dividends. These considerations certainly depend on individual circumstances, such as the relevant tax provisions of the home country of the parent company and the provisions of the tax treaty between the host country of the EU-subsidiary and home country of the parent.

Taxation of company investment / assets

With respect to depreciable assets the relative taxation of either intangibles or machinery is more generous than the taxation of buildings. A notable exception

is Greece, where buildings are depreciated over periods of 10 years only. Intangibles are treated most favourably in Denmark, where an immediate write-off is permitted. A sensitivity analysis of the relative weight of the assets as a percentage of balance sheet total leads to the conclusion that the impact of a different capital intensity is, on average, not great. We refer to Table C.9.

Sensitivity of results with respect to profitability and personnel intensity

The rate of return and thus the profitability of an investment is determinative for the results. Beyond some level of pre-tax return (about 10%) the EMTR is not greatly affected by any further changes in the pre-tax return. Below that level the results are significantly affected by differences in pre-tax return, particularly in the range below 6%. This leads to important changes in the relative EMTRs. Indeed, the spread between the highest and lowest EMTR across Member States falls from 54 percentage points for a pre-tax return of 3% to 19 percentage points for a pre-tax return of 15%. The EU-average falls from 19.23% to 18.32%. We refer to Table C.7. The considerable variation between the EMTR of the EU Member States in the case of a low profitability is to a great extent attributable to the levy of non-profit taxes.

Austria and France raise taxes which are increasing if the labour costs increase. Thus, a fair comparison of the EMTR requires that the costs of labour are included. In particular, the French rules are far from ideal from an economic point of view. With regard to "taxe professionnelle" and employer taxes both capital- and labour-intensive industries currently bear high tax burdens. However, the French government has announced to abolish payroll from the base of the "taxe professionnelle" until the year 2003. This would result in a significant reduction of the French tax burden.

Effective Tax Burdens for different industries

Since the effects of the weights of the types of investment, the sources of finance and the personnel intensity on the effective tax burden are not the same in each country, the EMTR were recalculated for 12 other industries in addition to our base case manufacturing company. We refer to Table C.11. The levels of the EMTRs and the variations between EMTRs across countries clearly depend on the specific industry. In this respect, the capital intensity, the debt-equity ratio and the personnel intensity are important factors. However, except for Belgium, Luxembourg and Finland, there are only minor changes in the country ranking from the highest to the lowest EMTR for different industries. Therefore, the base case makes a good assumption about the country ranking of the EMTRs.

Effects of tax reforms between 1998 and 2001

The final Section summarises the main tax reforms and their consequences for the effective levels of company taxation since 1998. The dominant trend in the tax

reforms has been a lowering of the tax rates on profits. This has been seen in eight out of 15 EU Member States. However, this lowering of the tax rates was combined with a broadening of the tax bases, in particular with a cut back of the depreciation rules. In addition, many Member States have changed their corporation tax systems. There is an obvious trend away from imputation systems towards shareholder relief systems which, however, reduce relief for corporation tax to domestic shareholders. The reduced relief for corporation tax also compensates for revenue losses attributable to the tax rate reductions. Since the changes of the corporation tax systems only burden resident tax payers, this trend clearly indicates that Member States try to strengthen the international competitiveness of their tax systems.

As a consequence of the tax reforms, the EU-average EMTR has fallen from 19.91% in 1998 to 18.13% in 2001. We refer to Table C.13. However, the effects on the country ranking from the highest to the lowest EMTR were only minor. Except Austria, Ireland and Portugal, no country could improve its position. In particular those Member States which did not reduce their tax burden or even increased it moderately, have lost some positions in the country ranking. The most striking result is, that countries on top of the ranking (Finland, Greece, Italy and Sweden) as well as at the bottom of the ranking (France and Germany) remained the same. From a quantitative point of view, only the Irish tax reforms caused major changes. The Irish EMTR has fallen from 20.59% in 1998 to 9.43 in 2001 respect already given to 12.5% corporation tax rate which will become effective from 2003. Since other countries with relatively low EMTRs did not further reduce their tax burdens, there is, however, no so-called race to the bottom.

Final conclusions

Tax regimes are designed as a whole. From the perspective of a multinational investor, the most important elements of a tax regime constituting the effective tax burden are the tax rate, the tax base and additional (local) taxes profit and non-profit taxes. From these three elements, the *tax rate on profits* has in general the highest impact on the level of effective tax burden. However, the tax rate on profits alone cannot explain the country ranking with respect to the effective tax burden in any case. There are several exceptions from this general rule. The most important exceptions are a relatively high level of non-profit taxes, for example in France, special (low) tax rates for certain types of corporate income, for example in Greece, special concepts for company taxation, for example the concepts of "dual income taxation" in Austria and Italy which favour equity capital against debt-financing, or local profit taxes which limit interest deductibility, for example the trade tax in Germany.

CHAPTER A

INTRODUCTION

I. AIM OF THE STUDY

With the formal establishment of the European Union's single market in 1992 and the third stage of the European Money Union (EMU) in 1999 many regulatory and economic barriers for doing business in the European Union (EU) have been removed. Yet, competition in the EU is still strongly distorted by the tax regimes of the EU Member States, since taxation is neither co-ordinated or even harmonised within the EU. Therefore, a multinational investor who plans to establish or restructure his business in the EU has to analyse and manage 15 independent European tax regimes as well as their complex interactions with his own tax system. Since other important economic and legal conditions within the EU have been harmonised more and more it is not surprising that discussions on the economics of one business location as against another in the EU quickly turn to the comparative tax burdens.

This study presents estimates of the effective levels of company taxation in the 15 Member States of the EU. The study is established from the perspective of a multinational investor and provides relevant qualitative and quantitative information about the company tax regimes in the EU Member States and their effects on the decision making of multinationals such as, for example, location and financing decisions. The study uses information about the tax regimes which are in force in 2001.

The main aim of the study is to compute and to compare effective marginal tax rates (EMTR) on domestic investment in all 15 EU Member States. The computation of the EMTR and the quantitative analysis is based on the well known approach of King and Fullerton (1984). The most important studies by the OECD (1991) and the European Commission (in the Ruding Report of 1992) in the last decade as well as an earlier report prepared by Baker & McKenzie in co-operation with the University of Mannheim (1999) on behalf of the Dutch Ministry of Finance applied the same methodology. A secondary aim of this study is to work out the impact of the different tax drivers on the effective tax burden. This means we want to elaborate for specific situations how the effective tax burdens of companies in the EU Member States are influenced by the tax systems, the different types of profit and non-profit taxes, the tax bases and the tax rates.

II. PERSPECTIVE OF A MULTINATIONAL INVESTOR AND THE ROLE OF PERSONAL TAXES

The typical structure of a multinational company with world-wide activities is composed by a parent or head company located in one country and subsidiaries in many different locations. The shareholders of the parent company are spread all over the world. From the perspective of a multinational investor profits which result from cross-border investment therefore might be taxed at three different levels.

First, taxation takes place at the level of the subsidiary which carries out the investment. Second, profits may be taxed at the level of the parent when they are repatriated from the subsidiary to the parent company. In general, a tax treaty between the host country of the subsidiary and the home country of the parent company includes provisions relating to the elimination or mitigation of international double taxation on repatriated profits. Thirdly, personal taxes of the shareholders are levied in the case of profit repatriation from the parent company. In addition, the tax burden at each level depends on how the investment is financed. If we consider, for example, equity- and debt-financing of the subsidiary by the parent company, the taxation of dividends and of interest payments at the level of the parent company has to be included in the analysis.

Compared to this complex structure of several independent levels of taxation, our study takes a more narrow perspective. We concentrate on the EU Member States as host countries of the subsidiaries and calculate the effective tax burden on domestic investments which take place in each Member State. The tax burdens are calculated for different types of investment of the subsidiary (e.g. buildings, intangibles and machinery) and different ways of financing these investments by the parent company (e.g. injection of new equity capital or granting a loan). Thereby, we restrict our analysis on the taxes borne at the level of the subsidiaries. This means we *neither include taxes on repatriated profits* from the subsidiaries which might be levied at the level of the parent company *nor personal taxes* of the shareholders.

From the perspective of a multinational investor, however, these assumptions are justified by the following considerations. First of all, we want to keep our analysis still manageable. Since we do not know in which country the parent company (i.e. the multinational investor) is located, we ideally would have to include at least the most important locations inside and outside the EU. This does not seem to be a feasible task.

Moreover, if we bring in mind that generally accepted provisions for the taxation of the *cross-border repatriation of profits* exist which are embodied in the OECD Model Convention, then the tax burdens borne at the level of the subsidiaries already include the most relevant information. In the case of *equity-*

financing, for example, dividends from the subsidiary can be either exempt at the level of the parent company or a credit for the underlying corporation tax is granted. If the exemption method is used – and the levy of withholding taxes on dividends is neglected – the tax burden borne at the level of the subsidiary does not change. In the case a foreign tax credit is granted, the tax burden at the level of the parent company is the minimum tax burden that faces the multinational investor. If, in this situation, the tax burden of the subsidiary is higher, the taxes in excess become in general definitive. However, even lower foreign tax burdens are advantageous since they allow to optimise the position of the parent company with regard to the foreign tax credit. Therefore, in most cases the tax burden at the level of the subsidiary is relevant for the comparative advantage of one location over another location.[1] The ranking of the foreign locations in the case of *debt-financing* of the subsidiary is even more straightforward. Since interest payments from the subsidiary are – as a general rule – deductible from the profits of the subsidiary and subject to taxation at the level of the parent company, a lower tax burden at the level of the subsidiary in the case of debt-financing already indicates comparative advantages over another location and vice versa.

Finally, turning to *personal taxes* of the shareholders there is no clear answer to the question whether they should be included in a comparison of effective tax burdens of companies or not. The answer depends to a great extent on the *size of a company*.

From the perspective of a *multinational investors*, personal taxes of the shareholders mostly do not matter since these investors act in the main interest of the firm and not in the main interest of the shareholder. This is also confirmed by the consideration that multinational companies generally have many different tax-paying and tax-exempt shareholders which are resident or non-resident individuals and separate legal entities respectively. Since it is impossible in practise to identify the relevant shareholders and their tax position, it is reasonable to conclude that personal taxes do not matter. Therefore personal taxes of the shareholders of the parent company are excluded from our international comparison of the effective tax burdens of companies. Moreover, if the subsidiary is under the exclusive control of the parent company, personal taxes in the host country of the subsidiary do not matter because there are no other shareholders besides the parent company. Therefore, we do not account for personal taxes in the host country of the subsidiary either.

The situation would be different, however, if we considered *small and medium-sized companies* (SMEs). Since these companies know the tax status of their owners and the most important source of income for the owners is the company,

[1] The multinational investor should, however, always take into account individual circumstances such as the relevant provisions of tax treaties.

a meaningful comparison of the effective tax burden of SMEs would have to include personal taxes.

III. STRUCTURE OF THE STUDY

The comparison of the effective levels of company taxation is made in two stages. Chapter B describes the basic elements of the company tax regimes of the EU Member States to the extent that they are relevant for this study. We concentrate on corporations as the relevant legal form of a company. The qualitative analysis of the tax regimes focuses on the corporation tax and on the additional profit taxes and non-profit taxes levied from the corporation, both at state level and municipal level. With respect to the corporation tax attention is given to the composition of the tax base, the tax rates and the corporation tax systems. Since we only consider taxes borne at the corporation level, the personal income tax regimes are not included in this study, nor are wage taxes, social insurance contributions, pension payments, etc. Capital duty is also not included, as this is a one-time levy only, which does not fit in the model we have used for the calculations and which focuses on taxes that are levied on a periodical basis. Moreover, we explicitly exclude special investment incentives. For detailed information with respect to the tax parameters used in this study for our calculations, we refer to Appendix A.

Chapter C calculates the effective marginal tax rates (EMTR) on domestic investment in the 15 EU Member States. For the calculations we use the model of King and Fullerton (1984). In a first step, we briefly introduce the methodological concept and the most important assumptions of the model. These assumptions are also summarised in Appendix B. Section II determines and compares the EMTR in the Member States taking as a base case data which is typical for the manufacturing sector. Section III examines how the results will be affected by alternative assumptions on the economic data of the company. Section IV then recalculates the effective tax burdens using data for 12 other industries. In 1999, Baker & McKenzie prepared a comprehensive report which included the same countries and applied the same methodology as in this study. The report from 1999 used information about the tax regimes which were in force in 1998. Based on this information, Section V recalculates the effective tax burdens on companies beginning with the fiscal year 1998 up to the year 2001. This summarises the consequences of the main tax reforms during this period. Detailed country results are presented in Appendix C.

Chapter D includes a brief summary of the main conclusions.

CHAPTER B

REGIMES OF COMPANY TAXATION IN THE MEMBER STATES OF THE EU

I. CORPORATION TAX

1. Overview

A corporation can either be a public limited company (plc.) or a limited company (ltd.). Anyway, corporations are separate legal entities and subject to corporate income tax independently from the taxation of their shareholders. This is true irrespective whether the shareholder is a natural person or another corporation and whether he is located domestically or abroad. In general, corporation income tax is levied on the *world-wide income* of a resident corporation.[2] A corporation is resident in that country where it has its domicile or its place of management. These criteria are usually quite similar between the EU Member States.

The computation of the *tax base* for corporation income tax purposes is in principle based on the Generally Accepted Accounting Principles (GAAP) which are relevant for financial accounting. However, the GAAPs are adjusted and modified according to the provisions of the national tax codes. Since neither theses adjustments nor the national GAAPs exactly correspond to each other, taxable income will differ across Member States.

The corporation *tax rates* including surcharges (as from January 1, 2001) vary between 12.5% in Ireland[3] and 40.17% in Belgium. The average tax rate within the EU Member States currently amounts to 31.83%. However, some countries levy special tax rates on certain categories of income from a corporation.

There exist various types of *corporation tax systems*. If the systems are classified to the extent of the integration of the corporation income tax into the corporate or personal income tax of the shareholder, three different categories can be distinguished: classical system, double taxation reducing and double taxation avoiding systems. Currently, corporation tax systems belonging to all of these categories exist within the EU. Since relief for corporation tax is in general only granted to domestic shareholders – and if the levy of withholding taxes on dividends is neglected – the tax burden borne at the level of a (EU-based) subsidiary is in general the minimum tax burden that faces a multinational investor.

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2 Within the EU, the only exception is France where the territorial principle applies.

3 The 12.5% tax rate in Ireland will become effective not before 2003. However, we already have considered this rate in our report. The actual rate of the year 2001 is 20%.

However, the tax burden borne at the level of a subsidiary is only relevant in the case that investments of the subsidiary are financed by the parent company with equity capital. Another possibility of financing the subsidiary would be a loan by the foreign parent company. Since the corporation (i.e. the EU subsidiary) and its shareholders (i.e. the foreign parent company) are separate legal entities, interest expenses derived from financial arrangements between the parent and the subsidiary are deductible from the profits of the subsidiary. Since the interest payments are taxable at the parent's level, it is not the tax burden borne at the level of the subsidiary but rather the tax burden at the level of the parent that faces the multinational investor. Although, interest deduction on inter-company loans at arm's length standards is, in general, available in all EU Member States, certain countries limit the deductibility by applying so-called thin capitalisation rules.

2. Tax Bases

The basis for the computation of taxable income (i.e. the corporation tax base) is formed by the national Generally Accepted Accounting Principles (GAAP) which are relevant for financial accounting. In all EU Member States, the provisions for financial and tax accounting are linked to some extent. Moreover, within the EU, the national GAAPs are harmonised to a great extent by the 4th EC Directive from 1978. Therefore, if the national GAAPs were equal and were relevant for the computation of taxable income in each Member State without exception, then there would exist in principle an uniform tax base within the EU.

But this is not true for many reasons. Although a dependence between financial and tax accounting prevails in most Member States, this linkage does not exist all over the EU. By contrast, in the Anglo-Dutch countries, independence between financial and tax accounting is the prevalent concept. Moreover, even if there is a linkage between financial and tax accounting, the national GAAPs are adjusted and modified to different extents for certain binding tax provisions. Finally, since the 4th EC Directive includes a lot of accounting options and choices, the national GAAPs in the Member States are not totally harmonised. Therefore, as a general rule, only the framework for the determination of taxable income is harmonised to a certain extent. For example, acquisition costs are the key norm for the valuation of assets and the realisation principle is recognised as a point of time when profits and losses enter the accounts.

By contrast, various differences with regard to particular elements of the tax bases exist. The most important rules are presented in Table B.1 and explained in more detail in the following. The provisions for the computation of taxable income which are incorporated in our model are presented in Tables A.A.5 – A.A.8 of Appendix A.

Table B.1: Most important rules for the computation of taxable income in the EU Member States

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden	United Kingdom
Relationship between financial and tax accounting	yes	Yes	no	yes	yes	yes	yes	no	yes	yes	no	yes	yes	yes	no
Depreciation															
Goodwill															
Depreciation method	straight-line	straight-line	straight-line	straight-line	not depreciable	straight-line	straight-line	not depreciable	straight-line	straight-line	straight-line	not depreciable	straight-line	straight-line / declining-balance	not depreciable
Depreciation period	15 years	5 years	7 years	10 years	-	15 years	5 years	-	10 years	10 years	5 years	-	10 years	5 years	-
Depreciation rate, if declining-balance meth														max. 30%	
Other intangible assets															
Depreciation method	straight-line	straight-line	100% first year allowance on option	straight-line	straight-line	straight-line	straight-line	straight-line	straight-line	straight-line	usually straight-line	straight-line	straight-line	straight-line / declining-balance	declining-balance (pooled basis)
Depreciation rate, if declining-balance meth	-	-	-	-	-	-	-	-	-	-	-	-	-	max. 30%	25%
Office buildings															
Depreciation method	straight-line	straight-line / declining-balance	not depreciable	declining-balance	straight-line	straight-line	straight-line	not depreciable	straight-line	straight-line	straight-line	straight-line	straight-line	straight-line	not depreciable
Depreciation period	50 years	33.3 years	-	-	25 years	33.3 years	8.3-20 years	-	25 years	33.3-50 years	normally 40 years	50 years	50 years	50 years	-
Depreciation rate, if declining-balance meth	-	6%	-	4%	-	-	-	-	-	-	-	-	-	-	-
Other industrial buildings															
Depreciation method	straight-line	straight-line / declining-balance	straight-line	declining-balance	straight-line	straight-line	straight-line	straight-line	straight-line	straight-line	straight-line	straight-line	straight-line	straight-line	straight-line
Depreciation period	25 years	20 years	20 years	-	20-50 years	33.3 years	8.3-20 years	25 years	25 years	20-25 years	40 years	20 years	33.3 years	25 years	25 years
Depreciation rate, if declining-balance meth	-	10%	-	7%	-	-	-	-	-	-	-	-	-	-	-
Plants, machinery, office equipment															
Depreciation method	straight-line	straight-line / declining-balance	declining-balance (pooled basis)	declining-balance (pooled basis)	straight-line / declining-balance	straight-line / declining-balance	straight-line / declining balance	straight-line	straight-line	declining-balance / straight-line	usually straight-line	straight-line / declining-balance	straight-line / declining-balance	straight-line / declining-balance	declining-balance (pooled basis)
Depreciation rate, if declining-balance meth	-	max. 40%	max. 25%	max. 25%	1,25 - 2,25 x the straight-line rate	max. 20%	3 x the straight-line rate	-	-	max. 30%	-	1,5 - 2,5 x the straight-line rate	1,5 - 2,5 x the straight-line rate	max. 30%	25%
If declining-balance method, shift to straight-line method possible	-	Yes	no	no	yes	yes	-	-	-	yes	-	yes	yes	yes	no
Max. cost of assets fully written of in year of acquisition	ATS 5.000	arrangement	DKK 9.500	FIM 5.000	FRF 2.500	DEM 800	GRD 200.000	-	ITL 1 Mio	LUF 35.000	NLG 1.000	PTE 40.000	-	SEK 2.000 – 10.000	-

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden	United Kingdom
Inventories	FIFO / LIFO / weighted average	FIFO / LIFO / weighted average	FIFO / weighted average	FIFO	FIFO / weighted average	LIFO / weighted average	FIFO / weighted average	FIFO / weighted average	FIFO / LIFO / weighted average	FIFO / HIFO / LIFO / weighted average	FIFO / base-stock-system / weighted average	FIFO / LIFO / weighted average	FIFO / LIFO / weighted average	97% FIFO	FIFO / weighted average
Reserves for bad debts / contingent liabilities	specification	specification	no	no	specification	specification	restriction	specification	restriction	specification	specification	restriction	specification	specification	specification
Pension costs	pension reserve, pension funds	pension funds	pension funds	pension funds	pension funds	pension reserve, pension funds	pension funds	pension funds	pension funds	pension reserve, pension funds	pension reserve, pension funds	pension funds	pension funds	pension reserve, pension funds	pension funds
Losses															
carry-forward	unlimited	unlimited	5 years	10 years	5 years	unlimited	5 years	unlimited	5 years	unlimited	unlimited	6 years	10 years	unlimited	unlimited
carry–back	-	-	-	-	3 years	1 year	-	3 years	-	-	3 years	-	-	-	1 year
Capital gains	roll-over relief	roll-over relief exemption	roll-over relief exemption indexation	roll-over relief	reduced rates in special cases	roll-over relief exemption	roll-over relief reduced rates in special cases	roll-over relief reduced rate indexation	suspension of taxation possible	roll-over relief	roll-over relief exemptions	roll-over relief indexation	roll-over relief indexation	-	roll-over relief indexation

- *Goodwill:*

  Goodwill is depreciable for tax purposes in all Member States except France, Ireland, Portugal and the United Kingdom. In general, the straight-line depreciation method is used over periods varying between 5 and 15 years. Since the depreciation of goodwill is of highest relevance on the occasion of an acquisition of a company, the depreciation rules are less important for the periodical taxation and in case of creation of a company.

