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**The Corporate Income Tax: international trends
and options for fundamental reform**

by

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THE CORPORATE INCOME TAX:
INTERNATIONAL TRENDS AND
OPTIONS FOR FUNDAMENTAL REFORM

by

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INTRODUCTION

This paper discusses the future of the corporate income tax in an integrating world economy. The first part of the paper reviews some important trends in corporate taxation across the OECD area. The second part discusses the role of the corporation tax, laying out guidelines for corporate tax reform and considering some alternatives to existing corporate income taxes.

In discussing options for fundamental reform, we try to address two sets of concerns. The first represents the traditional aims of a tax on corporate income. Essentially the traditional aim has been to design a tax system which raises revenue as efficiently as possible – that is, which minimises distortions to the location and scale of investment, to the sources and uses of finance, and to the choice of legal form. These distortions have been the subject of study for many years, and many proposals for reform have been made. One of the most popular and enduring ideas has been to tax only economic rent: in a traditional framework such a tax would not be expected to have any effect on investment or financing decisions.

However, this is not necessarily true in open economies in which multinational companies can choose where to locate their activities. Then, even taxes on economic rent can be distortionary - in affecting location choices for example. Governments in open economies may also seek to compete with each other to attract mobile economic activity. One way in which they may do so is to set lower effective tax rates on the returns to capital located within their jurisdiction. Indeed, the standard economic model suggests that a small open economy should not tax the return to capital located there at all. These considerations have led to concerns that effective tax rates on capital are on a downward spiral, or a race to the bottom, fuelled by ever-increasing globalisation.

There is also a second set of concerns. Part of this concern has also been the subject of study for many years – the relationship between the personal and corporate sectors, and in particular, the possibility of tax avoidance by shifting income between the two sectors. For example, an entrepreneur who could classify her income as corporate instead of personal may be able to reduce tax liabilities. To avoid losing income tax revenue, the design of the corporation tax must take into account the need for it to be a backstop to personal income tax.

But the possibility of shifting income between categories of taxable income has grown much more important with increasing globalisation. Specifically, irrespective of where they locate their real economic activity, multinational corporations active in many countries may be able to shift profits between countries to take account of favourable tax treatment. It is possible – indeed likely – that profit is actually more mobile than capital. That would imply that differences in tax rates between countries may affect the shifting of profit between jurisdictions to an even greater extent than the shifting of real economic activity. The extent of profit shifting depends fundamentally on the statutory tax rate (even though profit shifting is of course constrained by rules governing the transactions within firms). So a significant factor for any individual country in considering the structure of its corporation tax is to take into account the level of the statutory tax rate, irrespective of the definition of the tax base to which it is applied. This has two immediate implications. First, there may be a race to the bottom in statutory tax rates. And second, this conflicts with the notion of a tax on economic rent, since a revenue-neutral reform that introduced a tax on economic rent would almost certainly require an increase in the tax rate.

There are no simple prescriptions for reform of corporation tax which can address all of these concerns. These concerns are reflected in this paper, which is divided into two parts. Part I investigates trends in corporation taxes over the last two decades to see whether they are consistent with the predictions implied by increased globalisation. Part II analyses a number of possible structures for corporation tax in the light of the various aims and objectives which we set out.

Two limitations of this paper should be acknowledged at the outset. First, we focus on the design of a tax on corporation income in a single economy. We do not discuss how the possibility of international co-ordination might affect the options for reform. Second, we focus only on taxes on the return to capital, or profit. We do not discuss other taxes formally levied on companies (or other enterprises) that are insensitive to profit, such as taxes on the value of assets, or on payroll.

PART I
INTERNATIONAL TRENDS IN CORPORATE TAXATION

Taxes on corporate income are extremely complex. Legislation can run to thousands of pages, supported by legal judgements. There is not space here to give more than a very broad picture of the development of such taxes in OECD countries. We begin in Part 1.A by summarising some of the main features of the tax: the statutory rate, and one very simple measure of the general tax base.[1] We go on to combine these to present commonly-used measures of effective tax rates – both marginal and average – which depend on both the tax rate and the tax base. In Part 1.B we summarise trends in the revenue collected from these taxes. And in Part 1.C, taking into account the evidence presented, we consider the likely directions for the future, given the pressures which have driven reforms over the last few decades.

