

The Effect of Tax Harmonisation on Effective Tax Rates in the European Union

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Abstract

With the implementation of the Common Market the fragmentation of capital markets through different systems of corporate taxation remains one of the major obstacles on the way to fully integrated markets. Following the cost-of-capital-methodology, the tax systems of the major European countries, the United States and Japan are modelled. Effective Tax Rates are calculated for domestic and foreign direct investment. The model is used to evaluate different forms of harmonisation, including the suggestions of the Ruding-Commission, home state taxation, dual income taxation and clearing-house models. A full harmonisation of taxes is shown to be unnecessary, but the problem of tax credits on cross-border investments needs to be dealt with. Dual income taxation is shown to have desirable effects of tax neutrality. JEL-Classification H25, H73.

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1 Introduction

Comparisons of nominal tax rates have for many reasons only a limited expressiveness for the tax burdens created by different tax systems. Still, such comparisons are often made. There are numerous arguments against such examinations. For example, the tax burden of a company is the product of the headline tax rate and tax base. A high tax rate drawn on a narrow tax base may cause the same tax burden for the economy as whole – but not necessarily for every individual company – as a low tax rate drawn on a broad tax base. Furthermore, all comparisons are based on actually stated profits. In reality, tax systems exhibit significant differences in accounting standards, e.g. concerning reserve funds, hidden reserves etc. But also differences in the honesty of tax payments, intensity of tax audits and even the timing of tax payments (see [OECD 1991, 76]) should not be underestimated in their influence, but hardly can be made allowance for in a systematic manner. Finally, the combined tax burden at the corporate level through corporate taxes and at the shareholder level through personal income taxes plays a role.

A number of methods exist to calculate "effective tax rates" that take account of these factors. In the next section the cost-of-capital-approach of [King and Fullerton 1984] is introduced. Other methods have less relevance for the topic of this paper. Macroeconomic methods draw on macroeconomic data or company account data to calculate effective tax rates. But only microeconomic methods actually model the characteristics of the tax systems and can be used to evaluate changes. Apart from the King-Fullerton methodology, the *European Tax Analyzer*, a computer program that simulates the effects of relevant tax data on a representative company, see [Jacobs and Spengel 1996], has proved useful.

Effective marginal tax rates for 1999 are calculated according to the cost-of-capital-method in section 3. There are differences in the tax treatment of domestic investments and foreign direct investments, so that both cases are treated separately. Section 4 uses the model developed in sections 2 and 3 to discuss different reform proposals for a European corporate tax reform. Section 5 concludes.

2 The Cost-of-Capital-Approach

The basic idea of the [King and Fullerton 1984] approach can easily be presented: To serve its investors, a company has to cover at least its opportunity costs of capital. Without taxes this would be exactly equal to the real rate of interest. The tax system introduces a tax wedge between the companies' rate of return before corporate taxes and the investors' rate of return after personal income taxes. The pre-tax rate of return of a real investment necessary to guarantee an after-tax rate of return that equals that rate of return that an investor would have received from

an alternative investment is called cost of capital (p).¹ Stated differently, the cost of capital corresponds to the net marginal productivity of capital (i.e. the gross marginal productivity of capital minus depreciations) that a marginal investment has to earn before taxes in order to be profitable (cf. [Schreiber and Künne 1996]). Under these assumptions all investments that at least earn their cost of capital are carried out.

Three different rates of return are of importance in this context: the companies' rate of return before corporate taxes (p), called cost of capital, the rate of return before personal income taxes of an alternative investment (r), also called interest rate, and finally the rate of return after personal income taxes of the investor (s). The necessary pre-tax rate of return can only be calculated for a predetermined real interest rate r , because the marginal investment project is dependent on the level of the capital market rate of return (*fixed-r-approach*). Depending on this predetermined r , e.g. 5%, the corresponding pre-tax rate of return p and post-tax rate of return s can be calculated for a given tax system. Following results can then be derived for the tax system:

$$\begin{array}{ll} \text{Cost of Capital} & p \\ \text{Tax Wedge} & p - s \\ \text{Effective Tax Rate} & \frac{p - s}{p} \end{array} \quad (1)$$

In this case the tax rate only has a limited interpretability, because an identical tax wedge can lead to significant differences in the tax rate.

The so calculated tax rates are effective marginal tax rates, because they state the effective tax rate of a marginal investment taking account of the depreciation allowances, the rate of inflation, and the imputation system. They are therefore a good indicator of the tax burden on freshly invested capital and the incentive for investments set by the tax system.

The King-Fullerton-approach was extended to international settings by [Alworth 1988]. Since then some empirical studies drawing on this methodology have been published.² The tax treatment of cross-border investments is much more complex than in the domestic case, since not only two different tax systems have to be dealt with, but also the interaction of these two systems. Consider a marginal profit of one unit by the foreign subsidiary. This profit can be taxed at four different stages: by the corporate income tax proper on earnings of the foreign subsidiary abroad, by a foreign source tax on repatriated dividends, by the domestic corporate income tax on foreign-source income of the parent company, and finally by the personal income tax on the investors' dividend income.

¹The neo-classical theory of the corporation that is the basis of this approach is developed by [Jorgenson 1963].