- *Intangibles:*

  Intangibles acquired from third parties[4] (e.g. patents) are depreciable in all Member States. The straight-line depreciation method over the expected period of use prevails with exceptions for Sweden and the United Kingdom. Both countries apply the declining-balance method.

- *Buildings:*

  With respect to buildings one should distinguish between office buildings and industrial buildings. Certain Member States – Denmark, Ireland and the United Kingdom – do not allow depreciation on office buildings (or non-industrial commercial buildings). By contrast, industrial buildings may be depreciated in all Member States. The straight-line depreciation method is generally allowed, in two countries the declining-balance method is optional (Belgium) or compulsory (Finland). The depreciation periods vary between 20 and 50 years and are in general longer for office buildings.

- *Tangible fixes assets:*

  Tangible fixed assets such as plant and machinery and office equipment are depreciated in all Member States. Most countries allow on option the straight-line method or the declining-balance method. Only Austria, Ireland and Italy restrict depreciation to the straight-line method. If the declining-balance method is applied, the depreciation rates can amount up to 50% for assets with an useful life of three years.[5]

- *Inventories:*

  Inventories are valued at production costs. These may differ in particular with respect to the incorporation of production overheads. Changes in stock of finished goods and work in progress are in general valued at the weighted

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4 The costs for self created intangibles (e.g. research & development) can be deducted immediately from the tax base.

5 For example, in Spain the annual straigth-line depreciation rate is increased by 50% if the useful life of an asset is less than 5 years. Thus, if the useful life is 3 years, the depreciation rate is 50% (= 33.33% * 1.5).

average cost method. Optionally, most Member States allow other allocation methods such as FIFO. By contrast, LIFO cannot be universally applied in Denmark, Finland, France, Greece, Ireland, the Netherlands, Sweden and the United Kingdom. In times of inflation, LIFO is advantageous since it avoids the taxation of inflationary gains.

- *Provisions:*

  Within the scope of this study it is not possible to develop a comprehensive overview or even a ranking on the tax treatment of provisions. Instead, in order to best highlight the principle legal framework of the Member States, we have concentrated on provisions for bad debts or uncertain (contingent) liabilities. Although all Member States except Denmark and Finland generally allow to deduct contributions to provisions for bad debt from taxable income, deduction is in most countries only allowed upon specification. The necessary proofs are likely to differ across countries. Three countries – Greece, Italy and Portugal – even restrict the deductible amounts to a narrow quantitative limitation. A general deduction without specification is not allowed in any of the Member States.

- *Pension costs:*

  The provisions of the national tax codes for the deductibility of pension costs are rather complex. In principle, the deductibility depends on the manner in which the occupational pension scheme is financed. With respect to the financing, we can distinguish between funded and unfunded schemes. Funded schemes prevail in the Anglo-Dutch countries as well as in most other EU Member States. In these countries companies make regular cash contributions to a pension fund (or an insurance company) which collects the money and is responsible for the future pension payments to the employees. By contrast, the predominant system in Germany, Austria and Luxembourg still is an unfunded scheme. This differs from a funded scheme with respect to the person legally responsible for the future pension payments. In an unfunded scheme the company (employer) is responsible, whereas in the case of a funded scheme the pension fund (or the insurance company) is responsible. In both cases, however, the costs for the future pension payments are deductible from the tax base of the company (employer) upon realisation: in the case of a funded scheme the premiums paid to the pension fund are deductible and in the case of an unfunded scheme the company accounts for a pension reserve in the balance sheet and deducts annual contributions to this book reserve from the tax base.

  Although all Member States allow to deduct costs for future pension payments from the tax base either as contributions to pension reserves or as payments to external funds and similar (insurance) institutions, it is very difficult to compare the deductible amounts. They depend on the individual pension plan (e.g.

whether it is a defined benefit or a defined contribution plan) as well as on the actuarial assumptions, the national accounting standards and special provisions of the national tax codes. However, as a general rule, in contrast to many other statements it is not true that the deduction of contributions to provisions for pension reserves is more tax beneficial than the deduction of premiums paid to pension funds. Many individual examples as well as empirical evidence proof the opposite.

- *Losses:*

  Losses occurred in the usual business may be carried forward and deducted from future taxable income in all Member States. However, limitations in time are very common. Only eight Member States (Austria, Belgium, Germany, Ireland, Luxembourg, the Netherlands, Sweden and the United Kingdom) grant an unlimited loss carry-forward. By contrast, two thirds of the Member States have no loss carry-back. From the remaining five countries that allow a loss carry-back, two countries limit the period to one year (Germany and the United Kingdom) and three countries have limitations to the previous three years (France, Ireland and the Netherlands). As a consequence of these various restrictions, the country ranking of the effective tax burdens of companies in a loss situation can be completely different from the ranking of companies which always pay taxes.

- *Capital gains:*

  With respect to the taxation of capital gains considerable differences between the national tax provisions exist. From the Member States, only Sweden generally includes capital gains in the ordinary business income where they are taxed accordingly. In the other countries, relief is available under various provisions.

  Roll-over relief is granted in all of those countries with the exception of France and Italy. Since the roll-over relief is not granted to same types of assets in all countries – short-life assets, for example, are excluded in many countries – there is, however, no uniform tax treatment in this respect. *Indexation of acquisition costs* in order to account for inflation and reduce taxable capital gains due to price increases is available in Denmark, Ireland, Portugal, Spain and the United Kingdom. A general *reduced tax rate* on capital gains is applied in Ireland and – limited to specified assets, however, - in France and Greece. Finally, some capital gains, in particular gains upon the disposal of shares in other corporations, are *exempt from taxation* in Belgium, Denmark, Germany and the Netherlands.

Table B.2: Thin capitalisation rules in the EU Member States

Country	Debt-to-equity ratio
Austria	No specific rules
Belgium	7:1 if paid into countries with low tax rates
Denmark	4:1
Finland	No specific rules
France	1.5:1
Germany	1.5:1
Greece	No specific rules
Ireland	No specific rules
Italy	No specific rules
Luxembourg	No specific rules
Netherlands	No specific rules (85:15 rulings)
Portugal	2:1
Spain	3:1
Sweden	No specific rules
United Kingdom	1:1

It has already been emphasised that, from the perspective of a foreign based multinational investor, a subsidiary can be financed inter alia either by the injection of new equity capital or by granting a loan. In the case of debt-financing, interest payments are generally deductible from the corporation tax base of the subsidiary if they are in accordance with the arm's length standards. However, eight out of the 15 Member States explicitly apply so-called thin capitalisation rules. This means that particular debt-to-equity ratios are defined which are presented in Table B.2. In the event that a loan granted by the parent company exceeds such a debt-to-equity ratio, the related interest payment is deemed a hidden profit distribution and, hence, disallowed as a deductible expense. Since these ratios are in general quite generous, no real constraints for the debt-financing of a subsidiary by its parent company exist. In addition, many countries increase these ratios if the loan is granted to a holding company.

3. Tax Rates

The corporate income tax rates in the EU Member States are usually linear. Occasionally, different rates are used in one country depending on the size of a corporation (small, medium or large) and its profits respectively. Such reduced tax rates for smaller companies or in the event of relatively low profits are used in Belgium, France, Luxembourg, the Netherlands, Spain and the United Kingdom. Two Member States – Austria and France – also impose a minimum tax which is creditable against the corporation tax due. Therefore, an extra tax burden only exists in loss situations. In five Member States – Belgium, France, Germany, Luxembourg and Portugal – the standard tax rate is increased by temporary surcharges.

Table B.3: Corporation tax rates in the EU Member States (%)

Country	Corporation tax rate for small companies	Standard corporation tax rate	Surcharge on corporation tax rate	Effective standard corporation tax rate	Special corporation tax rate
Austria	–	34.00	–	34.00	25.00
Belgium	28.00	39.00	3.00	40.17	–
Denmark	–	30.00	–	30.00	–
Finland	–	29.00	–	29.00	–
France	25.00	33.33	9.30	36.43	–
Germany	–	25.00	5.50	26.38	–
Greece	–	37.50	–	37.50	15.00
Ireland[a)]	–	12.50	–	12.50	-
Italy	–	37.00	–	37.00	19.00/27.00
Luxembourg	20.00	30.00	4.00	31.20	–
Netherlands	30.00	35.00	–	35.00	–
Portugal	–	32.00	10.00	35.20	–
Spain	30.00	35.00	–	35.00	–
Sweden	–	28.00	–	28.00	–
United Kingdom	10.00	30.00	–	30.00	–
EU-Average	–	*31.15*	–	*31.83*	–

a) As from 2003

From the country data presented in Table B.3 we can see that the effective standard corporation tax rates including surcharges vary between 12.5% in Ireland and 40.17% in Belgium. Hence, the spread between the highest and the lowest tax rate amounts to 27.67 percentage points. The average tax rate within the EU Member States currently amounts to 31.83%. There are, however, only four countries – Finland, Germany, Ireland and Sweden – with a statutory corporation tax rate below 30%. Therefore, the relatively low average tax rate can be mainly attributed to 12.5% rate of Ireland which will become effective not before 2003 but which is already considered in our report.[6] Since, in reality, the level of the statutory tax rate has a considerable impact on location decisions of multinational investors,[7] the high spread between the corporation tax rates can distort location decisions within the EU to a great extent. However, a comparison of the corporation tax rates is incomplete since local profit taxes – in case they are levied – have to be added in order to arrive at the effective statutory tax rate on profits. Germany, for example, levies a local trade tax on income at an average rate of currently 17.63%. This results in an effective statutory tax rate on profits of 39.35% respect given to the deductibility of the trade tax from the base of the corporation tax. Consequently, Germany falls back in the country ranking from the lowest to the highest tax rate

6 The Irish corporation tax rate is 20% for 2001 and 16% for 2002.

7 For empirical evidence see Devereux (1992).

from second to thirteenth place, if we consider local taxes on profits besides corporation tax.[8]

Three Member States also levy lower tax rates on certain categories of income of a corporation. Interest income of a Greek corporation is currently taxed at a final rate of 15%. This clearly favours investments in financial assets over other assets. In Austria and Italy, profits which can be attributed to the increase in the equity capital of a company are taxed at lower rates compared to the rest of the profits. These so-called d*ual income tax* concepts, however, reach far beyond a simple reduction of the tax rate. The principle aim of the *dual income tax* is to achieve more neutrality with respect to the financing of a company. Since debt-financing is favoured over against equity-financing due to the deductibility of interest payments from the corporation tax base, more neutrality can be achieved by favouring self-financing from retained earnings and equity capital contributions from the shareholders leaving other things equal. Therefore, under the *dual income tax* in both countries, a portion of income that is deemed to be derived from the increase in the equity capital is deducted from the ordinary taxable income and taxed at reduced rates. In both countries, the deemed income is derived at by applying a standardised return to the increases of the equity capital. The standardised return is derived from the yield of state and private bonds. Since this return is fixed to a "normal" rate this also means that the benefits from dual income taxation will decrease the higher the profitability (or the return on equity) of a company is. The reduced tax rates amount to 25% in Austria (instead of 34%) and to 19% in Italy (instead of 37%). In Italy, however, the aggregate corporation tax rate resulting from the application of the ordinary and the reduced tax rate cannot be lower than a minimum of 27%.[9]

The Austrian and Italian concept of dual income tax stands for a division of the taxable income of a company into income attributed to equity-financing and to other income.[10] This concept cannot be compared with the dual income tax prevailing in Finland and Sweden (and Norway) which is also known as the *Nordic Model*.[11] In both countries, all sources of capital income are taxed at the same flat rate which is significantly lower than the tax rate on earned income. Earned income is more or less income derived from labour and taxed at progressive rates amounting to approximately 60%, compared to tax rates below 30% on capital income (see Table B.4). Capital income is defined very broadly and covers income

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8 See Table A.A.1 of Appendix A.

9 We use the 27% tax rate in our calculations.

10 The technical procedure of deducting a fictitious return on equity capital contains elements of the so-called "Allowance for Corporate Equity" (ACE), which is a variant of a cash flow tax and, hence, of a broader concept of consumption tax. See Gammie (1991); Jacobs and Schmidt (1997). However, under ACE, the tax rate on the fictitious return on equity capital as well as on interest is zero (i.e. the returns and interest payments are tax exempt). Since interest payments are still taxable as are profits of a corporation upon distribution there is still a tax burden on these sources of income. Therefore, it is not clear to decide whether dual income tax is in line with ACE (and, hence, with a consumption tax) or still in line with income taxation. We think the latter is true, since the *income* is still taxed.

11 See Cnossen (2000); Viherkenttä (1993).

from businesses, rental and royalty income, interest income, dividends and capital gains. Therefore, the Nordic type of dual income tax stands for the division of total income into capital income and earned income. Since the same flat tax rate applies on all categories of capital income, there is no preferential treatment of equity financing.

4. Tax Systems

Corporation tax systems can be catalogued according to various criteria. If the systems are classified to the extent of the integration of the corporation income tax into the personal income tax of the shareholder, three different categories can be distinguished: classical system, double taxation reducing and double taxation avoiding systems. In the classical system, dividends are neither exempt by the company nor is the shareholder entitled to a tax credit or some other relief for corporation tax. Measures for reduction or avoidance of double taxation can be achieved either through the company or the shareholder. With regard to companies, a deduction of dividends as business expenses or a split corporation tax rate which favours a distribution of profits against retention[12] can be considered. With regard to shareholders, the relief alternatives exist in the granting of a tax credit and in the preferential treatment of divided income compared to other income. From the nine possible alternatives there are presently five that are used within the EU. The possibilities and the countries are listed in Figure B.1.

The classical system still only exists in Ireland. Under this system, dividends without regard of the corporate income tax payment are subject to the ordinary – in general progressive – individual income tax rate. This results in a double taxation of dividend income with corporation tax and personal income tax.

Contrary to this is the full imputation system that results generally in an avoidance of double taxation by crediting the paid corporate income tax on the income tax of the shareholder who is entitled to imputation credit. This system operates in Finland, France[13] and Italy[14]. In these countries, dividends are incorporated together with a tax credit (grossed-up basis) that corresponds to the corporation tax underlying the dividends in the individual income tax base. The grossed-up amount is generally taxed progressively. As a result, distributed profits are subject only to the personal income tax of the shareholder. If the individual income tax on the grossed-up basis exceeds the corporation tax credit, the difference has to be paid by the shareholder. If, on the other hand, the

12 I.e. a split-rate system which was in force in Germany until 2000 and taxed distributed profits (30%) at a lower rate than retained earnings (40%).

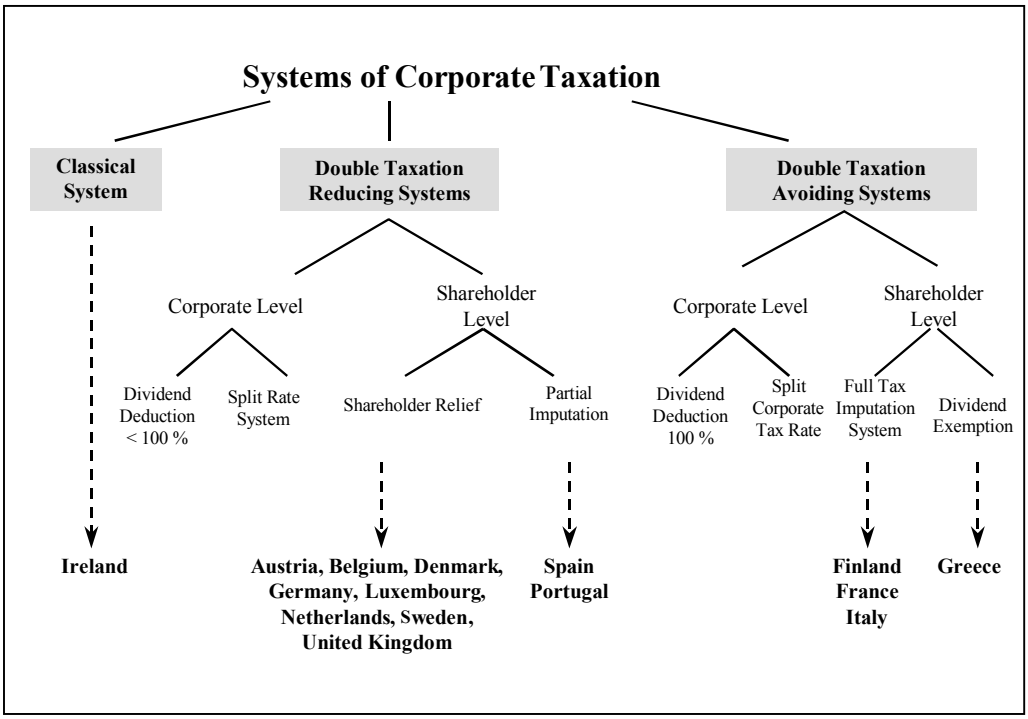
13 Since France levies temporary surcharges on the corporation tax which are not creditable against personal income tax (see Table B.2), there is currently in fact no full imputation.

14 Since portfolio shareholders may opt for a taxation of dividends with a final withholding tax (at a rate of currently 12.5%), the Italian system has also elements of a shareholder relief system.

corporation tax credit exceeds the personal income tax, the excess corporation tax credit is refunded to the shareholder.

An avoidance of double taxation can also be achieved through a system of exemption of dividends from personal income tax, as it is applied in Greece. The outcome of this is that dividends are only taxed once as they are through a full imputation system. However, in the dividend exemption system, the corporation tax rate and not the personal income tax rate is decisive for the tax burden.

Figure B.1: Systems of Corporate Income Taxation in the Member States of the EU



Between the classical system and double taxation avoiding systems are the double taxation reducing systems. These systems only partially abolish the double taxation of dividends. In the EU, double taxation reducing system are present in two forms: one in the form of a partial imputation system and the other in the form of a so-called shareholder relief package. Both systems work to reduce the effects of double taxation at the shareholder level.

Partial imputation systems exist in Spain and Portugal. In these countries, like in the full imputation system, dividends are incorporated together with a tax credit in the individual income tax base and then are progressively taxed together with the other sources of income. However, since the tax credit is generally smaller than the underlying corporate tax, the double taxation on dividends is, of course, reduced but not completely avoided.

The same can be said for the shareholder relief systems existing in the majority of the EU Member States. Austria, Belgium, Denmark, Germany, the Netherlands, Luxembourg, Sweden and the United Kingdom all use shareholder relief systems. In these eight countries there is a mitigation of the double taxation on dividends through a more or less rough reduction of personal income tax on dividend income. The reduction of personal income tax on dividends can take different forms.

In Austria, Belgium, Denmark, the Netherlands, Sweden and the United Kingdom[15] dividends are not included in the global personal income tax base but instead are taxed at reduced tax rates compared to the ordinary income tax rates. In most cases these reduced tax rates are final. Although there is a double taxation on dividends with corporation tax and personal income tax, it is not a "classical" double taxation, since a reduced income tax rate applies.

In the Netherlands, however, the shareholder relief system applies only to shareholders who have a substantial interest in a company. An interest of at least 5% in the issued share capital of a company is characterised as a substantial business interest. By contrast, shareholders without a substantial business interest are not taxed with their dividend income actually received. Instead, a fixed assumed return of 4% on the actual value of the shares is calculated each year (*investment yield tax*[16]). This assumed return is taxed at a flat rate of 30%. This means that the tax due is effectively 1.2% on the value of the shares (30% of 4%). Since the tax is not levied on the dividend income actually received, in fact, the yield tax is rather a net wealth tax than an income tax.

Compared to the application of a reduced and final tax rate, the "Half *Rate* Procedure" that exists in Austria produces somewhat different results. Here dividends are subject to a final withholding tax of 25% unless a tax assessment at half of the average income tax rate does not arrive at a lower tax burden. This means, that compared with the application of the final tax rate double taxation on dividends is further reduced if the average income tax rate is less than 50%.

Another variant of the shareholder relief is used in Germany and Luxembourg. In both countries, 50% of the dividends can be deducted from the personal income tax base. This so-called "Half *Income* Procedure" produces almost the same outcome as the application of half of the average income tax rate which is applicable in Austria. This can result solely in a different rate of progression so that dividends are included at different volumes in the tax base. However, under the "Half Income Procedure", expenses which are related to the dividend income

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15 In the United Kingdom, dividends still are grossed-up by one ninth of their amount. However, this gross-up cannot be qualified as a tax credit anymore since there is no refund. Moreover, the higher tax rate on dividend income (32.5%) is explicitly lower than the higher tax rate on ordinary income (40%).

16 See Meussen (2000).

can, as a consequence of the 50% exemption of the income, only be deducted by one half of their amount from the income tax base.

The dominance of the shareholder relief systems within the EU is the result of a longer trend in the last decade. Germany abolished its full imputation system (2001). Belgium (1992), Denmark (1991) and the United Kingdom (1999) changed from their partial imputation systems and Sweden[17] (1995) from a dividend exemption scheme to a shareholder relief system. Finally, Luxembourg (1994) and the Netherlands (1997) – as far as shareholders with a substantial interest in a company are concerned – gave up the classical system in favour of a reduced taxation of dividends at the shareholder level.

The recent examples of Belgium, Denmark, Germany and the United Kingdom as well as Ireland, which abolished its partial imputation system in 1999 and introduced a classical system, illustrate that currently there is a turning away from the imputation systems within the EU. This development can be best explained by the requirements of the EC Law and the complexity of imputation systems in comparison with the classical system and shareholder relief systems.

Table B.4 lists the standard corporation tax rates which are shown in the third column of Table B.3, the amounts of the corporation tax credit and – in case of a shareholder relief system – the reduced personal income tax rates. Moreover, in order to illustrate the effects of the different systems, the overall tax burden of dividends with corporation and personal income tax is calculated under simplifying assumptions.