As noted above, a common belief about the development of corporation taxes in the OECD over the last two decades is that we are in a 'race to the bottom', generated by intense and growing competition between countries to attract either inward investment or mobile profit. In this section we investigate the truth of this belief. It turns out that there is some truth in the claim, but on the whole corporation taxes have survived pretty well, at least until now.[2]

We present a systematic account of how corporation taxes have developed over time. We have not been able to accumulate all the data required for all OECD countries. However, we present evidence on corporation tax revenues since 1965 for 21 countries and on measures of statutory and effective tax rates for 19 countries since 1982. We begin by presenting measures of the statutory tax rate, followed by a measure of the generosity of the tax base. We then present measures of effective tax rates before going on to discuss trends in tax revenue. We summarise the developments over the last two decades in 5 stylised facts.

I.A The development of taxes on corporate income since the 1980s

We describe the development of tax legislation with reference, in turn, to the statutory rate, the tax base, and effective rates of tax.

I.A.1 The statutory tax rate

The most basic measure of a corporate income tax is the statutory tax rate. This measure is widely used, although even defining this rate is less straightforward than might be expected. Corporate income taxes are often applied at more than one level of government. There may also be temporary or permanent supplementary taxes, and there may be special tax rules for small and medium-sized enterprises. Our definition includes local tax rates and any supplementary charges made.[3]

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[1] We do not have space to identify and discuss special regimes – we focus only on the general position of the tax in each country.

[2] This section draws on, and updates, Devereux, Griffith and Klemm (2002).

[3] In cases where local tax rates differ across regions, we use averages weighted by production where data are available. Otherwise the rate of regions in which most of the production takes place, or data from OECD (1991) are used. Where local taxes or surcharges can be set off against other taxes (e.g. local against federal), this is taken into

Figure 1 shows the tax rate for each country for which data are available in 1982 and 2004. This shows a picture of remarkable change. Over this period, the statutory tax rate fell in most of these 19 countries. In many cases the fall has been substantial. In 1982, 15 out of the 19 countries had tax rates in excess of 40%; by 2004 there were none. Only Ireland and Spain increased their tax rate, each by around two percentage points (Ireland from the very low base of its 10% minimum rate on manufacturing activities introduced in 1981).

In Figure 2 we present the time series of the mean (unweighted, and weighted by GDP, measured in US dollars) and the median. The fall in tax rates was fairly continuous, though most pronounced in the late 80s. The unweighted mean reveals a pattern similar to the median; between 1982 and 2004 it fell by a third, from around 48% to around 32%. The weighted mean is dominated by the USA and, to a lesser extent, by the other large countries. While this too has shown a clear fall, the fall is less pronounced – there was a period of relative stability in this series in the 1990s, but it has since begun to fall again. It is clear, too, that the fall in rates has not halted – all three series exhibit falls since the turn of the century.

Overall then, the following is clear:

Stylised fact 1: statutory tax rates have fallen substantially since the early 1980s; while the pace of reductions has varied over time, it appears to be continuing.

A high tax rate does not necessarily imply high tax payments, since payments depend also on the tax base. However, as mentioned above, the tax rate may be important in its own right. In deciding where to declare income, it might be expected that multinational companies seek to use all allowances and deductions available in any jurisdiction. Having done so, tax on any excess income is levied at the statutory rate; hence it is the statutory rate which is central in determining the location of profit, conditional on where the company's real activity takes place.

The diagrams presented here do not amount to conclusive evidence that there has been competition for taxable profit. However, further evidence is available to support the notion that, in setting their statutory rates, governments do take account of the statutory rates in other countries.[4] This supports the notion that competitive pressures have driven down statutory rates. It seems plausible that this represents competition for mobile profit, although the possibility that it reflects competition for the location of real activities cannot be discounted.

I.A.2 The tax base

In all countries, the definition of the corporate tax base is extremely complex, involving a vast range of legislation covering everything from allowances for capital expenditure, to the deductibility of contributions to pension reserves, the valuation of assets, the extent to which expenses can be deducted, and so on. It is not possible to present a measure which reflects all of these factors. We follow the empirical literature in focusing only on depreciation allowances for capital expenditure. A natural measure of the value of such allowances is their present discounted value (PDV). In Figures 3 and 4 we present estimates of the PDV of allowances for investment in

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account. Where tax rates change within a year we use the rate valid at the end of the calendar year. See Chennells and Griffith (1997).