²The most important studies are: [OECD 1991], [Ruding-Report 1992] and [Chennells and Griffith 1997].

A number of limiting assumptions are made in order to keep the complexity of the analysis under control. It is assumed that the parent company is the sole proprietor of the foreign subsidiary, that the parent company only has domestic investors (i.e. there exists no cross-border portfolio capital), and finally that all countries face identical rates of inflation. Following the purchasing power parity theorem, a corollary of the last assumption are fixed exchange rates. Furthermore, the manipulation of transfer prices is ruled out.

3 International Comparison of Tax Burdens

3.1 Effective Tax Rates of Domestic Investments

According to this methodology tax wedges and effective marginal tax rates (EMTR) can be calculated.³ It is assumed that the rate of inflation is two percent in all countries.⁴ The tax data used for these calculations was collected from [PWC 1998], [Mennel and Förster], [Cnossen 1999] and [BMF 1999] and is presented in the appendix. It is assumed that the marginal investor is taxed at the top income tax rate.

For the average results weights have to be assumed. The asset weights used are 28% industrial buildings, 50% industrial plant and machinery, and 22% inventories. The finance weights employed are 55% retained earnings, 10% new equity, and 35% debt.

Table 1 presents the results for the member states of the European Union, for Japan and the United States. The effective tax rates are only given for information; for the reasons stated above their interpretability is limited. The tax wedges state the difference between pre- and post-tax rate of return; a tax wedge of zero therefore means that the tax system causes no burden. In certain circumstances tax wedges can also be negative, for example if the depreciation allowances are more generous than the economic rate of depreciation.

The variances of the tax wedges for the different forms of finance and the different assets are also quoted in the table. A low variance can be seen as indicator for a neutral tax system in regard to the form of finance or the asset in which is invested. According to these results the Italian and Greek tax systems are neutral regarding finance and investment. These variances are therefore interpreted as financial neutrality and investment neutrality.

The comparison of tax wedges leads to some surprises: Admittedly, the country with the highest effective tax burden is Japan, which happens to support one of the highest headline tax rates. But then Great Britain, Denmark and the Netherlands

³The results presented here are based on calculations made by the author in the context of his dissertation, published as [Göpffarth 2001].

⁴This isolates the influence of the tax systems on the effective tax burden.

Country	Tax Wedge	Financial Neutrality	Investment Neutrality	Effective Marginal Tax Rate
Austria	1,3	0,8	0,9	46,3
Belgium	0,9	7,6	3,3	17,2
Denmark	1,9	0,7	0,5	66,3
Finland	1,0	0,0	0,4	25,0
France	1,9	2,9	1,9	36,5
Germany	1,4	0,7	0,1	55,9
Great Britain	2,1	0,1	0,4	48,7
Greece	1,1	0,1	0,1	37,2
Ireland	1,6	1,6	0,0	47,1
Italy	1,4	0,0	0,4	44,5
Luxembourg	1,5	0,7	0,9	51,7
Netherlands	1,9	7,6	0,4	69,3
Portugal	1,3	2,7	0,3	28,4
Spain	1,5	1,4	0,3	57,3
Sweden	1,2	2,1	0,6	29,7
Japan	2,4	11,4	0,6	40,1
USA	1,9	3,6	0,4	49,1
∅	1,5	2,6	0,7	44,1

Table 1: Burden and Distortions Caused by the Taxation of Domestic Investments 1999

also can be found among the "high tax countries". These countries have among the lowest headline tax rates. There are two possible explanations for this result: differences in the generosity of the depreciation allowances and the imputation system.

Comparing the depreciation allowances, Great Britain, together with the other Anglo-Saxon countries and Japan, stands out with low tax privileges. But Denmark and the Netherlands have similar values as Germany and therefore belong to the more generous systems. In these countries the classical system of dividend taxation with the double taxation of dividends is decisive, which also can be seen from the fact that the tax wedge of equity finance is especially high.⁵

Among the "low tax countries" Belgium attracts attention due to the fact that it combines a low average weighted tax wedge with a high distortion regarding finance and investment. The reason for this is the classical-modified system of dividend taxation and the resulting tax discrimination of new equity and a overly generous depreciation system – especially concerning plant and machinery – that leads to new distortions.

⁵Would the Netherlands introduce a full imputation system, the tax wedge would ceteris paribus fall to 1.7. The tax wedge of new equity finance would fall to 2.9.

Because of generous depreciation allowances and the full imputation system Germany's effective tax burden lies in the upper midfield despite the high headline rate. In comparison with the figures for 1990, calculated for example in [OECD 1991], tax wedge and effective marginal tax rate have risen despite the reduction in the headline corporation tax rate from 50% to 40%. This can be explained by the introduction of the solidarity surcharge in 1991 and a slight deterioration in depreciation allowances for buildings. As disadvantage the tax discrimination of equity finance stands out.

Strikingly, the Finnish tax system causes not only an extremely low burden, but is also almost – regarding finance even completely – without distortion. This is especially surprising since the Finnish tax system caused the highest tax burden among the examined states in 1990. The reason for this development is the introduction of a *Dual Income Tax* in 1993. The Dual Income Tax taxes all capital income – independent of recipient and source – once and definitely with a rate of 28%, whereas labour income continues to be subject to a progressive tax.