Under a strict national view, the full imputation system has evident advantages, since distributed profits of a corporation are subject only to the personal income tax of the shareholder (see final columns of Table B.4). Consequently, decisions as to the legal form of a company (e.g. partnership or corporation) and the financing of a corporation (e.g. debt- or equity-financing) are generally not affected by tax considerations. Moreover, when the corporation tax rate and the personal income tax rate (on capital income) correspond, as they do, for example, in Finland, then the distribution of profits results in no other total tax burden than the retention of earnings. In such a situation, the decision about the distribution of corporate profits can be made independently from taxation. In all other corporation tax systems except for the dividend exemption system, the income tax borne at the corporation level is either partially (e.g. partial imputation system or shareholder relief system) or completely definitive (classical system), so that there is ex definitione no tax neutrality.

However, (full and partial) imputation systems operate completely different in the case of cross-border investment. In contrast to domestic dividends, in general no

[17] Sweden exempts a certain amount of dividends paid from small and mediums sized corporations to domestic shareholders.

corporation tax credit is granted for foreign source dividends. The denial of a tax credit in this situation results in a double taxation of foreign source dividends with foreign corporation tax and domestic personal income tax. Therefore, with respect to outbound investment, imputation systems isolate markets and operate as the classical system. Since domestic dividends are taxed only once with personal income tax, the double taxation of foreign source dividends evidently hampers cross-border activities. Furthermore, as far as outbound investments in other EU Member States are concerned – there is presumably a conflict with fundamental freedoms embodied in the EC Treaty, particularly with the freedom of establishment (Art. 43-48 EC Treaty) and the free movement of capital (Art. 56-60 EC Treaty).[18]

Table B.4: Corporation tax systems, corporation tax credits and corporation and personal income tax rates in the Member States of the EU

Corporation Tax System	Corporation tax rate in %[a)]	Tax credit in % of		Top marginal personal income tax rate in %		Tax burden of distributed dividends with corporation and personal income tax in %	
		Dividends	Corporation tax	General	Dividends	Maximum	Income tax rate 40%
Classical System:							
- Ireland	12.50	0.00	0.00	44.00	44.00	51.00	47.50
Reduction of double taxation:							
A: Partial Imputation System:							
- Portugal	32.00	23.24	60.00	40.00	40.00	47.68	47.68
- Spain	35.00	40.00	74.29	48.00	48.00	52.68	45.40
B: Shareholder Relief:							
- Austria	34.00	0.00	0.00	50.00	25.00	50.50	60.40
- Belgium	39.00	0.00	0.00	55.00	15.00	48.15	63.40
- Denmark	30.00	0.00	0.00	59.00	40.00	58.00	58.00
- Germany[b)]	25.00	0.00	0.00	48.50	24.25	43.19	40.00
- Luxembourg[b)]	30.00	0.00	0.00	42.00	21.00	44.70	44.00
- Netherlands[c)]	35.00	0.00	0.00	52.00	25.00	51.25	61.00
- Sweden	28.00	0.00	0.00	61.00	30.00	49.60	56.80
- United Kingdom	30.00	11.11	25.93	40.00	32.50	47.50	53.33
Avoidance of double taxation:							
A: Full Imputation System:							
- Finland	29.00	40.85	100.00	67.50	29.00	29.00	40.00
- France	33.33	50.00	100.00	53.25	53.25	53.25	40.00
- Italy	37.00	58.73	100.00	45.50	45.50	45.50	40.00
B: Dividend Exemption:							
- Greece	37.50	0.00	0.00	45.00	0.00	37.50	37.50

a) See third column of Table B.3
b) 50% of dividend income is exempt from personal income tax. Therefore, the income tax rate is reduced accordingly
c) Only for shareholders with a substantial interest in a corporation. Otherwise, the investment yield tax is levied

18 See also Jacobs (1999).

Under an imputation system, the conflict with EC Law could be solved by extending the corporation tax credit to foreign source dividends. However, crediting foreign corporation taxes on an unilateral basis without mutual or bilateral compensation for revenue losses, is very costly for a country. Moreover, with reference to the Foreign Income Dividend (FID) scheme in the United Kingdom, which was abolished only a few years after its introduction in 1994, it is very complicated and complex to implement cross-border foreign corporation tax credits into domestic imputation systems.[19]

As a result of the increasing pressure from EC Law and the high complexity of the imputation system, both Germany[20] and the United Kingdom[21] have abolished their imputation systems and introduced shareholder relief systems. Obviously, the classical system and the shareholder relief systems do not come into conflict with the fundamental freedoms of the EC Treaty, since – from the perspective of a domestic investor – domestic and foreign source dividends are treated in exactly the same way: dividends are subject to taxation as well at the (domestic or foreign) corporation level as at the (domestic) shareholder level.[22] Although the classical system and shareholder relief systems do not discriminate cross-border activities against domestic investment, they are not neutral towards economic decisions of investors. For example, equity-financing of outbound investments is generally discriminated against debt-financing, since dividend income is taxed twice and interest income only once.[23]

From the perspective of a multinational investor, the most tax efficient place of location for a subsidiary in one of the EU Member States is generally not affected by the type of the corporation tax system in the different countries. Since relief for corporation tax under every system – irrespective whether inside or outside the EU – is generally only granted to domestic shareholders, and double taxation of dividends received from a (EU-based) subsidiary is mitigated according to the provisions in the home country of the parent company, the type of corporation tax system in the host country of the subsidiary is not of high interest for a foreign based multinational investor.

An exception from this admittedly general conclusion has to be made for countries which explicitly extent their corporation tax credits to foreign investors. For example, certain shareholders of British corporations are entitled to a refund of a

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19 For details of the FID scheme see Gammie (1994).

20 See Jacobs and Spengel (2000).

21 See Gammie (1997).

22 Under a shareholder relief system, this non-discrimination requires, that relief is also granted to foreign source dividends. This is true for the new German tax system (see Endres and Oestreicher (2000)) but not, for example, for the shareholder relief system of Austria. See Züger and Matzka (1999)

23 This is true under the assumption that no thin capitalisation rules effectively restrict interest deduction abroad.

corporation tax credit.[24] The shareholders in question have to be resident in a jurisdiction with which the United Kingdom has a suitable tax treaty. Generally, such a treaty will permit the non-UK resident, for example a US investor, to receive a repayment equal to 0.027% of the net dividend paid by the UK company, if the non-UK resident holds at least 10% of the voting shares of the UK company which pays the dividend. Since the refund of a tax credit is in general advantageous for the investor and a tax credit is a typical element of an imputation system (and not the classical system or the shareholder relief system), multinational investors should check EU Member States using imputation systems whether the tax treaties in question include such provisions. In cases where no tax credit is granted, the European corporation tax systems operate as the classical system from the perspective of a multinational investor.

Another reason for dealing with the EU corporation tax systems in more detail is that tax regimes are generally designed as a whole. This means that there is a certain relationship between the tax rate, the tax base and the corporation tax system. Many tax reforms in the past including those to be discussed in more detail in Section V of Chapter C have shown that countries – in addition to the broadening of the tax base – tend to reduce the relief for corporation tax in order to compensate for the revenue loss in case of a lowering of the tax rates. The ratio behind this is that in case there are two independent bodies which are subject to taxation (i.e. the corporation and the shareholder), the nominal tax rates on each level can be lower than if only one body is effectively taxed (i.e. the shareholder). From the perspective of one country the same tax revenue can be collected with lower rates with the classical system or a shareholder relief system compared to an imputation system where, from an economic point of view, only the ultimate shareholder is subject to personal income tax on dividend income. As a broad conclusion, it seems reasonable to say that, in general, a lower corporation tax rate correlates with lower relief for corporation tax in case of distributions and vice versa.

From the point of view of a multinational investor, a lower relief for corporation tax is more convenient as a means for compensating for revenue losses than a broader tax base. The reason is that a reduced tax relief generally only burdens domestic investors whereas a broader tax base burdens both domestic and foreign investors. For example, in Germany, the abolition of the full imputation system and the introduction of a shareholder relief system in 2001 was accompanied by a reduction of the corporation tax rate from 40% (on retained earnings) and 30% (on distributed profits) to 25%.[25] Therefore, the trend in the Member States to abolish imputation systems characterises a tax policy that

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24 The UK treaty provisions originate from the time when a partial imputation system was applied domestically. Since the introduction of the shareholder system in 1999, the treaty tax credit has been reduced significantly and has almost no importance anymore. See Gammie (1998).

25 At the same time, however, the depreciation rates were reduced. See Section V in Chapter C for a quantitative analysis of the effects of the German tax reform.

strengthens the international competitiveness of the tax systems by cutting back advantages for the resident tax payers.

II. ADDITIONAL (LOCAL) TAXES ON CORPORATE PROFITS AND CAPITAL

Corporations might be subject to several other taxes in addition to corporation tax. The weight and importance of the additional taxes differs from country to country. For example, as we will see soon, in France and Germany additional taxes are of high relevance, in the Netherlands they are of low relevance. The structure of the additional taxes at the corporation level can be different. These taxes can be either independent from business yield (i.e. non-profit taxes) or related to the earnings of the company (additional profit taxes). The most important additional taxes are real estate tax, property tax and different kinds of trade taxes.

Real estate, real property or land tax is levied by all EU Member States. The tax base covers land and buildings. Although this definition seems similar, some countries include in addition to buildings all assets that are effectively connected with the building (e.g. elevators, heating etc). Thus some countries tend to extend their land tax to a kind of property tax (e.g. the UK). For the computation of the tax base the assets are valued either at market prices or lower standard tax values (of the land and the building) or the rental value. As a consequence, even if the tax bases comprise the same elements their values can be completely different as - in general - the rental values are considerably lower than the market or standard values of land and buildings. Therefore, the comparison of tax rates is not sufficient to get an idea about the burden with real estate tax. As a general rule we can conclude that the tax rate might be higher in countries that tax the rental value as in countries that tax the market value (e.g. 47.4% in the UK compared to 1.55% in Germany) without having a significant impact on the nominal tax burden. Some countries, for example Greece, exempt companies from real estate tax if they use their own buildings.

Additional *property taxes* covering real estate and business assets exist only as an exception at the corporation level. The only Member State that levies a property tax (net wealth tax) for companies is Luxembourg. However, in general there is no effective burden with property tax in Luxembourg since it can be credited against the corporation tax.

Trade taxes are levied by several countries either on a profit basis (Germany, Italy, Luxembourg), on a capital basis independent from the profits (France, Spain) or on a wage oriented basis (Austria, France). The tax bases for of these local trade and property taxes vary from country to country but are defined uniformly within one country. As far as non-profit taxes are concerned, in most cases they do not include intangibles, financial assets and inventories. Moreover, in most cases it is obvious that liabilities concerning the financing of the assets are not deductible from the tax base (gross tax base).

The *tax rates* for the various additional taxes are different and vary from country to country. Moreover, the tax rates differ within one country as local authorities or municipalities are entitled to set the tax rates. The effective tax rates used for our calculations are presented in Tables A.A.3 – A.A.4 of Appendix A.

Table B.5 presents an overview on the additional taxes levied on corporations resident in the EU Member States.

Table B.5: Local profit taxes and non-profit taxes in the Member States of the EU

Country	Kind of tax	English expression
Austria	Grundsteuer / Bodenwertabgabe Kommunalsteuer	Land / Real estate / Real property tax Payroll tax
Belgium	Précompte immobilier	Land / Real estate / Real property tax
Denmark	Ejendomsskatter	Land / Real estate / Real property tax
Finland	Kiinteistöverolaki	Land / Real estate / Real property tax
France	Taxe foncière Taxe professionnelle Taxes et participations assises sur les salaires	Land / Real estate / Real property tax Franchise tax on capital and payroll Payroll taxes
Germany	Grundsteuer Gewerbesteuer vom Ertrag	Land / Real estate / Real property tax Franchise tax on income
Greece	Telos akinitis periousias	Land / Real estate / Real property tax
Ireland	Business rates	Land / Real estate / Real property tax
Italy	Imposta communale immobiliare Imposta regionale sulle attività produttive	Land / Real estate / Real property tax Franchise tax on income (value added)
Luxembourg	Impôt foncier Impôt commercial Impôt sur la fortune	Land / Real estate / Real property tax Franchise tax on income Property tax
Netherlands	Onroerend-belasting	Land / Real estate / Real property tax
Portugal	Contribuição autárquica	Land / Real estate / Real property tax
Spain	Impuesto sobre bienes inmeubles Impuesto sobre actividades económicas	Land / Real estate / Real property tax Franchise tax on capital
Sweden	Fastighetsskatt	Land / Real estate / Real property tax
United Kingdom	Business rates	Land / Real estate / Real property tax

Referring to the number of additional taxes in each EU Member State the situation seems to be worst in France and in Luxembourg. This is not in line with the European trend of an abolishment of non-profit taxes on company's capital in the past decade. For example, Austria abolished the trade tax on capital and on income, Germany abolished the trade tax on capital and property tax and Luxembourg abolished the trade tax on capital.

In particular the French tax system can be characterised by an extremely high number of non-profit taxes. The "taxe professionnelle" and the employers' taxes

burden capital- and labour-intensive companies in particular: The tax base of the "taxe professionnelle" comprises 16% of the historical acquisition costs of tangible fixed assets and 18% of the payroll. Besides a general deduction of 16% there is no allowance for other deductions (e.g. debts). The average tariff is 23%. Moreover, the total payroll is charged by the employers' taxes. Their nominal burden amounts to 2.45% of the payroll. Consequently the total burden of the payroll due to "taxe professionnelle" and employers' taxes is around 5.8%. However, in line with the above mentioned trend within the EU, France has announced to exempt the payroll gradually from the base of the „taxe professionnelle“ till the year 2003.

By contrast, Germany and Luxembourg levy high trade taxes on income. The average tax rate amounts to 17.63% in Germany and to 9.09% in Luxembourg. With respect to the effective statutory tax rates on profits, both countries belong to the top five of the country ranking.[26] Since the corporation tax rates of both countries are below EU-average, an exclusive comparison of the corporation tax rates can be misleading when assessing the level of profit taxes in the EU Member States.

[26] See Table A.A.1 of Appendix A.

III. CONCLUSIONS

Altogether, the comparison of the company tax regimes of the EU Member States reveals that corporations are subject to several profit and non-profit taxes. The most important tax is the corporation tax. Although there exist some trends concerning the introduction of shareholder relief corporation tax systems and the gradual abolition of non-profit taxes in the past, the tax regimes of the EU Member States are far from being harmonised or co-ordinated. For example, the difference between the highest and the lowest corporation tax rates amounts to 27.67 percentage points. Furthermore, there are considerable differences between the national corporation tax bases. It is questionable whether this situation is adequate for an economic and monetary union at the beginning of the third millennium.

Since the effects of the different taxes, tax rates and tax bases will differ according to the individual circumstances of a company, for example the types and structure of the assets, the sources of finance or the profit and loss situation, it is not possible to draw any universally valid conclusion about the effective levels of company taxation in the EU Member States. Moreover, with a qualitative assessment of the different elements of the tax regimes alone it is not possible to identify the impact of these elements on the level of the effective tax burden separately. For example, it is not possible to state whether different rules for the computation of taxable income (e.g. depreciation rates) will compensate for differences between the statutory tax rates or not. To express it differently: the qualitative assessment of the tax regimes supplies no idea about the weight and the impact of the different tax drivers in the level of the effective tax burden.

For a multinational investor – as for any investor – who wants to assess the EU Member States under tax considerations, it is therefore necessary to carry out a quantitative analysis of the company tax regimes. This will be the main task of the following Chapter C.

CHAPTER C

EFFECTIVE LEVELS OF CORPORATE TAXES IN THE-MEMBER STATES OF THE EU

I. METHODOLOGY

The aim of this Chapter is to assess the possible effects of the tax regimes of the EU Member States on the decision of multinational companies with respect to the investment, financing and location of subsidiaries. This will be done by calculating effective marginal tax rates on domestic investment in each of the 15 EU Member States. From the perspective of a multinational investor, the computed tax burdens represent those of the subsidiaries located in the different EU Member States. However, no respect is given either to the levy of withholding taxes in the host country of the subsidiary nor to the taxation of dividend or interest income paid by the subsidiary to the parent in the home country of the parent company. However, as we have already argued in Section II of Chapter A, the tax burdens borne at the level of the subsidiaries already include the most relevant information.

The methodology in this report closely follows the commonly used approach of King and Fullerton[27] for the calculation of effective marginal tax rates. International studies of the OECD and the European Commission as well as an earlier report prepared by Baker & McKenzie in co-operation with the University of Mannheim on behalf of the Dutch Ministry of Finance also applied this methodology.[28] The main advantages of the King-Fullerton approach are its versatility and the possibility it offers to model the most relevant provisions of the tax codes, allowing the user to analyse the effects of different tax systems in a very systematic way. It is not intended to develop and explain the full scope of the model here. Since the model is described in detail in the earlier report of Baker & McKenzie (1999), we refer to Appendix A of this report. Instead, we just highlight the most important economic assumptions behind the model as well as the tax variables considered for the calculations.

The effective marginal tax rate (EMTR) is defined as the difference between the pre-tax real return (p) on a marginal investment and the post-tax real return (s) of the supplier of finance (generally a private investor) divided by the pre-tax real return (p).

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27 See King and Fullerton (1984).

28 See Commission of the European Communities (1992); OECD (1991); Baker & McKenzie (1999).

$$EMTR = \frac{p - s}{p} \tag{1}$$

Marginal investments are new additional projects which yield a rate of return on the initially invested capital (equal to one unit) that is just sufficient to make the project worthwhile from the investor's point of view. Since the company that carries out the investment has the legal structure of a corporation, the EMTR can be calculated in a separate step solely for the level of the corporation. Therefore, any personal taxes (e.g. income tax) or tax credits (e.g. corporation tax credit) are simply set to zero. The EMTR for the corporation (i.e. the so-called tax wedge for the investment) hence only depends on the relation between the pre-tax real return (p) and the nominal post-tax return (r_n) of the corporation. In principle, this relationship can be solved either for a given pre-tax return or a given post-tax return. In order to understand the principle procedure of the calculation it is sufficient to concentrate for the moment only on profit taxes (τ) and the net present value of depreciation allowance (A). For a given post-tax return (fixed-r case) the value of the pre-tax return can be expressed as

$$p = \frac{(1-A)}{(1-\tau)} * (r_n + \delta - \pi) - \delta \tag{2}$$

where δ is the rate of economic depreciation and π the inflation rate. On the other hand, the calculation can start with a given pre-tax return (fixed-p case) and then solve the equation for the value of the post-tax nominal return as follows

$$r_n = \frac{(p+\delta) * (1-\tau)}{(1-A)} - \delta + \pi \tag{3}$$

In this report, we employ a uniform pre-tax real return for all projects, which is fixed at a rate of 10%.[29] From equation (3), we can see that the value of the post-tax nominal return increases as the net present value of depreciation allowance (A) increases and the tax rate on corporate profits (τ) decreases ($if\ A \uparrow and\ \tau \downarrow\ than\ r_n \uparrow$). In other words: The effective marginal tax rate calculated just for the corporation level, expressed as the difference between the pre-tax and the post-tax return divided by the pre-tax return,[30]

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29 Our procedure is commonly denoted as the fixed-p case. Studies using the so-called fixed-r case are Commission of the European Communities (1992); OECD (1991). For both cases see King and Fullerton (1984).

30 Since the post-tax return of the corporation is equivalent to the pre-tax return of the private shareholder, this expression is equivalent to equation (1) in absence of all personal taxes (i.e. all personal taxes are set to zero).

$$EMTR_C = \frac{p - r_n}{p} \tag{4}$$

decreases as the net present value of depreciation allowance (A) decreases and the tax rate on corporate profits (τ) increases.

Equation (3) expresses the value of the post-tax nominal return in the case of equity-financing. Since, in the case of debt-financing, interest payments are deductible from the tax base of the corporation with its nominal value, this results in a tax saving. This tax saving increases the post-tax nominal return which then can be paid as an interest. Since r_n from equation (3) is a post-tax value, the tax saving from interest deduction amounts to

$$\frac{r_n}{1-\tau} * \tau \tag{5}$$

This results in a modified post-tax return in the case of debt-financing of

$$r_n + \frac{r_n}{1-\tau} * \tau = \frac{r_n}{1-\tau} \tag{6}$$

which can be paid as an interest.[31]

The EMTR model covers the most relevant provisions of the tax regimes described in Chapter B above, different types of investment and sources of finance. These elements as well as the other assumptions of the model are described in more detail now.

Taxation: Attention is given to the most relevant tax provisions. We consider the corporation tax, other (local) profit taxes and non-profit taxes, tax rates, and the most relevant aspects of the tax bases (e.g. depreciation rules and valuation of inventories).[32] However, the treatment of different types of investment income in the hands of the investor – the multinational parent company – is not taken into account (e.g. dividends, interest income and capital gains from the disposals of shares of the a subsidiary). The study uses information about the tax systems in operation as of 1 January 2001. One exception is Ireland. Since it has been already announced, we apply the 12.5% corporation tax rate which will become effective in Ireland in 2003.

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31 Suppose a pre-tax return p of 10% and a corporation tax rate of say 40%. In the case of equity-financing expressed by equation (3), this results in a post-tax return r_n of 6% and thus a tax burden of 40%. In the case of debt-financing we expect a tax burden of zero and thus a post –tax return of 10%, since the *pre*-tax return is deducted as an interest. However, we arrive at the same result if we increase the *post*-tax return r_n – which is 6% - by 1 / (1-0.4) as it is expressed by equation (6).

32 Capital duty is not included in this study.

The relevant information on the tax variables was derived from questionnaires which were answered from the country representatives of Baker & McKenzie. Several assumptions have to be made with respect to the use of tax electives (e.g. depreciation and valuation of inventories). Concerning the use of these tax electives, we always take the most tax efficient possibility. This means, if allowed, we use declining-balance instead of straight-line depreciation and LIFO instead of the FIFO or weighted average allocation. Details about the used tax data are set out in Appendix A. Compared to the elements of the national tax regimes we have analysed in Chapter B, it is clear that not all elements are included in the model. In particular, only a few items of the tax bases are taken into account. This should be kept in mind for the interpretation of the results. However, since the most essential features are incorporated, the results provide reliable estimates for the effective levels of company taxation in the EU Member States.