[4] See Devereux, Lockwood and Redoano (2004).

plant and machinery,[5] expressed as a percentage of the initial cost of the asset. The PDV would be zero if there are no allowances at all and it would be 100% with a cash-flow tax that permitted the cost to be deducted immediately.

Figure 3 shows the PDV for each country in 1982 and 2004, based on a single nominal discount rate for all countries and all years.[6] This Figure therefore reflects changes in the rates of depreciation set by governments, and abstracts from changes in the inflation rate and the real interest rate, which would affect the discount rate applied to future allowances. However, in Figure 4, we present two measures of the weighted average PDV of allowances. The first is based on the approach of Figure 3. The second is based on the assumption that the nominal discount rate applied to all allowances associated with an asset purchased in period t is based on the country-specific inflation rate in period t.

Although not quite as dramatic as the changes to the statutory rate, Figure 3 does demonstrate some striking reforms between 1982 and 2004. Of the 19 countries analysed, 11 cut their allowance rates for investment in plant and machinery between 1982 and 2004 - that is, they have broadened their tax bases. Most notably, the UK and Ireland decreased their allowances substantially from 100% to 73%, and to 71%, respectively. Five countries kept their allowances constant and only 3 countries, Greece, Portugal and Spain, increased allowances.

Figure 4 presents the time series of the weighted mean with constant and actual inflation. Not surprisingly, given the evidence of Figure 3, when inflation is held constant, there was a decline in the average PDV of allowances for plant and machinery; that is, the rates of allowance have become less generous. In fact, on this basis, the weighted mean fell from 83% in 1982 to 76% in 2004. The largest part of this decline was in the late 1980s; cuts were less pronounced in the 1990s. Since then, the USA has introduced temporarily higher allowances; these have had the effect of raising the overall weighted average. An unweighted average (not shown) reveals a similar pattern up to 2001 with a fall from 81% to 76%; but since then it has fallen slightly further, to 75%.

Allowing for the effects of inflation on the nominal discount rate generates a slightly different pattern. The marked decline in the second half of the 1980s is even more pronounced. However, the stability of rates in the 1990s, combined with falling inflation, leads to some recovery of the average PDV. Overall, both measures indicate a decline over the period considered – certainly up to around 2001 - but the impact of the decline in the rates has been offset by the lower discount rates implied by lower inflation.

Stylised fact 2: on average, tax bases were broadened between the early 1980s and the end of the 1990s; however, the impact of reduced rates of allowance was moderated by lower inflation.

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[5] The PDVs of allowances for investment in industrial buildings are lower, corresponding to lower rates of allowances. However, they also fell over the period considered.

[6] The nominal discount rate is 13.9%, based on inflation of around 3.5% and a real discount rate of 10%.

I.A.3 Effective tax rates

We now turn to combining elements of the tax rate and base to present two measures of effective rates of tax. The traditional method of measuring the impact of corporate income tax on the level of capital investment is through the user cost of capital – defined as the pre-tax real required rate of return on an investment project, taking into account the financial cost of the investment as well as depreciation.[7] The basic idea is that a firm will invest up to the point at which the marginal product of capital is just equal to the cost of capital – so that, at the margin, the project just breaks even. As investment increases, the marginal product is assumed to decline, resulting in a unique profit-maximising level of investment. The impact of tax on the cost of capital is measured by the effective marginal tax rate (EMTR). A higher EMTR pushes up the cost of capital, and therefore reduces the inflow (or increases the outflow) of capital. Most studies which model the impact of corporate income tax in an open economy are based on this approach.[8]

More recently, attention has also focussed on the discrete choices made by multinational firms, which face a choice between alternative locations of production. For example, if an American firm wants to enter the European market, it could locate production in one of a number of different European countries. Given the structure of its costs, it will probably not locate in all countries. It should choose that location (or locations) offering the highest post-tax profit. The impact of tax on this decision can be measured by the extent to which the pre-tax profit is reduced by taxation – this is measured by an effective average tax rate (EATR). Conditional on this location choice, the scale of the investment will be determined by the cost of capital and the EMTR.