3.2 Effective Tax Rates of Foreign Direct Investments

Because of the complexity of calculations, the tax rates of foreign direct investments are calculated only for a selection of member countries of the European Union, namely Germany, France, Italy and Great Britain, and, as comparison, for Japan and the United States. The tax wedges are calculated under the assumption that the foreign subsidiary is financed by a third each by retained earnings, debt and new equity. For the parent company the same weights are assumed as in the domestic case. The average values and variances are not weighted.⁶

Now, the taxation of incoming and outgoing investments have to separated. The corresponding tax wedges are presented in table 2. The tax wedges of outgoing investments indicate how the tax burden of a domestic investor depends on the destination of the investment. Would this variance equal zero, the investor would face the same tax rate in all destination countries. Hence, *capital export neutrality* would be achieved. The variances of the tax wedges of incoming investments have a similar interpretation as indicator of *capital import neutrality*. Differences in the taxation of incoming and outgoing investments can be represented by the *ratio of protection* (cf. [Devereux and Pearson 1989, 48f.]). This ratio is defined as the relation of the expected average rate of return on incoming investments to the expected average rate of return of outgoing investments. This should indicate in which way the tax systems influence the direction of cross-border capital flows. A ratio of protection smaller than one indicates a tax privilege of incoming capital.

⁶These rates should be weighed by the proportion of the total stock of foreign direct investment owned by the particular source country. Because only a small selection of countries is analysed here, no weights are employed. The average values do not represent the average tax burden on all foreign direct investments of a country, but only that of a selection.

Investments Country	outgoing		incoming		Ratio of Protection
	Tax Wedge	Capital Export Neutrality	Tax Wedge	Capital Import Neutrality	
France	2,2	0,03	2,0	0,50	0,8
Germany	1,3	0,01	2,4	0,69	2,1
Great Britain	2,2	0,02	2,1	0,52	1,0
Italy	1,5	0,01	2,1	0,48	1,4
Japan	3,3	0,07	2,0	0,26	0,6
USA	2,2	0,02	2,0	0,62	1,1

Table 2: Effective Marginal and Average Tax Rates of Foreign Direct Investments 1999

First of all, the tax burden on cross-border investments is significantly higher than the comparable wedge for domestic investments. Obviously, the current system of taxation of cross-border investments realises much more the goal of capital export neutrality.⁷

This result contradicts the results of other studies, such as [Devereux and Pearson 1989, 48ff.] and [Tanzi and Bovenberg 1990], who come to the conclusion that capital import neutrality prevails. These studies only examine the effects of the corporation taxes and ignore the combined effects of personal income and corporation taxes. The corporation tax mainly has the effect of a source tax on the activities of the foreign subsidiary, whereas the income tax rather represents the residence principle.

Germany stands out by the fact that of all six countries examined it has the lowest tax burden on outgoing investment, but the highest on incoming investment. The high German ratio of protection may be an important explanation for the difficulties in attracting foreign direct investment to Germany.

4 European Tax Harmonisation

4.1 Tax Harmonisation in Europe

So far, some arguments for a fundamental reform of the international taxation of (cross-border) capital flows were stated. Some of the solutions can be implemented in a purely domestic context, as the different performance of the examined countries in regard to the criteria of investment and financial neutrality shows. It can be assumed

⁷In this model capital export neutrality is enhanced by the assumption of immediate repatriation of all profits by the foreign subsidiary. In reality, source state taxes prevail through tax deferral until repatriation.

that tax systems that achieve a high degree of neutrality with regard to domestic investments also belong to the more neutral systems for cross-border investments.

In the international context national governments can achieve many of their goals only in co-operation with other states. If the aim were to simultaneously achieve capital import and capital export neutrality, admittedly an extreme goal, a global harmonisation of all corporation tax systems (and probably also of all income tax systems) can hardly be avoided. A number of measures can be agreed on between two countries bilaterally: As has been shown in the preceding section, double taxation agreements lead to a noticeable improvement in the treatment of cross-border capital flows. Albeit, this improvement is not strong enough to offset the discrimination of cross-border investments as compared to domestic investments.

The equal tax treatment of domestic and foreign direct investments is no goal by itself. Especially in the American tax reform debate it is often argued that the aim of tax reform measures should always be national welfare – which usually means a tax privilege of domestic investments. In one area this argument does not count: in the European Union. Since the Common Market has been almost completed with the free flow of goods and services, the segmentation of capital markets and the distortion of locational and investment decisions through taxes remains as one of the central impediments to the completion of the Common Market.⁸

Generally, ideas of harmonising direct taxes – and here especially of corporate taxes – are almost exclusively directed at the European Union. Probably, this is the case already due to the fact that the EU is the only supranational institution deemed capable of undertaking such a severe intrusion into national autonomies. That some arguments for harmonisation measures exist has already been shown in this paper. Cross-border imputation of corporation tax credits, balancing of profits and losses within multinational groups and tax neutrality with regard to international capital flows are aims that countries cannot achieve on their own. Therefore, in the following suggestions for tax reform measures in the European Union are examined and some suggestions made.