Assets and finance: As taxation varies with the assets and the financing possibilities, the EMTR depends upon the proportion of the marginal investment in each type of asset and the proportion of the company financing in each source of finance. Thus, the EMTR depends upon the particular industry and sector, respectively, as each industry can be characterised by a particular combination of assets and sources of finance. We examine five different assets: intangibles acquired from third parties, industrial buildings, machinery, financial assets and inventories. The financing policy considers three sources of finance: new equity capital, retained earnings, and debt.

There is a problem, as there is never a right set of weights for the assets and the financing possibilities. In order to be able to compare the effects that are solely attributable to the different national tax regimes, the same weights have to be used for all 15 EU-member states.[33] We took the same data as in the earlier report of Baker & McKenzie. Therefore, in our base case we consider data for the manufacturing sector. The weights for the assets are 1.43% for intangibles, 12.99% for buildings, 17.49% for machinery, 38.25% for financial assets, and 29.84% for inventories. For the sources of finance, the weights are 10.08% for new equity, 55.45% for retained earnings, and 34.47% for debt. For the personnel expenditure to turnover-ratio we assume 25.3%. When interpreting the results of the calculations, the reader has to bear in mind that these weights are not typical for each country. Comparing, for example, the sources of finance of a Dutch and a German corporation, one will notice differing weights for the financing possibilities. In order to avoid casuistry due to strict assumptions about the weights and in order to arrive at more universally valid results, we will use sensitivity analyses that show the impact of alternative weights for the assets and the financing possibilities on the EMTR. Moreover, the effect of specific weights on 12 other industries will be analysed.[34]

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33 See King and Fullerton (1984), p. 281; OECD (1991), pp. 94-95.

34 Industries and weights of the assets and of the financing possibilities are set out in Appendix B.

Macroeconomic data: Thirdly, the EMTR for the type of assets will differ as a result of different capital allowance rates for tax purposes relative to the true economic depreciation rates and as a result of inflation. Our assumptions regarding the rates of true economic depreciation were taken from international surveys. The inflation rate used is 2%, which was the actual rate in the EU in the year 2000. Finally, the EMTR will depend upon the assumption regarding the pre-tax return (p), which is an indicator for the profitability of the investment. For the base case we fixed p at a rate of 10%. In order to analyse the impact of the pre-tax return on the EMTR, we again use sensitivity analyses, considering other values for the pre-tax return (3, 6, 12 and 15%).

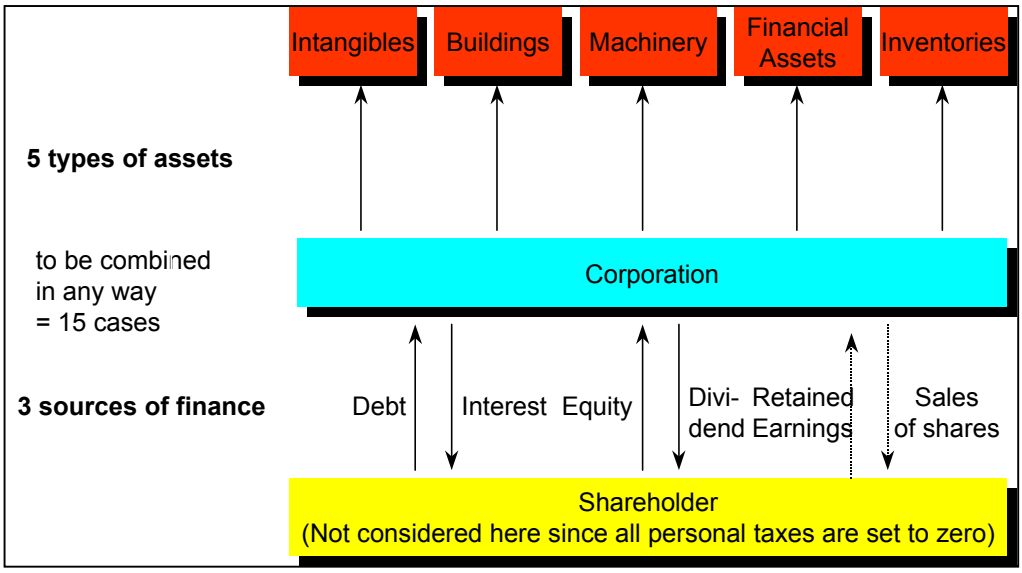
The most important assumptions of our study are summarised in Table C.1.

Table C.1: Summary of most important assumptions

Assumptions about taxes and tax bases			
Taxes	Corporation tax including surcharges, local profit taxes, non-profit taxes		
Tax base (profit computation)	Depreciation, stock valuation		
Assumptions about industry, assets and financing			
Industry	Manufacturing sector as base case, sensitivity analysis with data for 12 other sectors		
Types of asset (weights in %)	Intangibles (1.43), industrial buildings (12.99), machinery (17.49), financial assets (38.25), inventories (29.84)		
Sources of finance (weights in %)	New equity (10.08), retained earnings (55.45), debt (34.47)		
Assumptions about depreciation, inflation, and pre-tax return			
True economic depreciation (always straight-line)	Intangibles 12.5 years	Buildings 53 years	Machinery 11 years
Lifetime for tax purposes where no year is specified	10 years	25 years	7 years
Inflation rate	2%		
Pre-tax real return	10% sensitivity analysis with different values		

The consideration of five types of assets and three sources of finance results in 15 possible combinations of assets and financing, as set out in figure C.1. The effective tax burden at the shareholder's level is not considered separately here. Instead, by setting all personal taxes to zero, it is possible to isolate the effective tax burden at the corporation level. Altogether, we compute 15 single EMTR for the corporation level. In addition, keeping the comparison of the EMTR for all EU Member States manageable, we calculate the mean (weighted average) EMTR for each type of asset, each source of finance, and an overall mean EMTR for all combinations of assets and financing.

Figure C.1: Combinations of types of assets and sources of finance



Before analysing the results for all 15 EU Member States, we discuss the interpretation of the EMTR in more detail, taking as an example a tax regime which is similar to the one in the Netherlands. The relevant tax variables are those which are presented in Appendix A for the Netherlands. In the following example it is first assumed that the *inflation rate is zero*.

Table C.2: Example for calculating the EMTR with a 10% pre-tax real return and zero inflation in the Netherlands

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	Weighted average
New Equity	32.48	36.58	28.36	35.00	35.00	*34.01*
Retained earnings	32.48	36.58	28.36	35.00	35.00	*34.01*
Debt	-3.88	2.44	-10.21	0.00	0.00	*-1.52*
Weighted average	*19.95*	*24.81*	*15.07*	*22.94*	*22.94*	***21.76***

The results presented in Table C.2 should be interpreted as follows. For an investment in financial assets, yielding a given pre-tax real return of 10% and financed by issuing new share capital (= new equity), the EMTR is 35%. Thus, the EMTR just equals the Dutch statutory corporation tax rate of 35%, which does not come as a surprise, as no depreciation is allowed for financial assets. Taking financial assets as a benchmark, we observe that for machinery, financed in the same way, the EMTR is 6.64 percentage points lower and thus also lower than the corporation tax rate. The reason is that the assumed period for capital allowances for machinery for tax purposes (7 years) is shorter than the estimated period of true economic depreciation (11 years). This results in a tax saving, due to the

”accelerated” deduction of the costs of capital from the tax base. On the other hand, the EMTR for intangibles, although depreciable for tax purposes over a period of ten years, which is less than the estimated period of true economic depreciation (12.5 years), is only slightly lower (32.48%) than the statutory corporation tax rate. This indicates only a moderate tax saving resulting from the "accelerated" depreciation of the acquisition costs. The depreciation practice in the Netherlands is also not very generous for buildings (40 years). In addition, investments in buildings are subject to real estate tax (*onroerende-zaakbelasting*). Therefore, the EMTR for buildings in relation to other assets is highest in the Netherlands. Finally, the EMTR for inventories also equals the statutory corporation tax rate. Since inflation is assumed to be zero, there is no taxable inflationary gain which increases the EMTR although inventories are valued at weighted (average) costs in our example for the Netherlands.

If the corporation financed the same investments by retained earnings, the EMTR would be exactly the same. The reason is that dividends are not deductible from the tax base and there are no specific allowances for retained profits (e.g. a reduced corporation tax rate). By contrast, the EMTR would be close to zero or even negative, if the investments were financed by borrowing. The reason is, that in the case of borrowing, interest is deductible from the tax base with its nominal value. Deduction at the same rate for investments in financial assets that just yield the market pre-tax return interest, results in an EMTR equal to zero. Hence, the combination of interest relief and high capital allowances can result in an effective subsidy for marginal investments. In our example for the Netherlands, this is true for investments in intangibles and machinery.

The example for the Netherlands reveals, that the EMTR for investment in machinery is lowest, while the EMTR for buildings is highest. This is also obvious from the weighted average EMTRs we calculate in addition to the 15 EMTR. We compute weighted average rates for assets by summing up all EMTR involving a particular asset, multiplied by the weight of each source of finance (10.08% for new equity, 55.45% for retained earnings, and 34.47% for debt).[35] It therefore seems reasonable to conclude that the taxation of machinery relative to other assets is most favourable. However, one should bear in mind that estimates of the EMTR for assets are highly sensitive to the assumptions made for true economic depreciation. Turning to finance, it can easily be seen from the weighted average rates for sources of finance, that debt financing is subject to the lowest EMTR, regardless of the precise asset. We compute weighted average rates for the sources of finance by summing up all EMTR involving a particular financing possibility, multiplied by the weight of each asset (1.43% for intangibles, 12.99% for buildings, 17.49% for

[35] For example weighted average EMTR for machinery (15.07%) is the sum of EMTR/ machinery/ new equity * weight new equity (28.36 * 10.08% = 2.86%), EMTR/ machinery/ retained earnings * weight retained earnings (28.36 * 55.45% = 15.73%), and EMTR/ machinery/ debt * weight debt (-10.21 * 34.47% = -3.52%).

machinery, 38.25% for financial assets, and 29.84% for inventories).[36] Overall, across all 15 asset and finance combinations, the weighted average effective marginal tax rate in our example is 21.76%. The overall weighted average EMTR is calculated by summing up each of the weighted 15 combinations of assets and finance.

The consideration of a *positive inflation rate* would have the following effects on the EMTR. Investment financed by new equity or retained earnings would bear a higher EMTR. The reason is that depreciation for tax purposes is based on the (historical) acquisition costs, while true economic depreciation is based on replacement costs. This results in an inflationary gain which is taxable. The same is true for inventories unless they are valued according to the LIFO method. On the other hand, the EMTR on investment financed by debt would fall. Since interest is deductible from the tax base always with its nominal value, the tax savings resulting from interest deduction increases with the inflation rate. The effects of inflation on the overall EMTR depend also on the assumptions about the weights for the assets and – in particular – for the sources of finance. In our example, the overall EMTR would fall moderately from 21.76% to 20.67% in case of an inflation rate of 2%. The number of 20.67% also represents the current overall EMTR for the Netherlands.[37]

Summing up, it seems reasonable to conclude, that tax systems can distort investment and financing decisions in many ways. The Dutch tax system, which we have chosen as an example, favours debt financing and investment in machinery. Hence, the EMTR will be highly sensitive to the sector of industry carrying out the investment. There are several reasons for this result. Tax driven distortions at the corporation level[38] are caused by the corporation tax, the levy of additional profit and non-profit taxes, the tax rate structure, and the rules for profit computation. However, as shown in the following analysis, the situation demonstrated in our example for the Netherlands is not unique in Europe. Similar distortions can be found in all other EU Member States, although we will see that the reasons may differ.

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36 For example weighted average EMTR for new equity (34.01%) is the sum of EMTR/ intangibles/ new equity * weight intangibles (32.48 * 1.43% = 0.46%), EMTR/ buildings/ new equity* weight buildings (36.58 * 12.99% = 4.75%), EMTR/ machinery/ new equity * weight machinery (28.36 * 17.49% = 4.96%), EMTR/ financial assets/ new equity * weight financial assets (35.00 * 38.25% = 13.40%), and EMTR/ inventories/ new equity * weight inventories (35.00 * 29.84% = 10.44%).

37 See Table A.C.11 of Appendix for the results.

38 If shareholders were included, distortions would also be caused by the corporation tax systems.

II. EFFECTIVE TAX RATES ON DOMESTIC INVESTMENTS TAKING THE MANUFACTURING SECTOR AS A BASE CASE

1. Overall Tax Burdens of Corporations

One of the main purposes of this study is to examine the various EMTR in the 15 EU Member States and to work out the main reasons for the differences. Table C.3 presents for each Member State the EMTR for the types of assets and sources of finance as well as an overall weighted average. The EMTRs were computed under the assumption of a pre-tax return (p) of 10%. The weights used for the combinations of assets and financing are those of our base case (manufacturing sector), which are set out in Table C.1. The EMTRs for the base case for all 15 possible combinations of assets and financing for each country are presented in Appendix C.

The EU-average overall EMTR, which is presented in the final column in Table C.3, amounts to 18.13%. The highest EMTR can be found in France (30.11%), followed by Germany (25.2%). Although seven Member States have an EMTR between 18% and 19%, there is still some variation between the EMTRs. Overall EMTR below 15% are calculated for three countries (Greece, Ireland and Italy), the value for Greece - amounting to 6.76% – being the lowest. Thus, we have an EU-wide spread of 23.35 percentage points. The standard deviation amounts to 5.41.

This EU-wide spread cannot be explained by just one feature of the national tax regimes. In general, there is a strong relationship between the EMTR and the statutory tax rate on profits. Therefore, as presented in Table C.4, the ranking of the countries with respect to the *statutory tax rate on profits* serves as a good indicator for the country ranking with respect to the effective marginal tax rate. For example, Ireland, Sweden and Finland belong to the top five in both rankings, while Luxembourg and Germany belong to the last five in both rankings. However, there exist special features in many tax regimes which lead to a different order and therefore have to be stressed. Good examples are Austria, France, Greece and Italy.

Since *France* levies by far the highest amount of *non-profit taxes* it drops back from 10th position in the ranking of the statutory tax rates to the last place in the EMTR ranking.

Although *Austria* and – in particular – *Italy* apply high statutory tax rates on profits, their relative positions improve with respect to the EMTR ranking. The reason is the concept of the *dual income tax* prevailing in both countries.[39] According to this concept, a deemed return that is allocated to the increase in the equity capital

[39] The Austrian and Italian concepts of dual income tax are completely different from the dual income tax in the Nordic Countries, however. See Section II of Chapter B for a brief comparison.

presented in the annual accounts, is taxed at a lower rate. This tax rate mounts to 25% in Austria (instead of 34%) and to 23.25% in Italy (instead of 41.25%).[40]

Finally, *Greece* taxes interest income of a corporation at a *reduced rate* of 15% compared to the ordinary corporation tax rate of 37.5%.

Although it is not clear from an economic point of view whether the Austrian and Italian types of dual income taxation should be qualified as a reduction of the tax rate or the tax base, the example of both countries and Greece again prove a certain dominance of the *statutory tax rate* in *explaining* the *level of the effective tax burden*. Since Austria also imposes a considerable amount of non-profit taxes, this effect is, however, less evident than in the two other countries.

The final row in Table C.3 shows the EU-average EMTR for assets and financing. The average EMTR for intangibles and machinery is quite similar (12.17% and 13% respectively), whereas the taxation of the other assets is less generous. The treatment of buildings is worst (22.29%), closely followed by inventories (21%). With respect to the relative taxation of depreciable assets (intangibles, buildings and machinery) and inventories it is interesting to note that only four countries (France, Germany, the Netherlands and the UK) range above the EU-averages. The situation in France has already been explained by the levy of high non-profit taxes. Since the other countries do not levy such a considerable amount of non-profit taxes, their situation could be explained by relatively disadvantageous rules for profit determination (i.e. a relatively broad tax base) and limitations with respect to interest deductibility in the case of debt financing. Moreover, this could also explain why all three countries lose positions in the EMTR ranking compared with the ranking of the statutory tax rates on profits (see Table B.4).

[40] The numbers for Italy include local tax "IRAP" of 4.25%.

Table C.3: Effective Marginal Tax Rates in the EU Member States – base case – types of assets – sources of finance – overall

Country	Average for each type of asset					Average for each source of finance			Overall average
	Intangibles	Buildings	Machinery	Financial Assets	Inventories	New Equity	Retained Earnings	Debt	
Austria	20.92	17.65	16.60	18.73	18.73	29.64	29.64	-3.40	18.25
Belgium	8.49	22.78	5.91	21.70	21.70	37.89	37.89	-17.24	18.89
Denmark	-17.73	31.35	14.82	16.70	20.15	31.84	31.84	-5.95	18.81
Finland	18.23	17.93	14.31	16.19	22.80	30.67	30.67	-5.82	18.09
France	14.11	42.67	33.00	25.40	29.76	44.94	44.94	1.92	30.11
Germany	13.34	28.18	21.83	25.75	25.75	38.89	38.89	-0.82	25.20
Greece	23.40	3.22	6.43	-6.72	24.96	26.16	26.16	-30.14	6.76
Ireland	7.97	20.42	5.58	7.21	9.83	14.62	14.62	-0.43	9.43
Italy	2.73	16.37	-1.03	20.20	13.51	27.00	27.00	-11.46	13.74
Luxembourg	7.95	22.26	11.88	20.42	20.42	36.27	36.27	-13.87	18.98
Netherlands	21.88	24.00	16.62	19.22	23.37	36.22	36.22	-8.90	20.67
Portugal	22.00	16.72	14.34	19.32	19.32	34.21	34.21	-12.39	18.15
Spain	21.88	21.96	11.70	19.22	19.22	34.22	34.22	-11.97	18.30
Sweden	4.77	15.78	6.30	15.67	21.83	28.05	28.05	-7.70	15.73
United Kingdom	12.67	33.02	16.73	16.70	23.59	33.59	33.59	-3.44	20.83
EU-Average	*12.17*	*22.29*	*13.00*	*17.05*	*21.00*	*32.28*	*32.28*	*-8.77*	*18.13*
Standard deviation	*10.38*	*8.82*	*7.82*	*7.72*	*4.65*	*6.74*	*6.74*	*7.78*	*5.41*

Table C.4: Effective Marginal Tax Rates and statutory tax rates on profits in the EU Member States - base case

Country	Overall average EMTR	Ranking	Country	Statutory tax rate on profits *)	Ranking
Greece	6.76	1	Ireland	12.50	1
Ireland	9.43	2	Sweden	28.00	2
Italy	13.74	3	Finland	29.00	3
Sweden	15.73	4	Denmark	30.00	4
Finland	18.09	5	United Kingdom	30.00	4
Portugal	18.15	6	Austria	34.00	6
Austria	18.25	7	Netherlands	35.00	7
Spain	18.30	8	Spain	35.00	7
Denmark	18.81	9	Portugal	35.20	9
Belgium	18.89	10	France	36.43	10
Luxembourg	18.98	11	Luxembourg	37.45	11
Netherlands	20.67	12	Greece	37.50	12
United Kingdom	20.83	13	Germany	39.35	13
Germany	25.20	14	Belgium	40.17	14
France	30.11	15	Italy	41.25	15
EU-Average	*18.13*		*EU-Average*	*33.39*	
Standard deviation	*5.41*		*Standard deviation*	*6.84*	
*) See 5th column from Table A.A.1 in Appendix A					

Looking at the EMTR for the sources of finance, we observe an equal treatment of new equity and retained earnings (32.28%). By contrast, debt financing is treated far more generously, resulting in a EMTR of –8.77%. Thus, the favourable treatment of debt financing, as a result of the deductibility of interest expenses at nominal value, explains to a great extent the fact that the overall average EMTR in all countries is lower than the EMTR for new equity and retained earnings, respectively.[41] However, these average numbers hide a considerable variation within the EMTRs for the sources of finance. This variation depends on the level of the statutory corporation tax rate. The difference between the EMTR on equity and debt-financing amounts, for example, in Belgium (with a corporation tax rate of 40.17%) to 55.13 percentage points. By contrast, this difference is significantly lower in Ireland (15.05 percentage points). This is the result of the low corporation tax rate (12.5%), which obviously limits the tax savings due to interest deduction. Therefore, in general, low tax rates tend to reduce dispersions whereas high tax rates tend to have higher dispersions.[42]

41 As explained in the example in Table C.2, another reason for this disparity could be generous rules for profit computation.

42 The Member States applying a dual income tax concepts (Austria and Italy) also have low dispersions.

Summing up, it seems likely to presume that in general both the level of the EMTR and the variation between the EMTRs are above all influenced by the statutory tax rate on profits. On the other hand, rules for the computation of taxable income and the levy of non-profit taxes do not seem to have a major impact on the overall EMTR. However, the examples of France with respect to the non-profit taxes and Germany, the Netherlands and the UK with respect to the tax base as well as the country-wide spread in the rows showing EMTR for assets indicates that a more thorough analysis is necessary.

With respect to the considerable variation between the EMTR for assets and financing it is obvious that none of the EU tax regimes is neutral towards investment and financing decisions. In addition, there is a wide range among the national overall EMTR, resulting in a EU-wide tax differential. This tax differential can lead to distortions in location decisions in the European Union.

2. Taxation of Different Types of Assets

According to the EU-average EMTR for assets, shown in the last row of Table C.3, intangibles and machinery are taxed quite similarly and generously, whereas the taxation of buildings, financial assets and inventories is less generous. Altogether, buildings bear the highest tax burden.

With regard to *depreciable assets*, we can see from the national EMTR, presented in columns 2, 3, and 4 of Table C.3, that the relative taxation of either intangibles or machinery is more generous than the taxation of buildings. One exception is Greece, where buildings are depreciated for tax purposes over a short period of only ten years. The EMTR for intangibles is lowest relative to other assets in six countries (Denmark, France, Germany, Luxembourg, Sweden and the United Kingdom), while investment in machinery is taxed at the relatively lowest rates in eight countries (Austria, Belgium, Finland, Ireland, Italy, the Netherlands, Portugal and Spain). Intangibles in particular are treated most favourable when the lifetime for tax purposes is low. The immediate write-off in Denmark even results in a subsidy, due to the deductibility of interest.[43] On the other hand, machinery is favoured in the case of comparatively high allowance rates, either due to a declining balance depreciation practice or to short taxable lifetimes.[44] The combination of these factors results in comparatively low EMTR, as can be seen in the case of Belgium, Italy, and Sweden.