We measure the EMTR and EATR by considering the impact of tax on a hypothetical investment project. Box I.1 describes our approach for each measure.[9] The measures depend on economic conditions associated with each investment, notably the real post-tax required rate of return, the economic depreciation rate of the asset and the inflation rate. Throughout, we hold fixed the real post-tax required rate of return[10].

The form of the investment modelled is, of necessity, simple and hence limited. In common with other such measures, we ignore complications which would arise if we allowed the hypothetical investment to be risky. We consider the tax system only as it applies to a mature manufacturing firm – so the measures do not reflect the position for services or for hi-tech industries. The measures presented here also apply only to an investment in plant and machinery, financed by equity; we do not present estimates for investment in other assets (land or inventories, for example), nor for other forms of finance. We do not consider the treatment of losses or other forms of tax exhaustion. We analyse only source-based corporate income taxes –

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[7] This approach dates back at least to Hall and Jorgensen (1967). It was further developed by King (1977), among others. The most common form of measuring the effective marginal tax rate was developed by King and Fullerton (1984).

[8] See, for example, OECD (1991).

[9] Our approach is based on Devereux and Griffith (2003), and is slightly different from the well-known approach of King and Fullerton (1984) (although the measures generated are very similar).

[10] We assume that this is 10%, although the results are not sensitive to this assumption. We present estimates of the EATR based on an assumed pre-tax rate of return of 30%. Again, the results are not sensitive to reasonable variations in this assumption.

we do not include taxes levied in the country of residence of the parent company, nor do we include any source-based taxes paid by corporations that are not based on profit. We generally exclude industry-specific measures and we do not allow for any forms of tax avoidance. We have not included personal taxes levied on corporate source income. Despite all of these limitations, the measures do provide a summary of the combined effect of the tax rate and tax base, at least on a specific form of investment.

Figures 5 and 6 show the development of effective marginal tax rates (EMTR) over time, using the same format as previously. In Figure 5 we follow the approach of Figure 3, in holding inflation constant across all years and countries. In Figure 6 we mirror the approach of Figure 4 in presenting the weighted average across countries both with inflation fixed, and using the inflation rate of the period in which the investment is assumed to take place.

BOX 1: EFFECTIVE MARGINAL AND AVERAGE TAX RATES

Consider a simple one period investment, in which a firm increases its capital stock for one period only. It does so by increasing its investment by 1 at the beginning of the period, and reducing it by $1 - \delta$ at the end of the period, where δ represents economic depreciation. The higher capital stock generates a return at the end of the period of $p + \delta$, where p is the financial return. The discount rate is r. Ignore inflation.

One unit of capital generates a tax allowance with a net present value (NPV) of A. So introducing tax reduces the cost of the asset to $1 - A$, while the saving from the subsequent reduction in investment becomes $(1 - \delta)(1 - A)$. The total return $p + \delta$ is taxed at the tax rate τ.

The NPV of the investment with tax is therefore: $R = \dfrac{(p + \delta)(1 - \tau) - (r + \delta)(1 - A)}{1 + r}$.

The cost of capital is the value of p, denoted $\tilde{p}$, for which the investment is marginal ie. $R = 0$. The effective marginal tax rate (EMTR) is $(\tilde{p} - r)/\tilde{p}$.

We define the effective average tax rate (EATR) - for a given value of p - to be the NPV of tax payments expressed as a proportion of the NPV of total pre-tax capital income, $V^* = p/(1 + r)$. This is comparable to other commonly used measures of the average tax rate. For a marginal investment, EATR=EMTR. For a highly profitable investment, EATR approaches τ.

The cash flows are slightly different in the case of debt-financed investment, but the concepts of the EMTR and EATR are unchanged.

The development of the EMTR over time does not strongly replicate the pattern seen in the statutory tax rates. This is because investment projects at the margin are strongly affected by the value of allowances. Based on the approach in Figure 5, in 15 out of the 19 countries the EMTR has decreased. However, in many of these cases, the falls are not very substantial.

Figure 6 shows that, given fixed inflation, the weighted mean EMTR remained fairly stable until the late 1990s; it rose a little during the early and mid 1980s, but then fell back. From the late 1990s the fall has been substantial. This reflects the movement in the weighted average allowance rates: a combination of lower statutory rates, and more generous allowances have

contributed to reduce the weighted average EMTR. The same pattern holds for the weighted mean EMTR based on actual inflation rates in each country and year. However, for this measure, the drop over time has been more substantial; this reflects the evidence in Figure 4 - with a lower inflation rate, a given allowance rate is more generous, leading to a lower EMTR.