4.2 The Ruding-Report

In 1990, an "independent committee of experts on corporate taxation" was called. This group became known under the name of its chairman, the former Dutch minister of finance Onno Ruding. Its report was submitted in 1992 ([Ruding-Report 1992]). In this report, first of all, the European corporate tax systems were compared and the burden estimated by calculating effective tax rates. Four central results were derived:

⁸Andel wrote as early as 1983 on this subject: "Given the fact that the Common Market is intended to be a common factor market as well as a common product market, the way in which the harmonisation of factor-related taxes has lagged behind the harmonisation of product-related taxes is somewhat surprising" [Andel 1983, 308].

1. The span between the highest and the lowest headline corporation tax rate has shrunk and the rates have fallen on average.
2. The lower rates were generally not fully compensated by the accomplishing broadening of the tax base.
3. The degree of integration of personal income tax and corporation tax has risen.
4. Nation tax sovereignty has not significantly suffered through tax competition.

Apart from the third proposition⁹ these central results confirm with the results of the preceding section. Ruding suggests a harmonisation of corporate taxes in three phases. The first phase should have been completed in 1994 and have abolished the double taxation of cross-border income flows. Hence, all source taxes on interest, dividends and licence fees should have been abolished and the privileges of the parent-subsidiary-directive extended to all corporations. An obligatory lower floor for corporation tax rates should have been introduced with a rate of 39%. The second phase was intended to start in 1994 and to be completed with the introduction of a common currency in the European Union. In this period, the corporation taxes of the member states should follow the same principles. Therefore guidelines for a common calculation of transfer prices and for the possibility of balancing of profits and losses between parent and subsidiaries within the European Union were to be introduced. The lower floor for corporation tax rates should be supplemented with a tax ceiling of 40%. At the same time municipal profit taxes, such as the German *Gewerbesteuer* should be abolished and the tax base harmonised.

The Ruding Committee suggested to tax dividends according to the source principle and interest and licence fees according to the residence principle. An extension of tax credits from imputation systems to non-resident investors was rejected. Instead, the committee favoured a classical-modified form of dividend taxation, named after the German member of the committee *Rädler model*. According to this model the corporation tax becomes in the obligatory bandwidth definitive and accrues to the source country. The residence country exempts dividends from the general personal income tax and reduced the tax burden by applying a special tax rates which is only half of the personal income tax rate (cf. [Ruding-Report 1992, 461-482] and [Schreiber 1994]).

In the long term the Committee of Experts regarded a common corporation tax system as necessary (Phase III). The basic principles of this system were not stated. It was just mentioned that the European Commission and the member countries ought to examine alternative concepts in phase one in order to design the best

⁹Since the publication of the Ruding report Sweden moved from a dividend deduction system to a classical-modified system. Furthermore, the imputable tax credits in the partial imputation systems of Ireland and Great Britain were reduced. In Germany the full imputation system was abolished with the corporate tax reform 2000. For a detailed account of the German corporate tax reform see [Göpffarth 2000].

suited common corporation tax system for the community [Ruding-Report 1992, 220].

The Ruding report had hardly any consequences.

In order to evaluate the stated suggestions of the Ruding commission, the consequences of their suggestions are presented in table 3. The values of the average over the marginal tax wedges (\emptyset), of capital export neutrality (CEN) and of capital import neutrality (CIN) relate only to the four EU member states examined, i.e. Germany, France, Italy and Great Britain. To assess the consequences, the effects of the individual measures are listed separately. A harmonisation only of tax rates effectively means a cut of all tax rates over 40% since none of the rates examined here lies below the suggested lower floor of 30%. Hence, the average over all marginal tax wedges falls. To simulate the harmonisation of tax bases it is assumed that machinery and buildings can be written off by straight-line depreciation with rates of 20% and 5% respectively. Inventories are valued according to the LiFo principle. These depreciation allowances are on average somewhat more generous than the actual allowances. Therefore, a slight fall in burden occurs. The combination of a harmonisation of tax rates and tax bases would lead to a noticeable fall in the tax burden. The full implementation of the suggested measures of the Ruding commission for phase II would further mean a transition to the classical-modified system of dividend taxation according to the Rädler model. Since this necessitates the abolishment of the imputation system a significant rise in the tax burden is the consequence.

Suggestion	\emptyset	CEN	VIN
Status Quo	1.8	0.014	0.191
Harmonisation			
of rates	1.7	0.010	0.177
of bases	1.9	0.013	0.159
of bases and rates	1.5	0.004	0.169
Ruding (II)	1.9	0.004	0.147

Table 3: Consequences of the Suggestions of the Ruding Commission on Tax Burden and Distortion

More crucial than the effects on the tax wedges are the effects on tax neutrality. Obviously, the suggestions of the Ruding commission are suitable to increase the neutrality of the tax systems, albeit in the sense of capital export neutrality. Capital import neutrality is hardly effected by the Ruding suggestions. Only the introduction of a single form of dividend taxation shows some effect. Tax harmonisation only makes sense if it is implemented as full packet. A harmonisation of tax rates without bringing tax bases in line remains as ineffective as a harmonisation only of tax bases.

A big problem with the suggestions of the Runding commission is that they are somewhat arbitrary. Some suggestions come completely surprisingly, e.g. the corridor for corporation tax rates. This suggestion is in conflict with the conclusion of the Runding commission that there are no indications that autonomous action by national governments leads to an unbridled tax competition among the member countries that could lead to a fall in revenues from corporation taxes (cf. [Ruding-Report 1992, 13]).