The reasons for the disadvantageous treatment of buildings are the comparatively long lifetimes for tax purposes[45] – the lifetime is 33 years or more in Germany, the Netherlands and Spain – and the obligation to use straight-line depreciation method

43 See Table A.C.3 of Appendix C.

44 See Table A.A.7 of Appendix A for data used in the calculations.

45 See Table A.A.6 of Appendix A.

(except Finland and Sweden). Moreover, only investments in buildings bear an extra burden as a result of real estate tax, levied in all EU Member States. Real estate tax is comparatively high in Belgium, Denmark, Ireland and the United Kingdom.[46]

Looking at the columns in Table C.3, showing the EMTR for *non depreciable assets*, we can make a clear distinction between the taxation of financial assets and inventories. Except Italy, there is no country where the EMTR for financial assets exceeds the EMTR for inventories. The reason in Italy is the denial of the lower corporation tax rate under the concept of the dual income tax to interest income. In the other countries, EMTRs for both assets are only equal, if LIFO allocation can be applied for the inventories and taxation of inflationary gains is thus avoided.[47] The disadvantageous treatment of inventories is most evident in countries where FIFO is compulsory (Finland, Ireland, Sweden, and the United Kingdom) or where there is a weighted average method combined with high statutory tax rates (France). A further reason for the preferential treatment of financial assets in relation to inventories is that tax rates on interest income are lower, as is the case in Greece.[48]

With respect to the relative taxation of depreciable assets (intangibles, buildings and machinery) and inventories four countries (France, Germany, the Netherlands and the United Kingdom) range above the EU-averages. However, in addition to relatively disadvantageous rules for profit determination, this result can be explained by other features of the national tax regimes. France, although granting favourable depreciation for all assets, has a comparatively high EMTR on assets and evidently discriminates buildings and machinery in relation to intangibles. The reason for the high EMTR is the levy of high non-profit taxes (taxe professionnelle and employer taxes). Distortions between the assets are caused by the "taxe professionnelle", which only includes tangible fixed assets. Other countries imposing non-profit taxes (besides real estate tax) are Austria and Luxembourg. But the tax bases in these two countries hardly differ with regard to the type of asset.[49] Moreover, the property tax in Luxembourg constitutes no real tax burden, since it is creditable against corporation tax. Another reason for relatively high EMTRs on assets is the limitation with respect to interest deductibility in the case of debt financing (e.g. Germany caused by the trade tax, see below).

With respect to the depreciation practise for the different assets the relatively high standard deviation for intangibles indicates the biggest differences. By contrast, again with respect to the standard deviation from Table C.3, capital allowances on machinery seem to be broadly similar within the EU Member States. This would also mean that no further harmonisation would be necessary in this field. However, it is very difficult to draw broad conclusions as to the relative taxation of

46 See Table A.A.3 of Appendix A for data used in the calculations.

47 See Table A.A.5 of Appendix A for the data used in the calculations.

48 Greece taxes interest at a final rate of 15%. For details see Section II of Chapter B.

49 Except buildings in Luxembourg. See Table A.A.3 of Appendix A for the tax data and Section III of Chapter B for a qualitative analysis.

depreciable and non depreciable assets. As we have already pointed out when introducing the example of the Dutch tax system (see Table C.2), estimates of the EMTR for depreciable assets are highly sensitive to the assumptions made for true economic depreciation. Moreover, no clear conclusion can be drawn across the countries. Although all countries favour either intangibles or machinery over either financial assets or inventories, there are 14 countries that favour either financial assets or inventories over either intangibles or buildings. There is therefore no common pattern in the relative taxation of assets, but that in none of the EU Member States, machinery is treated worst.

3. Taxation of Different Sources of Finance

Table C.3 clearly indicates that, from the only *perspective of the corporation*, the most tax-efficient way of finance is debt. The major reason is that deduction of nominal interest payments from the corporation tax base significantly reduces the effective tax burden on investment financed through borrowing.

In general, the advantage of interest deduction increases with the statutory tax rates on profits and vice versa. For example, the tax savings from interest deduction are relatively high in Belgium, Greece and Luxembourg. By contrast, countries with a relatively low statutory tax rate on profits such as Ireland only allow for a relatively minor interest relief. Therefore, the country ranking with respect to the EMTRs on debt-financing and the ranking with respect to the statutory tax rates on profits often reveals a reverse order (see Table C.5).

Except in France, debt-financing is subsidised in all EU Member States since the EMTR on borrowing is negative.[50] In certain countries, debt-financed investments are even heavily subsidised, if, relative to other countries, assets receive "accelerated" depreciation (e.g. Belgium, Greece, Italy, and Sweden). In the case of Greece, the heavy subsidy of debt financing is furthermore increased by the fact that investment income on financial assets is taxed at a flat and final rate of 15%, while corporate interest payments are still fully deductible at a rate of 37.5%. However, even if effective tax rates on profits are high (e.g. France, and Germany), there is no full relief for interest deduction when local profit taxes and non-profit taxes are taken into account. Germany, for example, only allows deduction from local business tax of half of the interest payments. In France, liabilities arising from debt financing are not deductible from either the base of "taxe professionnelle" or the base of "employer taxes" levied on the payroll. A similar situation prevails in Austria.

[50] This is, however, no special feature of the tax systems in the EU Member States.

Table C.5: Effective Marginal Tax Rates on Equity Financing and statutory tax rates on profits in the EU Member States - base case

Country	Average EMTR on debt financing	Ranking	Country	Statutory Tax rate on profits *)	Ranking
Greece	-30.14	1	Ireland	12.50	1
Belgium	-17.24	2	Sweden	28.00	2
Luxembourg	-13.87	3	Finland	29.00	3
Portugal	-12.39	4	Denmark	30.00	4
Spain	-11.97	5	United Kingdom	30.00	4
Italy	-11.46	6	Austria	34.00	6
Netherlands	-8.90	7	Netherlands	35.00	7
Sweden	-7.70	8	Spain	35.00	7
Denmark	-5.95	9	Portugal	35.20	9
Finland	-5.82	10	France	36.43	10
United Kingdom	-3.44	11	Luxembourg	37.45	11
Austria	-3.40	12	Greece	37.50	12
Germany	-0.82	13	Germany	39.35	13
Ireland	-043	14	Belgium	40.17	14
France	1.92	15	Italy	41.25	15
EU-Average	*-8.77*		*EU-Average*	*33.39*	
Standard deviation	*7.78*		*Standard deviation*	*6.84*	
*) See 5th column from Table A.A.1 in Appendix A					

From the perspective of the corporation, financing through new equity and retained earnings is disadvantageous, as no deduction from the taxable base for the corresponding payments (dividends) is allowed. The effective tax burden for both forms of finance almost equal the effective tax rates on profits (see Table C.6), resulting in a EU-wide spread among EMTR on new equity and retained earnings of 30.32 percentage points. Of the EU Member States, France is currently in worst position, and Ireland – as a consequence of the by far lowest statutory tax rate of profits – in first place.

Referring to the close relation of the effective tax burden on new equity and retained earnings to the statutory tax rate on profits in most of the EU Member States, it can be concluded, that "normal" accounting rules for profit computation, in so far as they are considered in the model, in general do not have a great impact on the effective tax burden and on the ranking of the countries, as they only result in "timing differences". On the contrary, it is likely that the different statutory tax rates on profits explain most of the differences of EMTRs on both forms of equity-financing between countries. Only those countries granting generous capital allowances for depreciable assets have an EMTR that is significantly lower than the effective tax rate on profits (e.g. Belgium and Greece).

Table C.6: Effective Marginal Tax Rates on Equity Financing and statutory tax rates on profits in the EU Member States - base case

Country	Average EMTR on equity financing	Ranking	Country	Statutory Tax rate on profits *)	Ranking
Ireland	14.62	1	Ireland	12.50	1
Greece	26.16	2	Sweden	28.00	2
Italy	27.00	3	Finland	29.00	3
Sweden	28.05	4	Denmark	30.00	4
Austria	29.64	5	United Kingdom	30.00	4
Finland	30.67	6	Austria	34.00	6
Denmark	31.84	7	Netherlands	35.00	7
United Kingdom	33.59	8	Spain	35.00	7
Portugal	34.21	9	Portugal	35.20	9
Spain	34.22	10	France	36.43	10
Netherlands	36.22	11	Luxembourg	37.45	11
Luxembourg	36.27	12	Greece	37.50	12
Belgium	37.89	13	Germany	39.35	13
Germany	38.89	14	Belgium	40.17	14
France	44.94	15	Italy	41.25	15
EU-Average	*32.28*		*EU-Average*	*33.39*	
Standard deviation	*6.74*		*Standard deviation*	*6.84*	
*) See 5th column from Table A.A.1 in Appendix A					

Two groups of countries differ from the average. The first group consists of countries that impose high non-profit taxes, for example Austria and in particular France. In France, this results in a marginal effective tax rate on equity financing which is far above the statutory tax rate on profits. In Austria, this disadvantage is compensated for by a great extent by the effects of *dual income tax*, which was introduced in 2000.

Dual income tax is characterised by a generous taxation of equity financing. It also exists in Italy (in force since 1998) and explains why the Italian EMTR is significantly lower than the statutory tax rate. Under the *dual income tax*, profits that correspond to the increase of the equity capital of a company are taxed at lower corporation tax rates. In Austria, the flat rate is 25% instead of 34% and in Italy the special flat rate amounts to 19% instead of 37%.[51] The concept of the dual income favours self-financing through retention of profits and the issue of new share capital over debt financing.

[51] With respect to the local business tax "IRAP", the relevant tax rates rise from 19% to 23.15% and from 37% to 41.25%. Moreover, the aggregate total corporation tax rate can never be lower than 27%. We used the 27% instead of the 19%-rate for our calculation in the case of equity financing (= new equity and retained earnings). See Table A.A.2 in Appendix A for the data.

From the *perspective of a multinational investor*, the country ranking with respect to the EMTRs on debt-financing indicates the relative advantages of countries in the case that this particular source of finance is used. This does not mean, however, that either debt financing is more tax efficient than equity financing nor that the attraction of the EU Member States as a place of location for a subsidiary has changed compared to the ranking with respect to the overall EMTR. Since interest receipts from a subsidiary are subject to corporation tax in the home state of the parent company and there is often no further tax[52] on dividends at the parent's level, the multinational investor always has to compare the aggregate tax burden on interest and repatriated profits.

[52] This could be true since foreign dividends are either exempt from taxation at the parent's level or a tax credit is granted for the underlying foreign corporation tax. In addition, however, in the case of equity financing, withholding taxes on dividends have to be taken into account.

III. SENSITIVITY ANALYSIS

The computation of the effective marginal tax rate (EMTR) depends on several assumptions. The model of King and Fullerton which is used here is, for example, based on an assumed pre-tax return of the investment of 10%. Moreover, with respect to the differing tax burdens for the assets and company finance, the overall weighted average effective marginal tax rates depend to a great extent on the assumptions for the weights for the types of assets and sources of finance. Finally, with respect to non-profit taxes in Austria and France which include payroll in their bases, the level of the personnel intensity is another important element constituting the effective tax burden.

For these reasons, no universally valid value for both the level of the EMTR and the variation between the EMTR across countries exist. In order to demonstrate the impact of these assumptions on the EMTR and also to verify the conclusions from the previous Section for our base case, this Section recalculates EMTRs for different pre-tax returns, personnel intensities as well as different weights for the types of assets and sources of finance.

1. Differing Assumptions for the Rate of Return

The level of the effective marginal tax rate depends on the assumed value for the pre-tax real return (p) of the company. There are at least three reasons for this dependence.[53] First, the relative weight of non-profit taxes in the effective tax burden depends on the pre-tax return. As a general rule, the impact of the non-profit taxes decreases with an increasing pre-tax return. Second, under the assumption of a constant inflation rate, the relative advantage of debt financing (i.e. the tax savings) resulting from the deduction of interest with its nominal value depends on the level of the pre-tax return. In case of inflation the advantage from interest deduction decreases with an increasing pre-tax return. Third, the present value of depreciation allowances depends non-linearly on the pre-tax return used for discounting. Since the impact of the pre-tax return on the present value of depreciation allowances is not clear, the impact of the non-profit taxes and the interest deduction remain. However, both variables have different effects on the EMTR in case of an increasing pre-tax return: while a reduced weight of non-profit taxes decreases the EMTR, a lower advantage from interest deduction increases the EMTR. Therefore, it is possible that both effects compensate against each other.

In order to find out whether our estimates for the EMTR are relatively robust for the assumptions made for the pre-tax return (10%) or not, we have recalculated the EMTR by gradually altering the value for the pre-tax real return from 3% to 15%. The results of this sensitivity analysis are presented in Table C.7 and Figure C.2.

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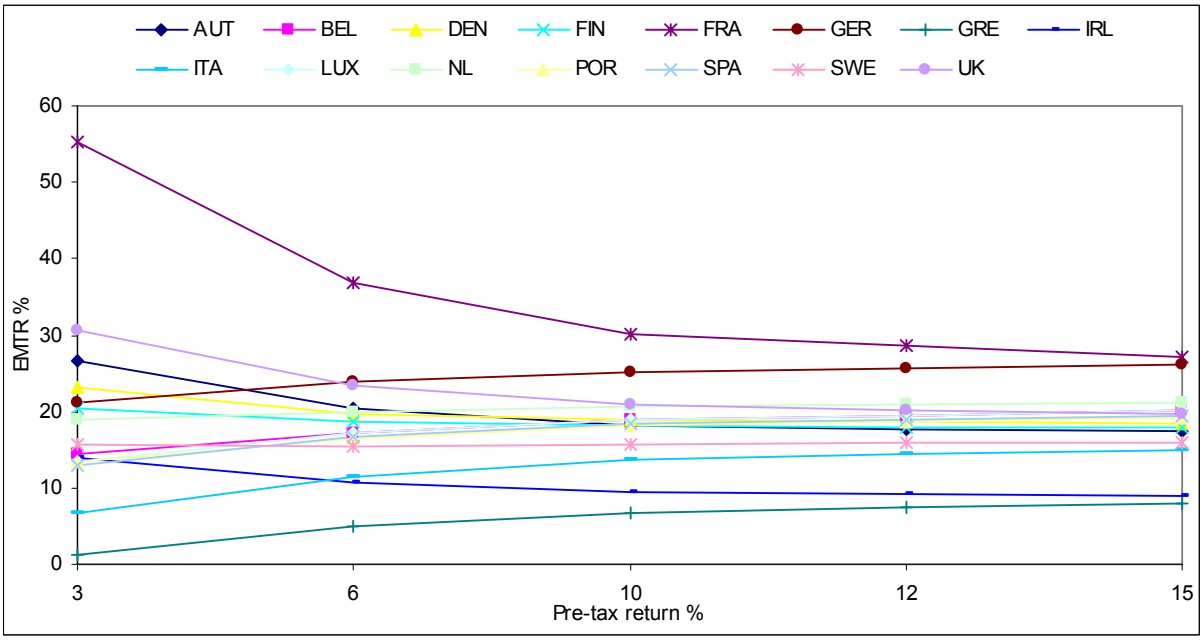
[53] See also King and Fullerton (1984), pp. 282-290.

Table C.7: Effective Marginal Tax Rates and variation of pre-tax return

Country	Pre-tax return %					Relative difference from 3% to 15% in percentage points
	3	6	10 Base case	12	15	
Austria	26.69	20.42	18.25	17.78	17.37	-9.32
Belgium	14.44	17.22	18.89	19.44	20.09	5.65
Denmark	23.18	19.79	18.81	18.65	18.53	-4.65
Finland	20.37	18.58	18.09	18.02	17.99	-2.38
France	55.37	36.84	30.11	28.57	27.13	-28.24
Germany	21.13	23.80	25.20	25.62	26.10	4.97
Greece	1.35	4.89	6.76	7.35	8.03	6.68
Ireland	14.06	10.64	9.43	9.17	8.92	-5.14
Italy	6.78	11.54	13.74	14.37	15.04	8.26
Luxembourg	13.45	17.12	18.98	19.54	20.17	6.72
Netherlands	18.82	19.94	20.67	20.91	21.19	2.37
Portugal	13.44	16.55	18.15	18.64	19.18	5.74
Spain	12.98	16.56	18.30	18.81	19.36	6.38
Sweden	15.80	15.53	15.73	15.85	16.03	0.23
United Kingdom	30.64	23.40	20.83	20.24	19.70	-10.94
EU-Average	*19.23*	*18.19*	*18.13*	*18.20*	*18.32*	-0.91
Standard deviation	*11.99*	*6.88*	*5.41*	*5.15*	*4.95*	

Figure C.2: Effective Marginal Tax Rates and variation of pre-tax return



From the final row in Table C.7 we see that the EU-average EMTR begins to fall as the value for the pre-tax real return increases from 3% to 10%. However, after having reached a critical level of 10% the EU-average EMTR tends to increase again. Altogether, there is a total decrease of 0.91 percentage points. Moreover, if we assume a high value for the pre-tax return, the variation between the EMTRs in the Member States is reduced significantly, since the standard deviation is falling to 4.95.

However, the trend of the EU-average EMTR hides relevant information from the trends in the different Member States. There is one group of six countries (Austria, Denmark, Finland, France, Ireland and the United Kingdom) with a falling trend. The nine Member States which remain have a rising trend. Therefore, within the EU Member States, the advantage of a lower impact of non-profit taxes and the disadvantage of a benefit from interest deduction compensate against with reversed premises.

The countries with falling EMTRs above all are those which levy high real estate taxes (Ireland and the United Kingdom) or additional high non-profit taxes (Austria and France). On the other hand we see, that the EMTR in particular in France will be far above the EU-average as the pre-tax return is falling, because non-profit taxes then constitute a relatively high fraction of a very small pre-tax return.

By contrast, EMTRs increase above all in those countries which levy relatively low non-profit taxes and where the relief for interest deduction is relatively high in the base case. In case of an increasing pre-tax return the benefit from deducting interest with the nominal value (i.e. the constant inflation rate) becomes a smaller fraction of the pre-tax return. The best example is Italy with an increasing EMTR of 8.26 percentage points. This considerable dispersion can also be attributed to some extent to the dual income tax.

The most striking result from this variation is, however, that the EMTR across the Member States converge, but do not cross, as the pre-tax return increases. Beyond some critical value of the pre-tax return - we may refer to the 10% from the base case as an example – the EMTR are not much affected by further changes in the value of the pre-tax return. Hence, our standard assumptions with respect to the pre-tax return clearly reflect the differences among the EMTR across the EU Member States. Moreover, although the value of the pre-tax return does affect the absolute value of the effective tax burden, the changes in the EMTR-ranking of the countries are negligible. With the exception of the United Kingdom, no country is moving by more than two positions.

2. Different Assumptions for the Personnel Intensity

The approach of King and Fullerton does not consider labour costs for the calculation of effective marginal tax rates. As labour costs are fully tax deductible, similar to interest costs, they do not influence the effective marginal tax rate. As a result, the EMTR on labour costs is always equal to zero.

It is obvious that, in relation to the net labour costs, the value of the deductibility of labour costs will depend on the amount of the tax saving due to the deductibility. As a general rule, a company's net labour costs will decrease with an increase of the statutory tax rate on profits. Thus, assuming equal gross wages in all EU Member States, net labour costs will be lowest in countries where the statutory tax rates on profits are highest (e.g. Belgium and Germany).

Table C.8: Effective Marginal Tax Rates and variation of personnel intensity

Country	Personnel intensity %			
	Base case (25.3)	90	50	10
Austria	18.25	33.55	24.08	14.64
Belgium	18.89	Same as base case		
Denmark	18.81	Same as base case		
Finland	18.09	Same as base case		
France	30.11	42.29	34.75	27.23
Germany	25.20	Same as base case		
Greece	6.76	Same as base case		
Ireland	9.43	Same as base case		
Italy	13.74	Same as base case		
Luxembourg	18.98	Same as base case		
Netherlands	20.67	Same as base case		
Portugal	18.15	Same as base case		
Spain	18.30	Same as base case		
Sweden	15.73	Same as base case		
United Kingdom	20.83	Same as base case		
EU-Average	*18.13*	*19.96*	*18.83*	*17.70*
Standard deviation	*5.41*	*8.43*	*6.32*	*5.08*

On the other hand, referring to Austria and France, two EU Member States levy taxes on the payroll of a company, other than wage taxes or social security contributions. In order to include these taxes we have extended the model of King and Fullerton correspondingly. In particular we considered "Kommunalsteuer" (municipal tax) in Austria and "taxe professionnelle" as well as employer taxes in France. The Austrian municipal tax is levied on all wages at a rate of 3%. In France, the nominal tax rate on all wages amounts to 5.8% approximately. For the assessment of the impact of payroll taxes on the effective

tax burden, we calculated the EMTR by gradually changing the value for the personnel intensity from 90% to 10%. For the base case we assumed a personnel intensity of 25.3%.

Referring to the results presented in Table C.8, we can conclude that assumptions for the personnel intensity have a large impact on the EMTR in Austria and France, respectively. A rise of the personnel intensity from 10% to 90% would increase the Austrian EMTR by 129%; the corresponding increase in France would be 55.3%. Unlike France, which is in general a high tax country and therefore always is in a bad relative position, Austria would move in the EMTR-ranking of the EU Member States by three positions. Thus, the estimate of effective marginal tax rates has to consider labour costs as a relevant factor. Altogether, it seems reasonable to conclude that labour-intensive industries face disadvantageous tax rules in Austria and France. The French tax rules in particular, are far from ideal from an economic point of view. With regard to "taxe professionnelle" and employer taxes, we can state that both capital- and labour-intensive industries are bearing high EMTR in France. However, the French government has announced to abolish payroll from the base of the "taxe professionnelle" until the year 2003.