In both cases, however, the pattern since 2001 has reflected especially the position in the USA, which had more generous allowances between 2002 and 2004. In 2005, allowance rates have fallen back in the USA, and hence the EMTR for the USA, and the weighted average EMTR has risen again. The effect of the USA is diminished by considering the unweighted mean. This has fallen more steadily over the period, from 28% to 20%, but has been stable for the last few years.

Figures 7 and 8 present evidence for the EATR, following the same approach as Figures 5 and 6. Figure 7 shows that, given the fixed inflation assumption, the EATR fell in 15 countries, remained unchanged in 2, and rose in 2. The pattern of reduction is closer to reflecting the pattern seen in the development of the statutory tax rate in Figures 1 and 2. The EATR for industrial buildings follows similar patterns. Figure 8 shows that, on the same basis of fixed inflation, the weighted mean EATR fell over the period from around 35% to around 27%. Based on actual inflation, the fall in the EATR was a little more striking, from 36% to 26%. These two series are closer in the case of the EATR than in the case of the EMTR, since the EATR depends rather more on the statutory tax rate and rather less on allowances. Nevertheless, the two approaches give a similar qualitative picture of the development of effective tax rates.

Overall, we would summarise the developments as follows:

Stylised fact 3: the effective marginal tax rate remained fairly stable over the 1980s and 1990s, but has more recently fallen; effective average tax rates for projects earning positive economic profits have fallen more continuously sine the early 1980s; allowing for lower inflation implies a greater reduction in both effective tax rates.[11]

I.B Trends in tax revenues

A number of studies have used data on tax revenues to measure the impact of corporate income tax on incentives for investment. Often, a form of average tax rate is calculated, expressing the tax payment as a proportion of a measure of profit. However, we do not present such measures here, mainly due to concerns about whether it is possible to find a suitable measure of profit to use as the denominator.[12]

Nevertheless, the size of revenues raised from corporate income taxes is clearly important to governments who face revenue constraints. We therefore present a description of the development of revenues from corporate income taxes. Note that these differ in scope from the measures considered above. For example, in constructing effective tax rates, we considered only source-based corporate income taxes. However, tax revenues in any country may include both

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[11] More detail on various forms of EATR and EMTR including, for example, the use of debt is given in Devereux, Griffith and Klemm (2002).

[12] Devereux (2004) provides a discussion of alternative measures, and Devereux and Klemm (2004) demonstrate that different approaches can generate very different impressions of the severity of a tax regime.

source-based taxes and residence-based taxes – typically, revenue collected from profits earned abroad and repatriated.

Due to differences in country size, it is clearly not useful simply to compare corporate income tax revenues across countries. Two convenient ways of making such comparisons are to scale tax revenues in each country by GDP or by total tax revenues. These measures will vary for reasons other than the corporate tax system. For example, both depend on the size of the corporate sector (e.g. the degree to which business is incorporated) and on the relative size of corporate income in GDP, which varies considerably over the economic cycle.

Figure 9 presents the time series since 1965 of tax revenues from corporate income as a proportion of GDP. We use data from OECD Revenue Statistics on tax revenues from corporate income and capital gains paid by corporations.[13, 14] The GDP weighted mean of the ratio of taxes on corporate income to GDP varies over the economic cycle, but does not appear to follow any long-term trend. In all years it is within the interval from 2.5% to 3.5% of GDP, beginning in 1965 at 3.1% and ending in 2004 at 2.8%. By contrast, however, the unweighted average has clearly risen over the last 40 years. Although it too shows some volatility, it is clearly trending upwards. In 1965 the unweighted average was 2.3% of GDP; by 2000 it had risen to 4.2%, before falling back to 3.7% by 2004. The median was relatively constant until the early-to-mid 1990s. However, it then rose quickly before also falling back after 2000.