Some useful suggestions are made how to deal with the distortions and discriminations occurring with regard to cross-border investments. But on the whole, these suggestions are made in an arbitrary and unsystematic way, as will be shown by the following two examples.

Regarding the double taxation of cross-border dividend payments the suggested classical-modified Rädler model offers only an imperfect solution. Admittedly, this model is neutral in the international context, but it leads to an increase of the tax wedge by a quarter. Furthermore, it is known from the analysis of domestic tax wedges (subsection 3.1) that this method leads to a considerable violation of financial neutrality, since it discriminates against equity finance and privileges debt finance.

In respect to the balancing of cross-border losses the Runding report suggests a regulation that goes beyond the draft directive. It recommends the introduction of a comprehensive vertical and *horizontal* balancing of losses within a group of companies at the domestic level and furthermore the extension of the draft directive in order to make a complete balancing of losses within groups of companies possible within the Community (cf. [Ruding-Report 1992, 217]). The problematic nature of the balancing of losses in connection with the exemption method cannot be addressed here, but a cautious approach is appropriate. Here it should be pointed out that the implementation of the suggested measures would lead to an arbitrary and unpredictable distribution of tax revenues among the member countries (cf. [Chown 1992, 126]). Furthermore, according to [Schreiber 1994] such measures are administratively hardly controllable without comparable accounting standards within the Community.

Finally, it has to be added that the realisation of the measures suggested by the Runding commission would lead to a harsh incursion into national tax autonomy.

4.3 Home State Taxation

The suggestions made by the Runding commission admittedly contrived a piecemeal realisation of a single European corporation tax. Nevertheless, measures such as the harmonisation of tax rates and tax bases were substantial. The high level of agreement that is necessary to implement these measures make progress difficult. Hence, [Lodin and Gammie 1999] suggest an alternative route of action.

The concept of home state taxation implies that a multinational enterprise is subjected to the tax rules of its home state, regardless of the member states in which this company operates and in which company form (subsidiary or permanent establishment) its activities are organised. For example, the taxable profits of a French company would be the profits of the company and all subsidiaries in the European Union calculated according to French tax code. This profit¹⁰ would then be divided among all member countries in which the company operates. The profit allotted in this way would then be taxed by the individual member countries according to their individual tax rates. The form of integration of personal income tax and corporation tax would be left to the discretion of the individual countries.

This high level of remaining tax autonomy is effectively limited by the fact that the country loses its influence on the domestic tax base of foreign companies. The compromise of compensating high headline tax rates through a narrow definition of the tax base, would only be operable with difficulty. In effect, a high pressure would arise to harmonise tax bases. This pressure is intended by the authors. They argue that the disadvantage of other harmonisation measures is that the member countries have to agree *ex ante* and unanimously on a common solution. With the system of Home State Taxation the common tax system arises effectively as the result of a competition of tax systems: "Home State Taxation provides a new set of incentives for Member States to approximate their corporate income tax systems" [Lodin and Gammie 1999, 289].

The problem of cross-border capital flows would be solved. Profits and losses would be balanced according to the conditions of the respective home state. Even the problem of tax privileges for investments – often not compatible with the Common Market – would find an elegant solution: Incentives directed at a single member country would not be possible. They would automatically be extended to all member countries in which a eligible company operated. Problems with transfer prices would not occur any more within the European Union.

Even if it is assumed that the obvious administrative problems of defining a key for the allocation of the tax base and finding a definition of the home state not open to manipulation, some questions and problems remain:

- Under the idealised assumptions of section 3 – that the subsidiary is solely owned by the parent and no portfolio investments exist – this suggestion seems simple. In reality, criteria have to be found to decide when a foreign subsidiary may be consolidated and when not. The current regulations for consolidated accounts could be used. This would require a minimum stake of around 75% in the subsidiary. Hence, a large proportion of companies would not profit from Home State Taxation.

¹⁰The speciality of this model lies in the fact that the tax based is allotted among the countries and not the tax revenue. It would be possible to let the home state tax the consolidated profits and distribute the revenue. But then a minimum tax rate would have to be introduced to prevent a low tax country attracting the seats of all company groups.

- Home State Taxation only offers a complete solution to the problems of the taxation of cross-border capital flows if the investors of a company also reside in the home state (no portfolio capital). If, for example, a Dutch investor receives dividend income from an Italian company, the well-known problem of the imputation of the foreign corporation tax credits reoccurs.
- The system of Home State Taxation admittedly sets incentives for the harmonisation of tax bases, but these incentives go on the expense of other incentives. Especially for small countries the largest proportion of the domestic tax base will be allotted to foreign tax authorities whereas a large proportion of tax revenues come from tax bases assessed abroad. Thus the incentives to "cultivate" the tax base in the sense of creating and maintaining a favourable tax climate for resident companies would dwindle.
- Home State Taxation would undoubtedly realise capital export neutrality but on expense of capital import neutrality. The companies operating within a country would admittedly be taxed according to a common corporation tax rate, but the tax base would be assessed according to fifteen different sets of rules. The variance of effective tax rates should be expected to increase, as can be seen from table 4. Surprisingly, not only does capital import neutrality decrease as expected, but also capital export neutrality decreases slightly. The values in table 4 can only be interpreted cautiously because they are based on the assumption of constant tax systems. Home State Taxation however intends to set the tax systems on a path of convergence.