3. Different Weights for the Assets

The analysis of the taxation of the different types of assets in Section II. 2 of this Chapter revealed that there is no common pattern in the relative taxation of assets across the EU Member States. However, each country shows more or less obvious differences in the tax treatment of the different assets considered in this study. This Section therefore investigates the impact of the weights for the assets on the average EMTR in the Member States as well as on the spread of the average EMTRs across Member States. We changed the weights by gradually reducing the fixed assets to total balance sheet-ratio from 90:10 to 10:90. In other words, this variation takes into account a reduction in the firm's capital intensity. The weights used in this variation are presented in Table A.B.3 of Appendix B.

As presented in the final rows in Table C.9, a reduction in the capital intensity from 90:10 to 10:90 would cause only a slight decrease in the EU-average overall EMTR of 0.72 percentage points. If one refers to the EU-average EMTR, one could therefore conclude that the capital intensity or the relation of buildings and machinery to intangibles, financial assets and inventories had almost no impact on the tax burden.

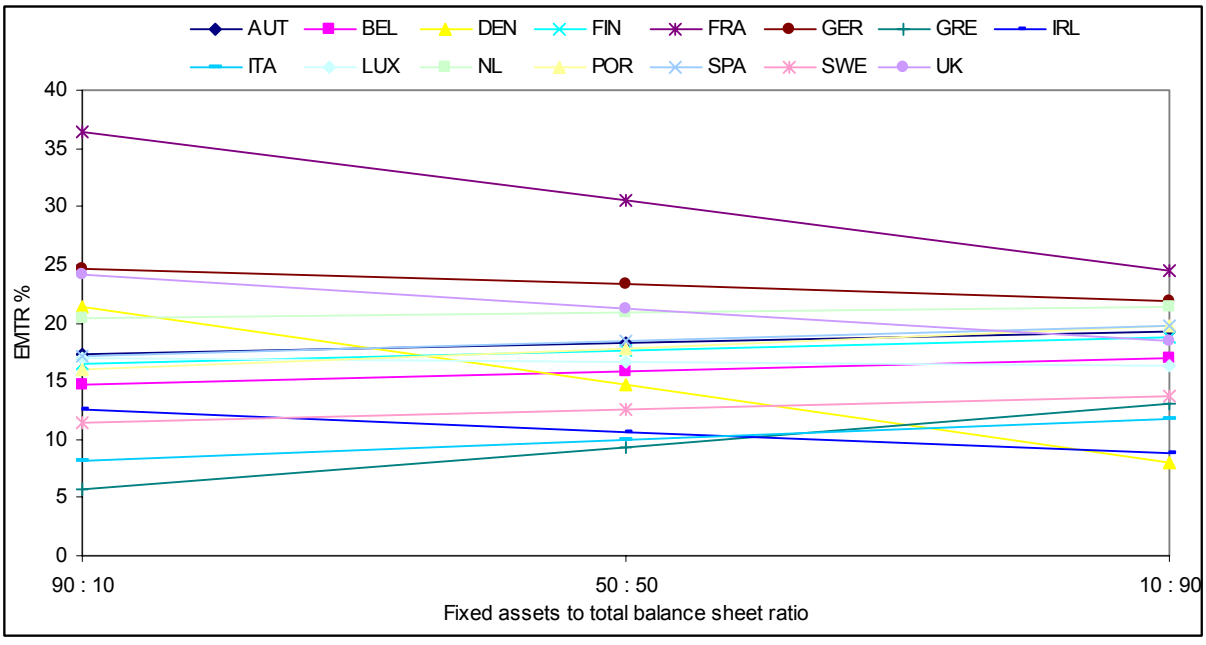
However, the average EU figures again hide a lot of individual information. If we refer to the development of the national EMTR, the impact of a decreasing capital intensity is quite different. Three countries (Greece, Italy and Portugal) show increases in the EMTR in excess of 3 percentage points. By contrast, we can see a

reduction of more than 10 percentage points in France and Denmark. There are several reasons for the high rates of increase and decrease in the EMTR.

Table C.9: Effective Marginal Tax Rates and variation of fixed assets to total balance sheet-ratio

Country	Fixed assets to total balance sheet-ratio			Relative difference from 90:10 to 10:90 in percentage points
	90 : 10	50 : 50	10 : 90	
Austria	17.36	18.29	19.23	1.87
Belgium	14.64	15.82	17.00	2.36
Denmark	21.41	14.73	8.05	-13.36
Finland	16.42	17.60	18.78	2.36
France	36.36	30.46	24.56	-11.80
Germany	24.66	23.31	21.95	-2.71
Greece	5.73	9.35	12.98	7.25
Ireland	12.53	10.67	8.80	-3.73
Italy	8.12	9.91	11.70	3.58
Luxembourg	16.99	16.67	16.34	-0.65
Netherlands	20.43	20.90	21.38	0.95
Portugal	16.00	17.87	19.75	3.75
Spain	17.16	18.47	19.78	2.62
Sweden	11.35	12.57	13.78	2.43
United Kingdom	24.15	21.27	18.38	-5.77
EU-Average	*17.55*	*17.19*	*16.83*	*-0.72*
Standard deviation	*7.19*	*5.38*	*4.68*	

Figure C.3: Effective Marginal Tax Rates and variation of fixed assets to total balance sheet-ratio



First, one reason can be seen in the shift from a more generous capital allowance practice to less generous rules for intangibles and non depreciable assets and vice versa. For example in the case of Denmark,[54] the reduction of the EMTR is caused by the higher weight of the tax reduction due to the immediate write-off of intangibles. Second, applying FIFO to inventories has a major impact on the effective tax burden, if capital intensity is falling (e.g. in the case of Finland and Greece). Third, the decrease of the EMTR in France, Ireland and the United Kingdom are caused by non-profit taxes. In the case of Ireland and the United Kingdom the reason is the lower impact of real estate tax (business rates) on buildings. The lower EMTR in France is explained by the lower impact of "taxe professionnelle", which does not include intangibles, financial assets, and inventories as taxable assets.

We can conclude from the results that there is an impact of the depreciation practice on the tax burden if the rules are comparatively favourable, whereas an "average" depreciation practice in relation to other countries has almost no impact on the EMTR in the case of altering weights in the assets. Furthermore, non-profit taxes can distort investment decisions, if there is no uniform valuation and taxation of the different types of assets. The French rules in particular result in a discrimination of capital intensive production.

The most striking result from this variation is that the EMTR across the Member States converge with an decreasing capital intensity. Referring to the standard deviation presented in Table C.9, a lower capital intensity would reduce the variation between the EMTRs across Member States. This indicates – for the EU as a whole – a greater similarity in the taxation of non-depreciable assets compared to depreciable assets. As a result from the effects of depreciation, valuation of inventories and non-profit taxes which were described above, the exact country ranking with respect to the EMTR depends on the assumptions for the capital intensity. However, in general, the changes in the EMTR-ranking of the countries are only minor. With the exception of Denmark, Portugal and the United Kingdom no country moves by more than three positions.

4. Different Weights for the Sources of Company Finance

The analysis of the taxation of the different sources of finance in Section II. 3 of this Chapter revealed that financing a company with debt capital is treated far more generously than financing with equity capital (i.e. issuing new equity capital and retaining profits). Referring to the different tax treatment of forms of finance, it seems likely that the EMTR at the level of a corporation is highly sensitive to the assumptions made for the weights of the different sources of finance. The aim of this Section is to investigate the impact on the average EMTR of

[54] In Denmark the decrease of the EMTR is, like in Ireland and the UK, even higher since there is lower impact of the relatively high real estate tax.

changing assumptions for the weights of financing. Therefore, we recalculate EMTRs by gradually reducing the debt-equity-ratio of the corporation from 90:10 to 10:90. The weights for the sources of finance are presented in Table A.B.3 of Appendix C.

Table C.10: Effective Marginal Tax Rates and variation of debt-equity ratio

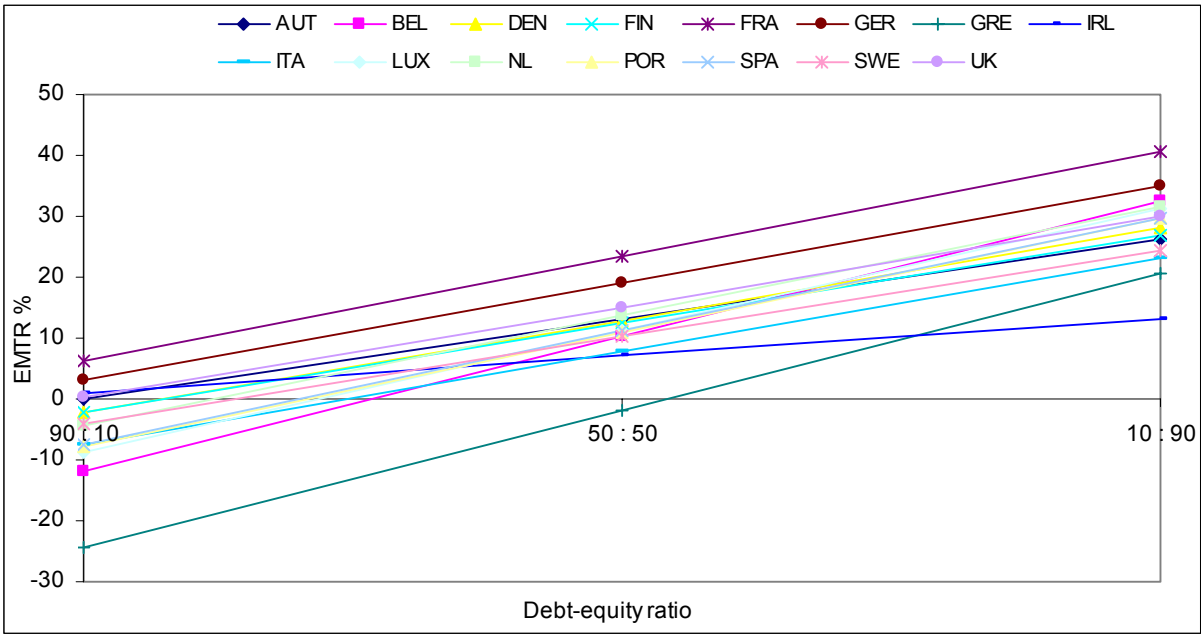
Country	Debt-equity ratio			Difference from 90:10 to 10:90 in percentage points
	90 : 10	50 : 50	10 : 90	
Austria	-0.10	13.12	26.33	26.43
Belgium	-11.73	10.33	32.38	44.11
Denmark	-2.17	12.94	28.06	30.23
Finland	-2.17	12.42	27.02	29.19
France	6.22	23.43	40.63	34.41
Germany	3.15	19.03	34.91	31.76
Greece	-24.51	-1.99	20.53	45.04
Ireland	1.07	7.09	13.12	12.05
Italy	-7.61	7.77	23.15	30.76
Luxembourg	-8.86	11.20	31.25	40.11
Netherlands	-4.39	13.66	31.70	36.09
Portugal	-7.73	10.91	29.55	37.28
Spain	-7.35	11.13	29.60	36.95
Sweden	-4.13	10.17	24.48	28.61
United Kingdom	0.26	15.07	29.89	29.63
EU-Average	*-4.67*	*11.75*	*28.17*	*32.84*
Standard deviation	*7.10*	*5.42*	*6.19*	

As presented in the final rows in Table C.10, a reduction in the debt-equity ratio from 90:10 to 10:90 would cause a major increase in the EU-average EMTR of 32.84 percentage points. Thus, if we refer to the EU-average EMTR, we can conclude that the debt-equity ratio has a major impact on the effective tax burden of corporations, which clearly shows a favourable treatment of debt-financing.

Looking at the development of the EMTRs across the EU Member States, we see a common favourable treatment of debt relative to other forms of finance, due to the deduction of nominal interest payments from the corporation tax base. Since the tax saving from interest deduction is highest in countries with high statutory tax rates on profits, most countries applying high tax rates can improve their position in the country ranking when more debt capital is employed (e.g. Belgium, Luxembourg, the Netherlands and Portugal). Belgium, for example, can improve from the thirteenth to the second position, which is the result of the high corporation tax rate. However, with reference to France and Germany, not all "high tax" countries benefit in the same way from debt financing. The reasons are that limitations for interest deduction (in Germany due to the trade tax) and non-profit taxes levied at a gross base (France) reduce the corresponding tax savings.

By contrast, countries with a preferential taxation of equity-financing partly lose their comparative advantage when more debt capital is employed. For example, Italy, a country with a high statutory corporation tax rate, does not grant the same benefits to debt financing as other countries do, because *dual income tax* treats equity capital more generously than debt. A similar trend, which is also caused by the *dual income tax*, prevails in Austria. Another example for a country which grants only little relief to debt-financing is Ireland. Ireland would drop back from first place to the thirteenth position in the country ranking if the debt-equity ratio were risen from 10:90 to 90:10. This is the result of the by far lowest corporation tax rate among EU Member States.

Figure C.4: Effective Marginal Tax Rates and variation of debt-equity ratio



Altogether, we can conclude that the debt-equity ratio, and hence the weight of debt in the sources of finance, has a significant influence on the effective tax burden. Furthermore, the country specific impact of the debt-equity ratio on the tax burden can change the relative position of the countries in the ranking. Although there is an obvious discrimination of equity-financing in all countries, it is therefore not possible to draw any universally valid conclusion about the effective tax burden in one country and the relative position of countries. Since the benefits from interest deduction are limited by the level of the statutory tax rate on profits, the effects of debt financing both on the relative position of the countries from the highest to the lowest EMTR and the dispersion between the different sources of finance are lowest in countries with a relatively low statutory tax rate on profits and vice versa. The most striking examples are Belgium on the one hand (statutory tax rate of 40.17%) and Ireland on the other hand (statutory tax rate of 12.5%). The ranking of both countries with respect to

the EMTR almost reveals a reverse order if the assumptions for the debt-equity ratio change from one to the other extreme.

It has to be stressed, however, that these are the conclusions from the only perspective of the corporation (e.g. a EU-subsidiary of a multinational investor). From the *perspective of a multinational investor*, the country ranking of the EMTRs assuming different debt-equity ratios only indicates the relative advantages of countries in the case that this particular mix of sources of finance is used. The ranking does not tell anything about the most tax efficient way of financing a subsidiary nor the attraction of the EU Member States as a host country for a subsidiary. Since interest receipts from a subsidiary are subject to corporation tax at the parent's level, the multinational investor always has to compare the aggregate tax burden on interest and repatriated profits,[55] for example in the form of dividends. Another possibility of repatriating profits from the subsidiary to the parent company would be profit retention by the subsidiary and the subsequent disposal of the shares of the subsidiary. In many countries, a capital gain from the disposal of the shares is either exempt (i.e. the participation exemption applies) or taxed at reduced rates.[56]

55 For the case of a US-investor with subsidiaries in the 15 EU Member States see Spengel (1999).

56 The disposal of shares is also included in the King-Fullerton model in the case of cross-border investment. See Baker & McKenzie (1999).

IV. EFFECTIVE TAX RATES FOR DIFFERENT BRANCHES AND INDUSTRIES

The results for the base case and the sensitivity analysis clearly evidence that there is no universally valid value for the EMTR in one country. Neither, therefore, is it possible to make universally valid statements regarding the differences of the EMTR across the EU Member States. The reason is that the impact on the EMTR of different assumptions, made for the weights of the types of assets and the sources of finance and for the personnel intensity, is not the same in each country.

In order to investigate the impact of alternative weights for assets, forms of finance, and personnel intensity, this Section calculates the EMTR of 12 other industries, in addition to the base case which referred to data from the manufacturing sector. The weights for the combinations of assets and finance that are used for the calculation, are presented in Table A.B.2 of Appendix B. In order to isolate the impact of the weights for the combinations of assets and finance on the EMTR, we considered a uniform pre-tax real return (p) of 10% for each industry.

The two final rows in Table C.11 show that, depending on the industry, the overall EU-average EMTR can vary between –0.53% for Transport and 22.55% for Chemical Engineering. Furthermore, compared to the base case, there can be either less or more variation between the EMTRs depending on the specific sector. For example, standard deviation amounts to 4.21 for High Tech industries or 4.34 for Commerce only, whereas it can rise to 9.1 for Transport. We do not intend to comment on the EMTR of each industry. We just want to draw attention to some typical industries where the EMTRs are significantly lower or higher than the EMTR in our base case. We therefore refer to Chemical Engineering and Automotive Vehicles on the one hand and to Commerce and Transport on the other hand.

Table C. 11: Effective Marginal Tax Rates for selected branches and industries

Country	Base Case Manufac-turing sector	Metal Production	Chemical Enginee-ring	Enginee-ring	Electrical Enginee-ring	Automo-tive Vehicles	Food and Beverages	Building and Cons-tructions	Commerce	Transport	Service Trade	Low Tech	High Tech	***Average of 12 industries***
Austria	18.25	14.22	22.46	15.21	18.94	20.02	11.12	10.33	2.56	3.77	18.06	4.95	7.07	***12.39***
Belgium	18.89	13.22	25.41	11.26	18.42	21.70	11.88	3.66	1.41	-10.00	7.13	3.47	8.16	***9.64***
Denmark	18.81	15.75	22.42	14.19	18.20	21.46	14.68	8.35	7.11	5.57	9.21	10.39	11.46	***13.23***
Finland	18.09	14.84	21.68	14.06	17.93	20.15	13.88	9.70	7.60	-0.13	9.21	9.27	11.66	***12.49***
France	30.11	26.28	34.64	26.00	29.93	33.27	23.59	18.56	12.61	18.99	25.08	18.03	18.81	***23.82***
Germany	25.20	21.76	29.79	19.43	24.63	27.63	20.57	13.33	12.01	7.50	15.89	14.80	16.30	***18.64***
Greece	6.76	2.39	9.96	4.52	7.22	10.15	1.15	1.04	-4.57	-21.67	-9.36	-2.83	1.51	***-0.04***
Ireland	9.43	7.99	10.89	7.92	9.00	10.44	8.25	5.20	5.28	5.32	6.50	6.99	8.65	***7.70***
Italy	13.74	9.20	19.43	8.02	13.41	15.32	8.37	3.51	2.05	-7.01	6.27	2.49	6.82	***7.32***
Luxembourg	18.98	14.32	24.86	11.82	18.38	21.84	12.94	4.43	2.62	-5.00	7.68	5.49	8.34	***10.64***
Netherlands	20.67	16.70	25.59	14.90	20.11	23.34	15.70	8.46	6.76	0.16	10.25	9.73	12.35	***13.67***
Portugal	18.15	13.98	23.79	11.28	17.57	20.80	12.67	4.37	2.70	-4.74	7.64	5.53	7.85	***10.29***
Spain	18.30	13.93	23.90	11.67	17.63	20.88	13.00	4.58	3.28	-3.52	8.46	6.18	9.35	***10.78***
Sweden	15.73	12.02	19.17	12.01	15.86	17.44	10.99	8.42	5.84	-4.67	7.27	6.20	9.66	***10.02***
United Kingdom	20.83	17.69	24.31	16.91	20.21	23.27	17.27	11.37	10.30	7.48	12.13	13.53	15.92	***15.87***
EU-Average	*18.13*	*14.29*	*22.55*	*13.28*	*17.83*	*20.51*	*13.07*	*7.69*	*5.17*	*-0.53*	*9.43*	*7.61*	*10.26*	***11.76***
Standard deviation	*5.41*	*5.37*	*6.02*	*4.95*	*5.29*	*5.65*	*5.11*	*4.41*	*4.34*	*9.10*	*7.11*	*5.05*	*4.21*	***5.19***

In relation to the base case, the EU-average EMTR and the overall average EMTR for Chemical Engineering and Automotive Vehicles are higher in each country. The reason is that the specific structure of the weights for assets and for the forms of finance is less tax-favourable than in the base case. Both industries have a high portion of equity in the sources of finance,[57] resulting in a limited tax advantage from debt financing. Moreover, a comparison of the tax burden of Chemical Engineering with the tax burden of Automotive Vehicles shows a higher EMTR for Chemical Engineering, due to the higher portion of financial assets in the total assets (about 51%, compared to 35% for Automotive Vehicles). Hence, the advantages from the depreciation allowances are also limited in the case of Chemical Engineering.

On the other hand – in relation to the base case –, the EU-average EMTR and the overall EMTR for Commerce and Transport are significantly lower in each country. Referring to Transport, the weights for both assets (fixed assets to total balance sheet-ratio about 84%) and forms of finance (debt-equity-ratio about 78%) are "tax efficient", resulting in the lowest EU-average EMTR. The EMTR for Transport is also lowest in each country. The EU-average EMTR for this industry is even negative (-0.53%) since only the level of the corporation is considered and, hence, no respect is given to the tax levied on interest payments from the subsidiary at the parent's level. In the case of Greece and Belgium, the high level of debt financing, combined with favourable depreciation allowances for fixed assets, even results in a heavy subsidy of debt-financing, pushing down the overall EMTR below –10%.

Commerce also has a high portion of debt in the sources of finance (about 68%), keeping down the overall EMTR. On the other hand, the portion of inventories in the types of assets is comparatively high (about 53%), resulting in a higher EMTR relative to Transport, since the advantages of the benefit from capital allowances for depreciable assets are limited.

The comparison of the effective tax burden of high tech and low tech industries shows, both for the overall EU-average EMTR and for the EMTR in each EU Member State, a more generous treatment of Low Tech in relation to High Tech industries from a tax point of view. Since both industries have about the same debt-equity-ratio (Low Tech industry about 60% and High Tech industry about 58%), the reason for the different overall EMTR is that the weights for depreciable assets differ. Whereas fixed assets to total balance sheet-ratio in the Low Tech industry amounts to about 47%, the corresponding ratio in the High Tech industry is only about 30%. On the other hand, High Tech industry has a higher portion of intangibles and inventories, altogether resulting in a lower benefit from capital allowances for depreciable assets.