The comparison between the weighted and unweighted means clearly indicates that smaller countries – which receive a smaller weight in the weighted average – have been increasingly reliant on corporation tax revenues. Figure 10 shows corporate income tax revenue as a proportion of GDP for each country in 1965, 1982 and 2004.[15] The variation across countries is considerable: some of the smaller countries raised less than 2% of GDP from corporate income taxes in 1965; by contrast, Luxembourg raised over 7% in 2004. Between 1965 and 2004 most countries experienced an increase in tax revenues as a proportion of GDP. There are 4 exceptions, but only the USA experienced a drop in excess of 1 percentage point (in fact, by 2001/2 the drop since the mid 1960s was over 2 percentage points, but there has been a subsequent small recovery); clearly the USA is important in determining the weighted average. Between 1982 and 2004 again 4 countries reduced this ratio; but only one of them, Japan, experienced a large reduction - of nearly 2 percentage points of GDP.

Stylised fact 4: On average, weighted by GDP, tax revenues on corporate income have remained broadly stable as a proportion of GDP since 1965. However, the unweighted average shows a significant rise over this period.

A second way of assessing corporation tax revenues is to consider the proportion of total taxes raised from this source. To examine this, we consider, in Figure 11, equivalent measures to Figure 9, but based on the ratio of taxes on corporate income to total tax revenue. This paints a rather different picture. Based on the weighted average, corporate income taxes have fallen on average as a share of total tax revenue; although the fall has not been smooth, it is clear that by the end of the period a lower proportion of total taxes were being raised from corporation tax.

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[13] This is tax class 1200 in the OECD data.

[14] Data for 2004 are not yet available for Australia and Greece; for these countries we have substituted the 2003 values.

[15] The latter two dates were chosen to correspond to the dates available for measures based on tax rules. We also show the year 1965, because tax revenue data are available over a longer period.

Combined with Figure 9, this suggests that – on a weighted average basis, with the weight being GDP - taxes from sources other than corporate income have risen rather faster than GDP, and that – relative to other taxes - governments are relying rather less on corporate income taxes.

Once again, however, the other measures present a different story. The median was fairly constant from the mid 1970s until the mid 1990s. However, since then it has risen, and now exceeds the levels reached in the 1960s. A similar picture is true of the unweighted average. This was also fairly constant from the mid-1970s to the mid-1990s, although lower than in the 1960s. But over the last 10 years, this has also risen.

Stylised fact 5: On average, weighted by GDP, tax revenues on corporate income have declined as a proportion of total tax revenue since 1965. This was also true of the unweighted average until the mid-1990s; but since then the unweighted average has risen.

These patterns of tax revenues may seem inconsistent with the stylised facts presented above which indicate a fall in statutory tax rates and the EATR. Indeed, this is a puzzle which requires further research and explanation. It may partly be explained by changes in profitability. In some countries this may be partly due to the tax system itself. For example, Ireland has had a low 10% tax rate on manufacturing activity since the early 1980s. One consequence has been a dramatic increase in inward investment – and probably inward flows of profit: this in turn has boosted corporate income tax receipts as a share of GDP, despite the continuing low tax rate. Another possibility is that lower corporation tax rates have increased the incentive to incorporate and to shift income from the non-corporate sector into existing corporations, thereby increasing the relative size of the corporate sector. For example, using data for 13 OECD countries, Fuest and Weichenrieder (2002) estimated that, on average, a one percentage point increase in the differential between the top marginal personal tax rate on interest income and the statutory corporate tax rate induces a 2.6 percentage point increase in the fraction of private saving that is channelled through corporations.

I.C. Implications for the future

Translating an analysis of the history of developments in corporate taxation into predictions for the future is hazardous. To do so, it is necessary to understand the factors which have been driving reforms, and to predict how these factors will develop in the future. It is therefore useful also to review briefly the literature which has attempted to explain the determinants of various forms of corporate income tax rate.

The central issue examined in the literature which discusses the possibility of a 'race to the bottom' in tax rates, is the influence of capital mobility: that is, has increased capital mobility been influential in driving down rates of tax? If so, will rates fall further with or without further increases in mobility? The second question is very hard to answer, but there is some empirical evidence which can help provide an answer to the first. Note that capital mobility can include moving various types of asset across borders. Typically, the literature investigates flows of capital: however, less investigated, but probably more mobile, is profit.