Suggestion	\emptyset	CEN	CIN
Status Quo	1.8	0.014	0.191
Home State Taxation	1.9	0.066	0.402

Table 4: Consequences of Home State Taxation on Tax Burden and Distortion

Because of these disadvantages Home State Taxation should be seen sceptically. But the model draws attention to a serious shortcoming that will take effect if the "Societas Europaea" is introduced: Then, at latest, a common European set of rules of taxation have to be found.

4.4 Dual Income Tax

The most obvious solution to the problems resulting from the difference between the top personal income tax rate and the corporation tax rate would be a lower top income tax rate. Two considerations might stand against this. The often progressive form of the income tax and the connection with the ability-to-pay-principle might

make the current system appropriate and tax competition may make a tax rate on the very mobile factor capital necessary that would lead to a unacceptable loss of revenue if it were transferred to the income tax rate.

The Nordic states have found an innovative solution for this dilemma.¹¹ The Dual Income Tax introduced in these countries in the 1980ies and 1990ies effected a separate taxation of wages and capital income. Whereas wages are further taxed progressively, capital income is subject to a proportional tax rate. The tax rate for capital income within the income tax is equivalent to the corporation tax rate and – at least in the theoretical model – to the lower rate of the progressive income tax on wages.¹² Capital income can either be taxed through *joint taxation*, i.e. with the possibility of balancing profits and losses between different forms of income and possibly a common tax allowance, or through *separate taxation* as a system of proportional source taxes on different forms of capital income. If source taxes exist, the source tax rate is also equivalent to the corporation tax rate.

Aim of the Dual Income Tax is to guarantee that all capital income is taxed exactly once. Hence, all capital income is to be covered consequently at the source. But double taxation has to be relieved, too. From this the full imputation of corporation taxes follows. The equivalence of all tax rates on all forms of capital income makes the effective exemption¹³ of distributed profits possible. The avoidance of the double taxation of retained earnings should be aspired for by adjusting the value of company stakes for the proportional post-tax retained earnings.¹⁴ For partnerships income has to be separated into a capital income and wage component.¹⁵

In section 3 it was already shown that countries with a Dual Income Tax – i.e. first of all Finland¹⁶ – achieve a high level of neutrality. In the following it is examined if this neutrality can also be observed in the international context. Hence, a coordinated introduction of a Dual Income Tax with the described elements in the examined European countries is modelled. Hence it is assumed that capital income is taxed once at the lower rate of the personal income tax. If this rate is not within a plausible range (20-30%), a rate of 27.5% is assumed.

The results are presented in table 5. It can be seen that the average over the marginal tax wedges falls considerably. This should come as no surprise. Instead of being

¹¹For an account of tax policy in the Scandinavian states see [Cnossen 1999] and [Sørensen 1994].

¹²It does not matter if the taxes on wages and capital income are realised as two separate taxes or through a proportional tax on all income and a progressive supplement on wages.

¹³The tax exemption of dividend income would be more elegant than the imputation system, but the exemption of dividend income may find political objections.

¹⁴This element of the dual income tax was only realised in Norway.

¹⁵For the different models for this and the advantages and disadvantages see [Cnossen 1999, 38ff.].

¹⁶Norway was not examined here. Denmark was the first country to introduce a Dual Income Tax in 1987, but undermined the basic system through numerous exemptions. Since 1994, Sweden does not avoid the double taxation of distributed profits. For an account of the implementation of the Dual Income Tax in different countries see [Cnossen 1999].

Suggestion	\emptyset	CEN	CIN
Status Quo	1.8	0.014	0.191
Dual Income Tax	1.3	0.004	0.010

Table 5: Consequences of a Dual Income Tax on Tax Burden and Distortion

subject to an average corporation tax rate of 40.7% and an average income tax rate of 50.3% capital income is taxed once with an average rate of 25%. This is admittedly partly offset by an improved tax registration of capital gains and interest, but not enough to compensate the effect.¹⁷ A noticeable effect on capital export neutrality¹⁸ can be observed, but the most significant effect is on capital import neutrality. Of all reform measures examined so far none was as effective in guaranteeing capital import neutrality.

The argument mostly brought forward against the Dual Income Tax – apart from administrative concerns usually directed at the calculation of fictive wages for self-employed and tradesmen – is the violation of the ability-to-pay-principle. The Council of Scientific Advisors to the German Minister of Finance, for example, comes to the conclusion that the ability-to-pay-principle can best be implemented through a comprehensive income tax that covers the complete worldwide income of the tax payer and taxes this income according to a unitary tariff. According to the Advisory Council the introduction of a Dual Income Tax should not be grounded on international necessities but is based on the implicit admission of the legislator that he is not able or not willing to close gaps in the tax base (cf. [BMF-Beirat 1999, 99]). Against this argumentation that a Dual Income Tax is not compatible with the ability-to-pay-principle following counter-arguments can be made:¹⁹

- In inflationary times capital income taxation leads to a taxation of nominal profits without a real base. A taxation with a lower rate can offer a rudimentary compensation for this.
- Due to numerous gaps in the tax base progressive capital income taxes only result in low tax revenues.
- The inclusion of capital gains has so far proven as not enforceable.
- Human capital is increasingly on the way of becoming the most important factor of production. Compared to physical capital this factor remains taxed too low.²⁰ The Dual Income Tax offers some remedy by taxing wages, i.e.