Finally, referring to the ranking of the countries from the highest to the lowest

[57] The debt-equity ratios are 29.11% for Chemical Engineering and 39.19% for Automotive Vehicles. See Table A.B.2 of Appendix B.

EMTR, we can draw the following conclusions. If - compared to the base case - the portion of non-depreciable assets and the portion of equity financing is high, the ranking of the countries is hardly affected. If instead the portion of depreciable assets and the portion of debt financing is high, the ranking of the countries does change. In particular countries granting generous capital allowances and high relief for debt-financing improve their ranking (e.g. Belgium, and Luxembourg). Altogether, however, except Belgium which improves by six positions, Luxembourg, which improves by four positions, and Finland, which loses five positions, there are only minor changes in the ranking, if we compare the base case with the average of the 12 industries (presented in the last column of Table C.11). Therefore, the base case makes a good assumption about the ranking of the EMTR in the EU Member States.

V. CHANGES OF THE EFFECTIVE TAX RATES SINCE 1998

This Section summarises the main tax reforms in the EU Member States and their effects on the effective marginal tax rates (EMTR) for companies. In our analysis we refer to the period 1998-2001. Based on the economic assumptions for our base case,[58] we recalculate the EMTR for the fiscal years 1998, 1999 and 2000. Like in the previous sections we only consider elements of the tax regimes that are generally available for the manufacturing sector.[59] This excludes, above all, special investment incentive schemes. Moreover, since this report is addressed to multinational investors, we do not consider changes of the personal income tax regimes.

The results are summarised in Table C.13 and in Figure C.5.[60] Within the EU, seven Member States have reduced the EMTR for corporations (Austria, Denmark, France, Germany, Greece, Ireland and Portugal). However, not all Member States have decreased their EMTRs. No relevant tax changes during the period 1998-2001 can be reported for five Member States (Belgium, Italy, Luxembourg, Spain and Sweden).[61] Three Member States (Finland, the Netherlands and the United Kingdom) have even increased the EMTR. However, these increases are, in general, negligible and can be attributed to a minor increase of local taxes (e.g. real estate tax in the Netherlands) or the reduction of a generous first year allowance for certain investment (United Kingdom). Indeed, it was only Finland which increased the taxes explicitly by rising the corporation tax rate from 28% to 29%.

The dominant trend in the tax reforms has been a lowering of the statutory tax rates on profits. This has been seen in eight out of 15 Member States. As in earlier periods not covered by this report, the lowering of the tax rates was combined with extensions of the tax base, in particular with a cut back of the depreciation rules. However, the broadening of the tax base was not the only measure that was taken to finance the revenue losses which were caused by the lowering of the tax rates. In addition, many Member States have changed their corporation tax systems. There is an obvious trend away from imputation

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58 The assumptions are summarised in Table C.1.

59 The reader should be aware that the EMTRs recalculated for the year 1998 – although they use the same tax variables – are not exactly the same as in the previous Baker & McKenzie report (1999). This is, above all, attributable to our new assumptions for the inflation rate. In this report, we use as an inflation rate 2% instead of 1.1%. Since the advantage from deducting interest with its nominal is rising, debt-financing bears a lower effective tax burden. Therefore, EMTRs for the year 1998 in this report tend to be lower than in the previous report. This can also affect the country ranking.

60 More detailed results for each period are presented in Tables A.C.16 – A.C.19 of Appendix C.

61 The governments of Belgium, Italy and Luxembourg have already announced tax reforms for 2001 and subsequent years. However, these proposed tax changes have not become effective by the time this report was written.

systems towards shareholder relief systems.[62] Within the period of time considered here, Germany, Ireland and the UK have abolished their imputation systems. From the perspective of a multinational investor, the type of a corporation tax system is, in general, not relevant. Since, apart from a few exceptions,[63] relief for corporation tax is only granted to domestic shareholders and, moreover, this analysis is restricted to the effective tax burden of corporations, the effects of the corporation tax system on the EMTR are not considered. However, what is clear from the trend which was just explained briefly, is, that Member States try to strengthen the international competitiveness of their tax system by cutting back advantages of their resident tax payers.

Table C. 12: Summary of the most important tax reform since 1998

Austria: Reduction of corporation tax rate from 34% to 25% on deemed profits that can be attributed to the increase of equity capital
Denmark: Reduction of corporation tax rate from 34% to 32% and to 30%, reduction of declining-balance depreciation on machinery from 30% to 25%
Finland: Increase of corporation tax rate from 28% to 29%, reduction of declining-balance depreciation on machinery from 30% to 25%, minor increase of real estate tax
France: Reduction of corporation tax rate from 41.67% to 40%, 37.77% and to 36.43%, reduction of coefficient of declining-balance depreciation by 0.25%, further reduction of "taxe professionnelle" did not enter the calculations, since the relevant of the “taxe professionnelle” is not included in the model anyway
Germany: Reduction of corporation tax rate from 45% to 40% and to 25%, abolition of reduced corporation tax rate on distributed profits, reduction of declining-balance depreciation on machinery from 30% to 20%, reduction of straight-line depreciation on buildings from 4% to 3%, minor increase of average tax rate of local trade tax, abolition of full imputation system and introduction of a shareholder relief system
Greece: Reduction of corporation tax rate from 40% to 37.5%, reduction of final tax rate on interest receipts of a corporation 20% to 15%
Ireland: Reduction of corporation tax rate from 32% to 28%, 24% and to 12.5%, abolition of partial imputation system and introduction of a classical system
Netherlands: Minor increase of real estate tax
Portugal: Reduction of corporation tax rate from 34% to 32%
United Kingdom: Reduction of corporation tax rate from 31% to 30%, reduction of first year allowance for investment in machinery, abolition of partial imputation system and introduction of a shareholder relief system

Table C.12 summarises the most important tax reform during the period 1998-2001. With respect to the degree of the reduction of the EMTR and with respect to systematic considerations, the reforms in Austria, Germany and Ireland seem to be the most important ones.

62 See Chapter B for a more detailed analysis and for a classification of the different corporation tax systems.

63 For example, US-investors are granted a partial tax credit for investments in the United Kingdom.

Ireland has gradually reduced the corporation tax rate by more than 60% from 32% to 12.5%. Although the tax rate of 12.5% will not become effective before 2003 it was already considered for the year 2001 in this report. As a consequence, the Irish EMTR has declined from 20.59% (1998) to 9.43% (2001) (see Table C.13). Due to this significant reduction of the EMTR of 54.28%, Ireland could improve by nine positions in the country ranking from the eleventh to the second place. This is by far the highest improvement of all countries.

A closer look at the types of assets and sources of finance reveals, that the EMTRs for all five investments as well as for the two forms of equity-financing – new equity and profit retention – were reduced. By contrast, the reforms have increased the EMTR for debt-financing.[64] Therefore, a considerable lower statutory tax rate on profits not only reduces the effective level of company taxation but also the dispersion between the different forms of finance, since it cuts back the advantages of interest deduction and debt-financing respectively.

Table C. 13: Effective Marginal Tax Rates 1998-2001

	1998		1999		2000		2001	
Country	EMTR	Ranking	EMTR	Ranking	EMTR	Ranking	EMTR	Ranking
Austria	24.09	13	24.09	13	18.25	7	18.25	7
Belgium	18.89	6	18.89	7	18.89	9	18.89	10
Denmark	20.33	9	19.40	10	19.40	11	18.81	9
Finland	16.72	4	17.24	4	18.09	5	18.09	5
France	32.83	15	31.90	15	30.65	15	30.11	15
Germany	28.81	14	28.03	14	28.03	14	25.20	14
Greece	9.37	1	6.46	1	6.46	1	6.76	1
Ireland	20.59	11	18.35	6	16.08	4	9.43	2
Italy	13.74	2	13.74	2	13.74	2	13.74	3
Luxembourg	18.98	7	18.98	8	18.98	10	18.98	11
Netherlands	20.60	12	20.60	11	20.60	12	20.67	12
Portugal	19.15	8	19.15	9	18.15	6	18.15	6
Spain	18.30	5	18.30	5	18.30	8	18.30	8
Sweden	15.73	3	15.73	3	15.73	3	15.73	4
United Kingdom	20.56	10	20.83	12	20.83	13	20.83	13
EU-Average	*19.91*		*19.45*		*18.81*		*18.13*	
Standard deviation	*5.46*		*5.64*		*5.35*		*5.41*	

The tax reform in *Austria* in 2000 has introduced the concept of a *dual income tax*. According to this concept, a statutory corporation tax rate of 25% instead of the standard rate of 34% is levied on deemed profits that are attributed to the increase of equity capital of an Austrian company.[65] Since equity-financing has

[64] The EMTR for equity-financing decreases from 34.47% to 14.62%. By contrast, the EMTR for debt-financing increases from –5.78% to –0.43%. See Tables A.C.16 – A.C.19 of Appendix C.

[65] See Chapter B for more details about the Austrian *dual income tax*.

a high weight in the sources of finance in our model[66] and relief for interest deduction in the case of debt-financing is still granted at the standard tax rate of 34%, the total reduction of the EMTR in Austria amounts to 24.24% - from 24.09% in 1998 to 18.25% since 2000. In the country ranking, Austria improved its position from thirteenth to seventh place. Following Italy (since 1998), Austria is the second EU Member State which has introduced a type of *dual income taxation* that explicitly favours equity-financing. Since there are only two Member States applying such a tax regime it seems too early to talk about a trend in this respect.

Since many elements of the tax regime were changed at once, the *German* tax reform which became effective on January 1, 2001, is also an important reform. The full imputation system – in force since 1977 – was abolished and a shareholder relief system was introduced. Under the new *corporation tax system*, only half of the dividends are subject to personal income tax at the shareholder's level. This change of the corporation tax system, however, has no effect on inbound investments to Germany. In addition to the corporation tax system, both the level and the structure of the *corporation tax rate* were changed. The split-rate structure that distinguished between retained profits (40%) and distributed profits (30%) was abolished and a lower single tax rate (25%) was introduced. Since the tax rate on retained profits was higher than the tax rate on distributed profits, retained profits (15 percentage points) receive a higher relief than distributed profits (5 percentage points). Compared with 1998, the relief for retained profits even amounts to 20 percentage points, since by that time the relevant tax rate was 45%. Although the 25% corporation tax rate is the second lowest within the EU, the solidarity levy of 5.5% and the trade tax with an average rate of 17.63%[67] remain. With respect to the deductibility of trade tax as a business expense, the statutory tax rate on profits was therefore reduced by less than 20 percentage points from 56.67% (1998) to 39.35% (2001). Although this is a significant reduction, the tax rate in Germany is still high compared with EU standards. Currently, only Belgium has a higher tax rate (40.17%). Finally, there was a *broadening of the tax base* by cutting back the depreciation rules both for tangible fixed assets (i.e. machinery in our model) and for buildings. The maximum declining-balance rate for tangible fixed assets was reduced from 30% to 20%. This is the lowest rate within those EU Member States allowing the declining-balance method.[68] For buildings, the straight-line depreciation was reduced from 4% to 3%, which is the second lowest rate within the EU.[69]

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66 The combined weight for new equity (10.08%) and retained earnings (55.45%) amounts to 65.53%.

67 Applying a standard tax coefficient (Hebesatz) of 428%.

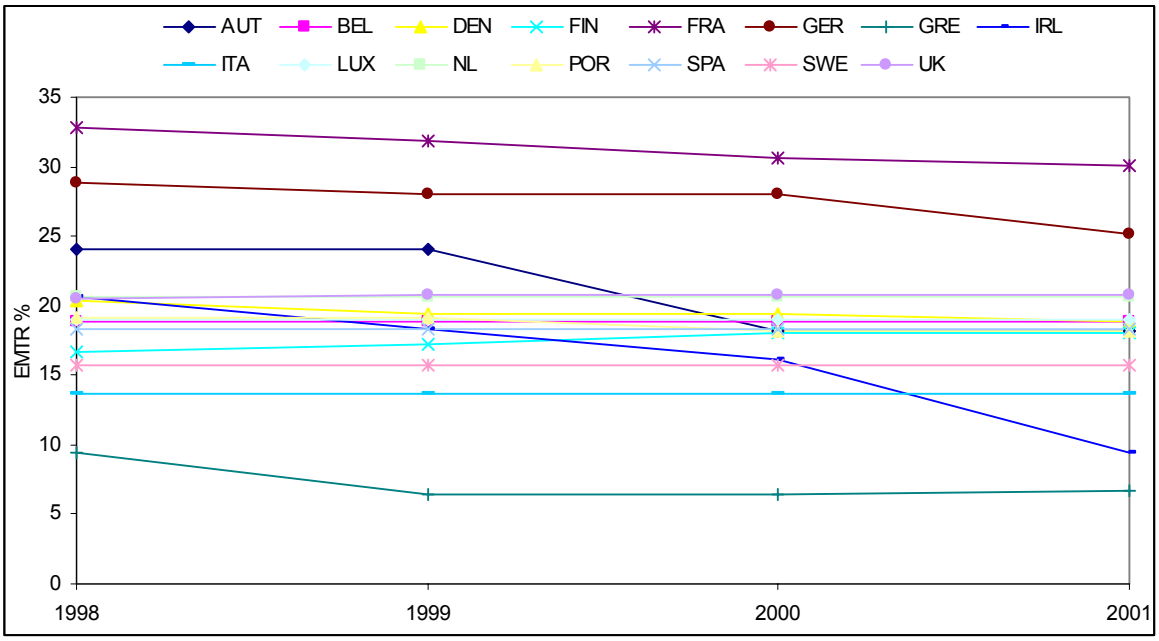
68 See Table A.A.7 of Appendix A.

69 Spain also applies a rate of 3%, the rate in the Netherlands (2.5%) is lowest. See Table A.A.6 of Appendix A.

Altogether, as can be seen from the results in Table C.13, the overall EMTR of the German corporation during the period 1998-2001 decreased. However, there is only a minor reduction from 28.81% (1998) to 25.2% (2001). As a result, Germany cannot improve in the country ranking and still is on last but one position. A more detailed analysis of the results presented in Tables C.16-C.19 of Appendix C reveals, that not all investments can take advantage from the reforms. Since the effects of the tax rate reductions are more than compensated for by the broadening of the tax base, the EMTR for machinery increases from 21.39% (1998) to 21.83% (2001). Referring to the sources of finance, only retained earnings are taxed lower after the reforms. The EMTR has been fallen significantly from 55.06% (1998) to 38.89% (2001). But this is still the second highest EMTR behind France. By contrast, the other two sources of finance are taxed more heavily after the reforms. The increased EMTR for debt-financing – from –15.55% (1998) to –0.82% (2001) – can be attributed to the reductions of the corporation tax rate which limited the tax savings from interest deduction significantly. The EMTR for new equity increased moderately from 36.08% (1998) to 38.89% (2001) and is since 2001 – due the abolition of the split-rate structure – the same as for profit retention. Although the tax rate on distributed profits was reduced by five percentage points, this tax reducing effect was more than compensated for by the effects resulting form the broader tax base.

It is difficult to draw a broad conclusion of the effects of the German tax reform. On the one hand, the significant reduction of the corporation tax rate is a strong signal for investors which is also reflected by a considerably lower EMTR on retained earnings of a German corporation. On the other hand, the two most tax efficient ways of financing a German corporation bear a higher tax burden after the reforms. This increases the tax burden on foreign inbound investment into Germany if a subsidiary is financed by debt or new equity and distributes profits to its foreign parent company.

Figure C.5: Effective Marginal Tax Rates 1998-2001



As a consequence of the developments in the Member States, the EU-average EMTR declined from 19.91% (1998) to 18.13% (2001) (see Table C.13). This is considerable reduction of 8.94% in a period of only four years. According to the standard deviations presented in the last row of Table C.13, the variation between the EMTRs of the Member States did not become less, however. The detailed analysis of the results presented in Appendix C reveals, that on average all types of investment took advantage from the reforms.[70] As a consequence of the reduced tax rates on the one hand and the broadening of the tax bases on the other hand, there is now less variation between the effective tax burdens of the different types of investment in the Member States. With respect to the sources of finance, both forms of equity-financing are taxed less heavily after the reforms. Moreover, since Germany has abolished the split-rate structure, which was unique within the EU, new equity and profit retention bear an equal average tax burden. By contrast, the EU-average EMTR for debt-financing is higher after the reforms. This increased tax burden can be attributed to the reduction of the corporation tax rates in most Member States, which reduced the tax savings from interest deduction.

Altogether, we can conclude, that there was a trend to reduce the EMTR for corporations within the EU Member States. However, the effects on the country ranking from the highest to the lowest EMTR were only minor. Except Austria, Ireland and Portugal, no country could improve its position. In particular those Member States which did not reduce their tax burden or even increased them moderately, have lost some positions in the country ranking. The most striking result is, that countries on top of the ranking (Finland, Greece, Italy and Sweden)

[70] See Tables C.16-C.19 of Appendix C.

as well as at the bottom of the ranking (France and Germany) remained the same. From a quantitative point of view, only the Irish tax reforms caused major changes. The Irish EMTR has fallen from 20.59% in 1998 to 9.43 in 2001 respect already given to 12.5% corporation tax rate which will become effective from 2003. Since other countries with relatively low EMTRs did not further reduce their tax burdens, there is, however, no so-called race to the bottom.

CHAPTER D

FINAL CONCLUSIONS

The results of the qualitative and quantitative analysis of the company tax regimes of the EU Member States revealed that – in general – tax regimes are designed as a whole. This means, that there is a particular relationship between the number of taxes, the tax rates, the tax bases and the corporation tax system. It is therefore almost impossible to explain the differences between the effective tax burdens of company by just one feature of the national tax regimes.

Since this report focuses on multinational investors, the corporation tax systems and the personal income tax regimes prevailing in the EU Member States were not of main concern. In most cases foreign investors – in contrast to domestic investors – are not entitled to a tax credit or similar relief from double taxation anyhow. From the perspective of a multinational investor, the most important elements of a tax regime constituting the effective tax burden are the tax rate, the tax base and additional profit and non-profit taxes.

From these three elements, the *statutory tax rate on profits* has in general the highest impact on the *level* of effective tax burden. The statutory tax rate on profits includes the corporation tax rate plus local profit taxes and surcharges. Moreover, the statutory tax rate on profits is most decisive for the *variation* between the effective tax burdens in case of different sources of financing. The best example is Ireland with its 12.5% tax rate. However, referring to the results which are presented in Table C.4, the statutory tax rate on profits alone cannot explain the country ranking with respect to the effective tax burden in any case. There are several exceptions from this general rule. The most important exceptions are

- a relatively high level of non-profit taxes, for example in France,
- special (low) tax rates for certain types of corporate income, for example in Greece,
- special concepts for company taxation, for example the concepts of "dual income taxation" in Austria and Italy which favour equity capital against debt-financing, or
- local profit taxes which limit interest deductibility, for example the trade tax in Germany.

Since, for the vast majority of the EU Member States, the effective marginal tax rate in the case of equity financing differs only a few percentage points from the statutory tax rate on profits, in normal cases the corporation tax bases (i.e. the rules for income determination) do not have a great impact on the effective tax burden

(see Table C.6). However, the reader has to bear in mind that this last statement does not consider any special investment incentives. In addition, in reality, there exist much more complex elements of the tax bases, such as tax free reserves or provisions, which were not considered in the above analysis.

Finally, the effective tax burden of companies clearly depend on the assumptions made for the profitability of the investment as well as on the weights for the assets and for the sources of finance. From these assumptions, the profitability can be determinative in case it drops below some critical value. However, beyond some level of pre-tax return, the effective tax burden is not greatly affected by any further increases of the profitability.

Altogether, our base case makes a good assumption about the country ranking of the effective levels of company taxation in the EU Member States.