The empirical literature on the influence of capital mobility on corporate tax rates has developed in two ways. First, a number of papers have undertaken regression analysis, attempting to explain tax rates by various factors specific to that country, including measures of capital

mobility. Typically they estimate a reduced-form equation, with little theoretical backing. These studies differ in several ways, including the variables used and the econometric specification. These papers include, for example, Garrett (1995), Quinn (1997), Garrett and Mitchell (2001), Bretschger and Hettich (2002), Swank and Steinmo (2002), Slemrod (2004) and Winner (2005).

This line of research presents a mixed picture of the effect of capital mobility, partly reflecting the different approaches used. The most frequently-used measure of taxation is the statutory tax rate, although measures based on tax receipts are also common. None of these studies uses measures of effective tax rates similar to those presented above. Measures of capital mobility also vary. One approach is to use data on trade, or foreign direct investment; the higher these factors are relative to GDP, it is argued, the greater is capital mobility. Of course this does not necessarily follow: however, it may be true that the greater the share of trade and FDI in an economy the more a government has to be concerned about external factors. Another approach is to construct indices which reflect the degree of formal controls on capital flows; these show a marked fall over time across the OECD, which does coincide with the fall in statutory rates of corporation tax.

Some of these studies find a significant impact of capital mobility on tax rates, but the results are not robust across the papers or even within any paper. There are some significant and negative correlations. Bretschger and Hettich (2002) find a relationship with trade openness; Swank and Steinmo (2002) find a relationship with the statutory rate, but not with other measures; Slemrod (2004) finds an effect in determining both the statutory rate and a measure of tax burden – but neither of these is robust to adding other factors into the equation. Moreover, the studies by Quinn (1997) and Garrett and Mitchell (2001) even find a positive, rather than a negative, relationship between capital mobility and capital tax rates. The most recent analysis within this strand of the literature is the paper by Winner (2005) which is based on a panel data set for 23 OECD countries. This study calculates average effective tax rates on capital and labour from macroeconomic data and constructs a measure of capital mobility based on saving-investment correlations. Controlling for a number of other factors expected to influence the tax burden, the author finds that rising capital mobility has exerted a significant downward pressure on capital tax rates and has tended to increase the effective tax rate on labour income relative to that on capital income. Although these recent results are in line with the hypothesis of a 'race to the bottom' in capital taxation, on the whole this literature has not produced unambiguous evidence that corporate tax rates have been driven down by increasing capital mobility.

A second strand of the literature investigates the idea of tax competition more directly. The role which increased capital mobility must play in determining corporate tax rates is that governments compete more energetically the more mobile is capital. This implies that the tax rate in one country is partially determined by the tax rates set in other countries. There is certainly anecdotal evidence that governments respond in this way. Two papers – Altshuler and Goodspeed (2002) and Devereux, Lockwood and Redoano (2004) – both follow this approach. Altshuler and Goodspeed consider whether the USA is a leader in setting tax rates – that is, whether other OECD countries respond primarily to the USA. They find some evidence to support this claim, although their approach is based on determining a measure of tax revenues, rather than specific tax rates.

Devereux et al. (2004) test a model in which governments compete both over flows of capital (influenced by the EMTR) and over shifting of taxable profit (influenced by the statutory rate). They find that the statutory rate in one country is influenced by the statutory rates in other

countries, but that this relationship is much weaker for the EMTR. Further, they find that this relationship is much stronger (indeed, arguably it only exists) between countries which do not have formal capital controls in place.

Taking all these studies together, there is some evidence that increasing mobility has had some impact on corporate tax rates. Probably the most well-supported case is that there has been competition over statutory rates of tax. This may involve competition for mobile capital through discrete location decisions (where the statutory rate is closely related to the EATR); it is also possible that co-movements in the statutory rate reflects competition for profit. The fact that statutory rates in OECD countries have fallen significantly over the last two decades is consistent with such competition. Offsetting this, especially in the 1980s – has been an expansion of tax bases. Combined with other factors, corporation tax revenues have kept pace with – or even exceeded – the growth in GDP, and also in may cases with the growth in revenues from other taxes.[16]

What of the future? The existence of low tax-rate jurisdictions continues to place pressure on statutory rates, despite the successes of international co-ordination through the OECD to combat tax havens.[17] Their existence will continue to put downward pressure on tax rates. However, there may be less scope in the future to offset reductions in statutory rates by expanding tax bases. The most significant reforms in this dimension came in the late 1980s and early 1990s. Since then, governments have been increasingly tightening up rules for the taxation of international flows, aware of the possibility that profits flow to low tax-rate jurisdictions. This type of activity may be partly responsible for revenues holding up well.