¹⁷The effect of a more effective prevention of tax evasion of interest income cannot be modelled.

¹⁸This can be explained through the fact that effectively it comes to a harmonisation of rates. The span between the highest and lowest rate falls from 21.4 or 19.2 percentage points to 7.5.

¹⁹More detailed on this topic is [Sørensen 1994].

²⁰The comprehensive income tax leads to an immediate expensing of investments into human

income from human capital investments, at a higher rate.

- From a life-income perspective the Dual Income Tax reduces horizontal inequities between tax payers with different time profiles regarding consumption and income.

Against the comprehensive income tax it can be argued that the rules for the calculation of the taxable income are not the same for all types of income. Profits are calculated by balancing of wealth at the beginning and end of a period. Capital income and wages are the surplus of income over the expenditures that can be made account of. The criteria for the deductibility of expenses differ from on form of income to the other. Due to the possibility to manipulate tax payments the different forms of income are not taxed evenly, neither in Germany, nor in the other European countries. Albeit, in the political process the differentiation between the corporate (investment) sphere and the private (consumption) sphere ("retained" versus "distributed" earnings) is taken more seriously than the differentiation between wages and capital income ("Dual Income Tax").

Furthermore, it is one of the central results of the theory of optimal taxation that factors should be taxed according to their elasticities, i.e. the more mobile and therefore more elastic factor capital ought to be subjected to the lower tax rate (cf. [Atkinson und Stiglitz 1990, 442ff.]).

4.5 Clearinghouse Models for Corporation Tax Credits

Basically, the possibility of imputation of cross-border corporation tax credits could be offered unilaterally. In reality, this can only seldom be observed. These cases have also been reduced in recent years. The reason for this lies in the high fiscal costs resulting from these measures, because a domestic tax authority credits taxes that have flown to a foreign tax authority and is not compensated for this. Without side payments a multilateral introduction would not be feasible since capital exporting countries would have to reimburse more taxes than they would receive.²¹

There are two basic possibilities to solve the problem of cross-border tax credits within imputation systems. Either the source country of the dividend payment must reimburse the corporation tax paid to the foreign taxpayer, or the destination country of the dividend payment must unilaterally reimburse the corporation tax paid abroad. These two alternatives can be compared using the known criteria. The result of this comparison can be seen in table 6.

capital, whereas physical investments are capitalised over their lifetime and have to be depreciated.

²¹Also the hidden hint of the Ruding commission that possible tax revenue losses could be offset by the member countries through an adjustment of corporation tax rates (cf. [Ruding-Report 1992, 218]) cannot offer a feasible solution. It would result in capital exporting countries having to raise their corporation tax rates and hence becoming even more unattractive for incoming investments. A destabilising vicious circle would result.

Alternative	\emptyset	CEN	CIN
Status Quo	1.8	0.014	0.191
Reimbursement by Source Country	1.7	0.013	0.136
Destination Country	1.3	0.015	0.073

Table 6: Consequences of Cross-Border Corporation Tax Credits on Tax Burden and Distortion

It can be seen firstly that the cross-border imputation of corporation tax credits – regardless of the alternative chosen – abolishes a major obstacle to achieving capital import neutrality, but also, secondly, that the unilateral reimbursement through the resident state of the investor is the clearly superior measure. This is an empirical proof of the verdict of the Ruding commission that the extension of tax credits to foreign investors is not compatible with the principle of tax entitlement of the source country (cf. [Ruding-Report 1992, 219]).

To compensate for the shifts in the distribution of tax revenues resulting from this measure, often a *Clearinghouse* model is suggested. According to the residence principle [Jacobs 1999, 136] suggests to settle only excess source country tax credits reimbursed in the resident country. At the same time, Jacobs is sceptical about the feasibility of such mechanisms since comparable clearinghouse models for the value added tax were rejected due to administrative problems (cf. [Genser 1999, 131f.]). [Chown 1992, 125] contradicts, because "in contrast to the VAT proposals, the administrative burden would be small in relation to the sums involved". Nevertheless the political obstacles for an European Clearinghouse system can be regarded as very high.

5 Summary and Conclusion

Drawing the conclusion of more than 30 years of attempts to harmonise direct taxes in European Union leads to meagre results. Apart from some small pragmatic approaches to abolish the most flagrant distortions concerning dividend payments within corporate groups and cross-border mergers and acquisitions not much happened. But there are some areas in which more co-ordination activity would be desirable. Among these are the taxation of cross-border capital flows, and thereby especially an internationally neutral form of imputation of corporation tax credits. But also the unfavourable rules concerning the cross-border balancing of losses need to be reformed. All in all, these problems lead to a discrimination of cross-border capital flows and hence to a tax segmentation of capital markets.