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APPENDIX A

TAX DATA USED IN THE CALCULATIONS AS AT JANUARY 1, 2001

Table A.A.1: Corporation tax rates and statutory tax rates (%)

Country	Nominal corporation tax rate	Surcharge on corporation tax rate	Local profit tax rate	Effective statutory tax rate on profits
Austria	34.00	–	–	34.00
Belgium	39.00	3.00	–	40.17
Denmark	30.00	–	–	30.00
Finland	29.00	–	–	29.00
France	33.33	9.30	–	36.43
Germany	25.00	5.50	17.63[a)]	39.35
Greece[b)]	37.50	–	–	37.50
Ireland[c)]	12.50	–	–	12.50
Italy	37.00	–	4.25	41.25
Luxembourg	30.00	4.00	9.09[a)]	37.45
Netherlands	35.00	–	–	35.00
Portugal	32.00	10.00	–	35.20
Spain	35.00	–	-[a)]	35.00
Sweden	28.00	–	–	28.00
United Kingdom	30.00	–	–	30.00

a) Local profit tax is deductible from the base of the corporation tax
b) Shares not quoted on the Athens Stock Exchange
c) As from 2003

Table 2: Special effective statutory corporation tax rates (%)

Country	Tax rate	Case
Austria	25.00	Deemed interest on the increase of equity capital
Greece	15.00	Interest income
Italy	37.00	Interest income
	23.25	Other investment income. financed with new equity or retained earnings
	41.25	Other investment income. financed with debt

Table A.A.3: Real estate tax and net wealth tax for corporations (%)

	Real estate tax[a)]		Net wealth tax	
Country	Nominal	Effective	Nominal	Effective
Austria	0.25	0.17	-	-
Belgium	1.67	1.00	-	-
Denmark	2.42	1.69	-	-
Finland	0.75	0.53	-	-
France	1.09	0.69	-	-
Germany	0.39	0.24	-	-
Greece[b)]	0.00	0.00	-	-
Ireland	1.58	1.26	-	-
Italy	0.28	0.26	-	-
Luxembourg	0.75	0.47	0.50	0.00[c)]
Netherlands	0.42	0.27	-	-
Portugal	0.50	0.32	-	-
Spain	0.40	0.26	-	-
Sweden	0.38	0.27	-	-
United Kingdom	2.37	1.66	-	-

a) In all countries except Italy real estate tax is deductible from the base of the corporation tax. In Italy deduction is allowed from the IRAP tax base

b) Tax exempt if used by the owner

c) Net wealth tax can be credited against liability of corporation tax resulting in an effective tax rate of zero

Table A.A.4: Non-profit taxes on assets other than real estate tax and net wealth tax (%)

Country	Nominal tax rate	Effective tax rate	Asset
Austria (Kommunalsteuer)	1.02	0.67	Buildings
	0.76	0.50	other assets
France (taxe professionnelle)	3.24	2.06	Buildings
	4.24	2.70	Machinery

Table A.A.5: Tax treatment of inventories

Country	Inventory valuation
Austria	Lifo
Belgium	Lifo
Denmark	Average cost method
Finland	Fifo
France	Average cost method
Germany	Lifo
Greece	Average cost method
Ireland	Fifo
Italy	Lifo
Luxembourg	Lifo
Netherlands	Average cost method
Portugal	Lifo
Spain	Lifo
Sweden	Fifo
United Kingdom	Fifo

Table A.A.6: Capital allowances for industrial buildings (%)

	Kind of allowance	Allowance rate	Length of period
Austria	SL	4.00	ufd
Belgium	DB SL	10.00 4,78	7 10
Denmark	SL	5.00	ufd
Finland	DB	7.00	ufd
France	SL	5.00	ufd
Germany	SL	3.00	ufd
Greece	SL	10.00	ufd
Ireland	SL	4.00	ufd
Italy	SL SL SL	4.00 8.00 4.00	1 2 ufd
Luxembourg	SL	4.00	ufd
Netherlands	SL	2.50	ufd
Portugal	SL	5.00	ufd
Spain	SL	3.00	ufd
Sweden	SL	4.00	ufd
United Kingdom	SL	4.00	ufd

DB Declining balance
SL Straight line
ufd Until fully depreciated

Table A.A.7: Capital allowances for machinery (%)

	First period			Second period		
	Kind of allowance	Allowance rate	Length of first period	Kind of allowance	Allowance rate	Length of second period
Austria	SL	14.29	7	–	–	–
Belgium	DB	40.00	2.50	SL	20.00	2.5
Denmark	DB	25.00	Ufd	–	–	–
Finland	DB	25.00	Ufd	–	–	–
France	DB	32.14	4	SL	7.07	3
Germany	DB	20.00	2	SL	12.80	5
Greece	DB	42.86	5	SL	3.05	2
Ireland	SL	15.00	6	SL	10.00	1
Italy	SL	13.25	1	SL SL SL	26.50 13.25 7.25	2 2 1
Luxembourg	DB	30.00	4	SL	8.00	3
Netherlands	SL	14.29	7	–	–	–
Portugal	DB	35.71	ufd	–	–	–
Spain	DB	28.57	4	SL	8.68	3
Sweden	DB	30.00	2	SL SL	20.00 9.00	2 1
United Kingdom	DB	25.00	ufd	–	–	–

DB Declining balance
SL Straight line
ufd Until fully depreciated

Table A.A.8: Capital allowances for intangibles – specifically the purchase of a patent (%)

	First period			Second period		
	Kind of allowance	Allowance rate	Length of first period	Kind of allowance	Allowance rate	Length of second period
Austria	SL	10.00	10	–	–	–
Belgium	SL	20.00	5	–	–	–
Denmark	–	100.00	1	–	–	–
Finland	SL	10.00	10	–	–	–
France	SL	20.00	5	–	–	–
Germany	SL	20.00	5	–	–	–
Greece	SL	10.00	10	–	–	–
Ireland	SL	10.00	10	–	–	–
Italy	SL	20.00	5	–	–	–
Luxembourg	SL	20.00	5	–	–	–
Netherlands	SL	10.00	10	–	–	–
Portugal	SL	10.00	10	–	–	–
Spain	SL	10.00	10	–	–	–
Sweden	DB	30.00	2	SL SL	20.00 9.00	2 1
United Kingdom	DB	25.00	ufd	–	–	–

DB Declining balance
SL Straight line
ufd Until fully depreciated

APPENDIX B

ECONOMIC PARAMETERS OF THE MODEL

Table A.B.1: Economic parameters of the model

Economic depreciation rate used in the calculations	
Machinery	11 years = 17.5%
Buildings	53 years = 3.1%
Intangibles	12.5 years = 15.35%
Lifetime for tax purposes where no year is specified	
Machinery	7 years
Buildings	25 years
Intangibles	10 years
Inflation rate	2.0%
Pre-tax real return	10.0%

Table A.B.2: Proportion of total investment in each type of asset, proportion of total capital by each source of finance, and personnel expenditure to turnover-ratio in each industry (in per cent)

Industry	Types of assets					Sources of finance			Personnel expenditure to turnover-ratio
	Machinery	Buildings	Financial Assets	Intangibles	Inventories	Debt	New Equity	Retained Earnings	
Manufacturing (base case)	17.49	12.99	38.25	1.43	29.84	34.47	10.08	55.45	25.30
Metal Production	25.61	12.73	33.24	0.73	27.70	42.50	8.85	48.65	20.50
Chemical Engineering	16.64	12.69	50.67	2.81	17.19	22.55	11.92	65.54	26.30
Engineering	13.74	14.27	21.22	1.19	49.58	49.55	7.76	42.69	32.80
Electrical Engineering	14.82	9.95	37.52	0.92	36.78	36.14	9.82	54.03	30.20
Automotive Vehicles	22.49	14.58	34.80	0.81	27.32	28.16	11.05	60.79	24.50
Food and Beverages	22.24	17.64	30.42	2.77	26.93	45.50	8.38	46.12	11.80
Building and Constructions	8.08	7.35	15.60	0.18	68.79	65.47	5.31	29.22	33.00
Commerce	10.66	14.47	20.18	1.83	52.84	68.41	4.86	26.73	8.20
Transport	44.68	39.68	13.92	0.25	1.48	78.23	3.35	18.42	29.30
Services Trade	7.74	17.92	48.34	4.98	21.02	58.09	6.45	35.46	53.60
Low Tech	24.01	22.84	13.86	2.49	36.81	60.24	6.12	33.65	8.24
High Tech	2.40	27.00	14.92	6.26	49.42	57.80	6.49	35.71	10.79

Table A.B.3: Weights of types of assets and sources of finance for the sensitivity analysis (in per cent)

	Types of assets					Sources of finance		
	Machinery	Buildings	Financial Assets	Intangibles	Inventories	Debt	New Equity	Retained Earnings
Manufacturing (base case)	17.49	12.99	38.25	1.43	29.84	34.47	10.08	55.45
	Variation of fixed assets to total balance sheet-ratio (FATBSR)							
FATBSR = 9:1	45.00	45.00	3.33	3.33	3.33	34.47	10.08	55.45
FATBSR = 1:1	25.00	25.00	16.67	16.67	16.67	34.47	10.08	55.45
FATBSR = 1:9	5.00	5.00	30.00	30.00	30.00	34.47	10.08	55.45
	Variation of profit distribution and debt-equity-ratio (DER)							
DER = 9:1	17.49	12.99	38.25	1.43	29.84	90.00	5.00	5.00
DER = 1:1	17.49	12.99	38.25	1.43	29.84	50.00	25.00	25.00
DER = 1:9	17.49	12.99	38.25	1.43	29.84	10.00	45.00	45.00

APPENDIX C

SUMMARY OF COUNTRY RESULTS

Table A.C.1 – A.C.15:
EMTR for Domestic Investment in the Member States of the EU
- **10% pre-tax real return**
- **only taxes of corporations**
- **as from 2001**

Table A. C.16 – Table A.C.19:
EMTR for Domestic Investment in the Member States of the EU
- **10% pre-tax real return**
- **only taxes of corporations**
- **time series 1998 – 2001**

Table A.C.1: Austria

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	31.56	29.36	28.24	30.01	30.01	*29.64*
Retained earnings	31.56	29.36	28.24	30.01	30.01	*29.64*
Debt	0.69	-4.62	-5.54	-2.71	-2.71	*-3.40*
Weighted average	*20.92*	*17.65*	*16.60*	*18.73*	*18.73*	***18.25***

Table A.C.2: Belgium

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	29.45	41.05	27.35	40.17	40.17	*37.89*
Retained earnings	29.45	41.05	27.35	40.17	40.17	*37.89*
Debt	-31.35	-11.95	*-34.85*	-13.43	-13.43	*-17.24*
Weighted average	*8.49*	*22.78*	*5.91*	*21.70*	*21.70*	***18.89***

Table A.C.3: Denmark

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	0.00	42.76	28.35	30.00	33.00	*31.84*
Retained earnings	0.00	42.76	28.35	30.00	33.00	*31.84*
Debt	-51.43	9.66	-10.92	-8.57	-4.29	*-5.95*
Weighted average	*-17.73*	*31.35*	*14.82*	*16.70*	*20.15*	***18.81***

Table A.C.4: Finland

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	30.79	30.53	27.35	29.00	34.80	*30.67*
Retained earnings	30.79	30.53	27.35	29.00	34.80	*30.67*
Debt	-5.65	-6.01	-10.49	-8.17	0.00	*-5.82*
Weighted average	*18.23*	*17.93*	*14.31*	*16.19*	*22.80*	***18.09***

Table A.C.5: France

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	31.58	55.42	47.35	41.00	44.64	*44.94*
Retained earnings	31.58	55.42	47.35	41.00	44.64	*44.94*
Debt	-19.09	18.42	5.71	-4.27	1.46	*1.92*
Weighted average	*14.11*	*42.67*	*33.00*	*25.40*	*29.76*	***30.11***

Table A.C.6: Germany

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	28.74	41.43	36.00	39.35	39.35	*38.89*
Retained earnings	28.74	41.43	36.00	39.35	39.35	*38.89*
Debt	-15.93	2.97	-5.12	-0.13	-0.13	*-0.82*
Weighted average	*13.34*	*28.18*	*21.83*	*25.75*	*25.75*	***25.20***

Table A.C.7: Greece

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	39.95	23.23	25.89	15.00	41.25	*26.16*
Retained earnings	39.95	23.23	25.89	15.00	41.25	*26.16*
Debt	-8.08	-34.83	-30.57	-48.00	-6.00	*-30.14*
Weighted average	*23.40*	*3.22*	*6.43*	*-6.72*	*24.96*	***6.76***

Table A.C.8: Ireland

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	13.23	25.10	10.95	12.50	15.00	*14.62*
Retained earnings	13.23	25.10	10.95	12.50	15.00	*14.62*
Debt	-2.02	11.54	-4.63	-2.86	0.00	*-0.43*
Weighted average	*7.97*	*20.42*	*5.58*	*7.21*	*9.83*	***9.43***

Table A.C.9: Italy

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	15.87	25.63	13.44	37.00	23.25	*27.00*
Retained earnings	15.87	25.63	13.44	37.00	23.25	*27.00*
Debt	-22.24	-1.24	-28.54	-11.75	-5.00	*-11.46*
Weighted average	*2.73*	*16.37*	*-1.03*	*20.20*	*13.51*	***13.74***

Table A.C.10: Luxembourg

Asset Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	27.12	38.98	30.38	37.45	37.45	*36.27*
Retained earnings	27.12	38.98	30.38	37.45	37.45	*36.27*
Debt	-28.50	-9.53	-23.29	-11.98	-11.98	*-13.87*
Weighted average	*7.95*	*22.26*	*11.88*	*20.42*	*20.42*	***18.98***

Table A.C.11: Netherlands

Asset Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	37.24	39.03	32.80	35.00	38.50	*36.22*
Retained earnings	37.24	39.03	32.80	35.00	38.50	*36.22*
Debt	-7.32	-4.57	-14.15	-10.77	-5.38	*-8.90*
Weighted average	*21.88*	*24.00*	*16.62*	*19.22*	*23.37*	***20.67***

Table A.C.12: Portugal

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	37.46	33.01	31.01	35.20	35.20	*34.21*
Retained earnings	37.46	33.01	31.01	35.20	35.20	*34.21*
Debt	-7.38	-14.25	-17.33	-10.86	-10.86	*-12.39*
Weighted average	*22.00*	*16.72*	*14.34*	*19.32*	*19.32*	***18.15***

Table A.C.13: Spain

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	37.24	37.31	28.66	35.00	35.00	*34.22*
Retained earnings	37.24	37.31	28.66	35.00	35.00	*34.22*
Debt	-7.32	-7.22	-20.53	-10.77	-10.77	*-11.97*
Weighted average	*21.88*	*21.96*	*11.70*	*19.22*	*19.22*	***18.30***

Table A.C.14: Sweden

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	18.39	28.10	19.74	28.00	33.43	*28.05*
Retained earnings	18.39	28.10	19.74	28.00	33.43	*28.05*
Debt	-21.12	-7.64	-19.25	-7.78	-0.23	*-7.70*
Weighted average	*4.77*	*15.78*	*6.30*	*15.67*	*21.83*	***15.73***

Table A.C.15: United Kingdom

Asset / Finance	Intangibles	Buildings	Machinery	Financial Assets	Inventories	*Weighted average*
New Equity	26.49	44.21	30.02	30.00	36.00	*33.59*
Retained earnings	26.49	44.21	30.02	30.00	36.00	*33.59*
Debt	-13.59	11.74	-8.54	-8.57	0.00	*-3.44*
Weighted average	*12.67*	*33.02*	*16.73*	*16.70*	*23.59*	***20.83***

Table A.C.16: Effective Marginal Tax Rates in the EU Member States – base case – types of assets – sources of finance – overall – 1998

Country	Average for each type of asset					Average for each source of finance			Overall average
	Intangibles	Buildings	Machinery	Financial Assets	Inventories	New Equity	Retained Earnings	Debt	
Austria	27.27	23.15	22.43	24.63	24.63	38.55	38.55	-3.40	24.09
Belgium	8.49	22.78	5.91	21.70	21.70	37.89	37.89	-17.24	18.89
Denmark	-21.31	33.58	13.27	18.73	22.73	35.36	35.36	-8.25	20.33
Finland	17.61	15.45	10.83	15.67	22.02	28.93	28.93	-6.49	16.72
France	15.61	45.15	34.47	28.07	33.26	50.05	50.05	0.09	32.83
Germany	14.97	28.22	21.39	31.11	31.11	36.08	55.06	-15.55	28.81
Greece	21.88	3.71	6.01	1.44	23.37	26.69	26.69	-23.55	9.37
Ireland	20.06	27.07	14.30	17.73	25.16	34.47	34.47	-5.78	20.59
Italy	2.73	16.37	-1.03	20.20	13.51	27.00	27.00	-11.46	13.74
Luxembourg	7.95	22.26	11.88	20.42	20.42	36.27	36.27	-13.87	18.98
Netherlands	21.88	23.48	16.62	19.22	23.37	36.16	36.16	-8.99	20.60
Portugal	23.34	17.32	15.32	20.39	20.39	36.37	36.37	-13.60	19.15
Spain	21.89	21.96	11.70	19.23	19.23	34.23	34.23	-11.98	18.30
Sweden	4.77	15.78	6.30	15.67	21.83	28.05	28.05	-7.70	15.73
United Kingdom	13.11	33.29	12.50	17.22	24.38	33.89	33.89	-4.79	20.56
EU-Average	*13.35*	*23.30*	*13.46*	*19.43*	*23.14*	*34.67*	*35.93*	*-10.17*	*19.91*
Standard deviation	*11.61*	*9.35*	*8.11*	*6.36*	*4.49*	*5.61*	*7.58*	*5.84*	*5.46*

Table A.C.17: Effective Marginal Tax Rates in the EU Member States – base case – types of assets – sources of finance – overall – 1999

Country	Average for each type of asset					Average for each source of finance			Overall average
	Intangibles	Buildings	Machinery	Financial Assets	Inventories	New Equity	Retained Earnings	Debt	
Austria	27.27	23.15	22.43	24.63	24.63	38.55	38.55	-3.40	24.09
Belgium	8.49	22.78	5.91	21.70	21.70	37.89	37.89	-17.24	18.89
Denmark	-19.46	33.26	12.45	17.73	21.44	33.44	33.44	-7.29	19.40
Finland	17.61	15.45	13.80	15.67	22.02	29.38	29.38	-5.86	17.24
France	15.13	44.35	33.77	27.24	32.16	48.36	48.36	0.60	31.90
Germany	14.87	27.73	20.61	30.27	30.27	38.40	50.70	-11.48	28.03
Greece	24.90	3.73	6.85	-9.13	26.54	27.68	27.68	-33.87	6.46
Ireland	17.61	25.79	12.51	15.67	22.02	30.37	30.37	-4.49	18.35
Italy	2.73	16.37	-1.03	20.20	13.51	27.00	27.00	-11.46	13.74
Luxembourg	7.95	22.26	11.88	20.42	20.42	36.27	36.27	-13.87	18.98
Netherlands	21.88	23.48	16.62	19.22	23.37	36.16	36.16	-8.99	20.60
Portugal	23.34	17.32	15.32	20.39	20.39	36.37	36.37	-13.60	19.15
Spain	21.89	21.96	11.70	19.23	19.23	34.23	34.23	-11.98	18.30
Sweden	4.77	15.78	6.30	15.67	21.83	28.05	28.05	-7.70	15.73
United Kingdom	12.67	33.02	16.73	16.70	23.59	33.59	33.59	-3.44	20.83
EU-Average	*13.44*	*23.10*	*13.72*	*18.37*	*22.87*	*34.38*	*35.20*	*-10.27*	*19.45*
Standard deviation	*11.34*	*9.13*	*7.90*	*8.43*	*4.30*	*5.38*	*6.70*	*7.82*	*5.64*

Table A.C.18: Effective Marginal Tax Rates in the EU Member States – base case – types of assets – sources of finance – overall – 2000

Country	Average for each type of asset					Average for each source of finance			Overall average
	Intangibles	Buildings	Machinery	Financial Assets	Inventories	New Equity	Retained Earnings	Debt	
Austria	20.92	17.65	16.60	18.73	18.73	29.64	29.64	-3.40	18.25
Belgium	8.49	22.78	5.91	21.70	21.70	37.89	37.89	-17.24	18.89
Denmark	-19.46	33.26	12.45	17.73	21.44	33.44	33.44	-7.29	19.40
Finland	18.23	17.93	14.31	16.19	22.80	30.67	30.67	-5.82	18.09
France	14.49	43.29	32.52	26.09	30.66	46.11	46.11	1.26	30.65
Germany	14.87	27.73	20.61	30.27	30.27	38.40	50.70	-11.48	28.03
Greece	24.90	3.73	6.85	-9.13	26.54	27.68	27.68	-33.87	6.46
Ireland	15.15	24.46	10.72	13.55	18.87	26.28	26.28	-3.31	16.08
Italy	2.73	16.37	-1.03	20.20	13.51	27.00	27.00	-11.46	13.74
Luxembourg	7.95	22.26	11.88	20.42	20.42	36.27	36.27	-13.87	18.98
Netherlands	21.88	23.48	16.62	19.22	23.37	36.16	36.16	-8.99	20.60
Portugal	22.00	16.72	14.34	19.32	19.32	34.21	34.21	-12.39	18.15
Spain	21.88	21.96	11.70	19.22	19.22	34.22	34.22	-11.97	18.30
Sweden	4.77	15.78	6.30	15.67	21.83	28.05	28.05	-7.70	15.73
United Kingdom	12.67	33.02	16.73	16.70	23.59	33.59	33.59	-3.44	20.83
EU-Average	*12.76*	*22.69*	*13.10*	*17.73*	*22.15*	*33.31*	*34.13*	*-10.06*	*18.81*
Standard deviation	*10.81*	*8.96*	*7.40*	*8.21*	*4.31*	*5.15*	*6.66*	*7.92*	*5.35*

Table A.C.19: Effective Marginal Tax Rates in the EU Member States – base case – types of assets – sources of finance – overall – 2001

Country	Average for each type of asset					Average for each source of finance			Overall average
	Intangibles	Buildings	Machinery	Financial Assets	Inventories	New Equity	Retained Earnings	Debt	
Austria	20.92	17.65	16.60	18.73	18.73	29.64	29.64	-3.40	18.25
Belgium	8.49	22.78	5.91	21.70	21.70	37.89	37.89	-17.24	18.89
Denmark	-17.73	31.35	14.82	16.70	20.15	31.84	31.84	-5.95	18.81
Finland	18.23	17.93	14.31	16.19	22.80	30.67	30.67	-5.82	18.09
France	14.11	42.67	33.00	25.40	29.76	44.94	44.94	1.92	30.11
Germany	13.34	28.18	21.83	25.75	25.75	38.89	38.89	-0.82	25.20
Greece	23.40	3.22	6.43	-6.72	24.96	26.16	26.16	-30.14	6.76
Ireland	7.97	20.42	5.58	7.21	9.83	14.62	14.62	-0.43	9.43
Italy	2.73	16.37	-1.03	20.20	13.51	27.00	27.00	-11.46	13.74
Luxembourg	7.95	22.26	11.88	20.42	20.42	36.27	36.27	-13.87	18.98
Netherlands	21.88	24.00	16.62	19.22	23.37	36.22	36.22	-8.90	20.67
Portugal	22.00	16.72	14.34	19.32	19.32	34.21	34.21	-12.39	18.15
Spain	21.88	21.96	11.70	19.22	19.22	34.22	34.22	-11.97	18.30
Sweden	4.77	15.78	6.30	15.67	21.83	28.05	28.05	-7.70	15.73
United Kingdom	12.67	33.02	16.73	16.70	23.59	33.59	33.59	-3.44	20.83
EU-Average	*12.17*	*22.29*	*13.00*	*17.05*	*21.00*	*32.28*	*32.28*	*-8.77*	*18.13*
Standard deviation	*10.38*	*8.82*	*7.82*	*7.72*	*4.65*	*6.74*	*6.74*	*7.78*	*5.41*