Harmonisation measures in other areas, such as the introduction of an European company form called *Societas Europaea* (SA), will increase the pressure on tax

harmonisation. Furthermore, it has to be stressed that after the realisation of the free market for goods and services the tax segmentation of the capital market remains as the largest obstacle for the full implementation of the Common Market. On the other hand, the question remains, if the current distortions really necessitate a full harmonisation of the corporation tax systems in the European Union, such as suggested by, for example, the Ruding commission.

This paper has shown that a full implementation of all Ruding measures is not necessary to achieve the main aims. But also other models of harmonisation such as Home State Taxation and a single European Corporation Tax fail because of administrative difficulties and the considerable incursions into national tax autonomy through the European Union. Furthermore, a harmonisation of corporate taxes will put a strong pressure on a further harmonisation of personal income taxes, so that – at least in the medium-term – a harmonisation of these would become unavoidable.

In the United States the suggestion of a Comprehensive Business Income Tax is discussed. This would tax profits extended by interest payments and other capital income. This broad tax base would lead to increased tax neutrality and would make lower tax rates possible. In Europe, where, as opposed to the United States, a large spread between corporation tax rates and personal income tax rates is common, the Dual Income Tax would be the logical counterpart. The Dual Income Tax taxes wage income furthermore with a progressive schedule, but taxes capital income – regardless of whether doing so within the personal income tax or the corporation tax – with a single proportional tax rate. This rate usually becomes definitive at the source. The Dual Income Tax leads to a significant increase in capital import neutrality.

In the central area of the cross-border imputation of corporation tax credits it is shown that the unilateral reimbursement through the resident state is the clearly superior alternative. Voluntarily, such a measure cannot be expected. Capital exporting countries would have to sacrifice a considerable part of their tax base. A European solution would only be feasible if at the same time a compensating set of side payments (clearinghouse) would be introduced, that would offset the excessive burden of capital exporting countries. Opinions on how feasible such a mechanism is politically are divided.

In table 7 the discussed alternatives are presented with their main advantages and disadvantages. Regarding efficiency it is examined, if the suggested measures reduce the discrimination between incoming and outgoing capital flows and how the introduced forms of neutrality (capital export neutrality – CEN, capital import neutrality – CIN, investment neutrality – IN, Financial neutrality – FN) are affected. With "subsidiarity" it is judged, how far national tax autonomy is reduced. To judge the distributional effects the concept of Inter-Nations Equity is drawn upon (cf. [Musgrave und Musgrave 1972]). Administrative aspects are represented by the costs of levying through the tax authorities and the costs of compliance through the tax payers.

The Dual Income Tax appears as a very favourable alternative. In the comparison of effective tax rates this model – as implemented in Finland – already proved itself worthy. The Finnish example shows that an European harmonisation is not needed to introduce a Dual Income Tax. But it was also shown that – apart from the advantages in the domestic context – the Dual Income Tax is very favourable in an European context. Especially, the Dual Income Tax would move the tax system towards the source principle, which is very favourable for multinational enterprises.

	Criteria											
	Efficiency					Distribution				Administration		
	Nondiscrimi- mination	Capital Ex- port neutrality	Capital Im- port neutrality	Investment neutrality	Financial neutrality	Subsidiarity	Internations Equity	Cost of levying	Cost of compliance			
Alternative												
Ruding Commission	++	++	o	?	?	-	-	-				++
Home State Taxation	(-)	(-)	(-)	?	?	+	-	+				++
European Corporation Tax	++	++	++	?	?	-	?	+				++
Dual Income Tax	++	(+)	++	++	++	+	+	+				o
Clearinghouse Model	++	o	+	?	?	+	-	+				++

Table 7: Criteria for the Evaluation of the Discussed Alternatives

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Appendix

Country	Income Tax ^a		Corporation Tax ^b	Capital Gain Taxes ^c	Imputation Credit ^d
	Dividends	Interest			
Austria	25.0	50.0	34.0	0.0	0.0
Belgium	25.0	15.0	40.2	0.0	0.0
Denmark	40.0	58.0	34.0	40.0	0.0
Germany	55.9	55.9	51.4	0.0	30.0
from 2005	44.3	22.3	38.2	0.0	0.0
Finland	28.0	28.0	28.0	28.0	28.0
France	59.2	25.0	40.0	26.0	33.3
UK	40.0	40.0	30.0	40.0	11.0
Greece	0.0	45.0	40.0	0.0	0.0
Ireland	46.0	46.0	10.0	20.0	5.6
Italy	46.2	46.2	41.3	12.5	37.0
Luxemburg	25.6	51.3	38.1	0.0	0.0
Netherlands	60.0	60.0	35.0	0.0	0.0
Portugal	25.0	25.0	37.4	10.0	0.0
Spain	56.0	56.0	35.0	56.0 ^e	0.0
Sweden	30.0	30.0	28.0	30.0	0.0
Japan	35.0	20.0	47.5	26.0	0.0
USA	43.7	43.7	40.5	20.0	0.0

Table 8: Tax Data, 1999 (in percent)

^a Including tax supplements.

^b Including local taxes and supplements.

^c Taxation of capital gains from the sale of stocks. It is assumed that assets are held for at least one year and that no major stakes are concerned.

^d Value of the tax credit in relation to the gross dividend.

^e The value of capital gains is divided by the number of years the asset was held. The resulting amount is included in normal taxable profits whereas the rest is taxed at the average tax rate.