But the ability of governments to maintain effective tax rates while reducing statutory rates is likely to become weaker over time, since there is a limit to the possible expansion of tax bases. Eventually, there are two possibilities. Either revenues received from corporation taxes will diminish, as tax rates are reduced without any further capacity to increase tax bases. Or the offsetting pressure to raise revenue from this source will brake the reductions in statutory rates.

There is, perhaps, some evidence of both happening. Figure 2 indicates that the reduction in statutory rates continued through the 1990s, but not at the same rate as the 1980s. It seems plausible to predict that the rate of this reduction will continue to slow, especially with the greater efforts in combating the shifting of profits between jurisdictions. It seems unlikely that governments will willingly forgo the substantial revenues they have been accustomed to raise from corporation taxes.

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[16] There have been few attempts to systematically examine the determinants of corporation tax revenues. Devereux, Griffith and Klemm (2004) examine the surprisingly high corporation tax revenues in the UK, and Clausing (2005) presents the first systematic analysis across countries.

[17] The EU's Code of Conduct also has the effect of inhibiting competition through the creation of special regimes with low tax rates; but this is limited to the EU.

PART II
ALTERNATIVE BLUEPRINTS FOR
FUNDAMENTAL CORPORATE TAX REFORM

Our review of international trends in corporate taxation showed that statutory and effective tax rates on corporate capital have tended to fall in recent years, presumably reflecting growing international tax competition. In designing their corporate tax systems, governments are clearly concerned about their ability to attract increasingly mobile capital and taxable profits. Indeed, much of the recent international debate on corporate tax policy has centered on how national governments can design a corporate tax system that is more robust to growing capital mobility and that still leaves individual countries with some room for maneuver in the choice of tax rate.

While the implications of globalization for corporate tax design is attracting increasing attention, policy makers also continue to be concerned about more traditional goals such as designing a corporation tax that can serve as a backstop to the personal income tax while minimising the distortions to corporate investment and financing decisions and the distortion to the choice of organizational form.

Against this background, the rest of this paper considers alternative options for fundamental corporate tax reform. A 'fundamental' reform is one that redefines the tax base with the purpose of eliminating or reducing one or several of the basic distortions caused by the corporate tax system, rather than just involving a change of tax rate and depreciation schedules etc. within an essentially unchanged corporate tax design.

In sections II.A.6 and II.D below we shall explain in detail how the various reform proposals seek to deal with the concerns of policy makers mentioned above, including the challenges posed by globalization. To prepare the ground for this discussion, we start by reviewing the functions of the corporate income tax and by laying out guidelines for evaluating alternative reform proposals. In this context we identify the distortions caused by existing corporate tax systems. We then provide an overview of the most important blueprints for fundamental corporate tax reform which have been proposed in the international tax policy debate in recent decades.

II.A GUIDELINES FOR TAXING CORPORATE INCOME

II.A.1 What is the role of corporate income tax?[18]

Any discussion of corporate tax reform must start by asking: why do we want to impose a separate tax on corporations in the first place? In this section we consider the traditional motivations for maintaining a corporate level tax on profit.

The first rationale generally given for the corporate income tax is that it would be difficult to administer a tax on all the capital income accruing to any individual, including any retained profit held in a company which is partly owned by that person. Specifically, the capital gains on shares generated by corporate retentions are difficult to tax on an accruals basis. Thus, since it is

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[18] This section draws in part on Mintz (1995) and Bird (1996).

possible to levy a tax at the corporate level on retained corporate income, such a tax may act as a reasonable substitute for a personal tax, even if the tax rates are not identical.[19]

A second rationale sometimes offered is that a source-based corporation tax acts as a charge for public goods provided by the government and consumed by the company. However, there is no clear relationship between the tax that a company would pay on its profits and the value of the public goods it enjoys. If the aim is to charge for public goods, a more straightforward way to achieve this would be to do so directly. Still, for practical or political reasons it may be difficult to charge such user fees. One could then argue that infrastructure and other public investments which are not fully priced adds to profits of businesses that benefit from the expenditures. In that case a business income tax may serve as an imperfect substitute for the missing user fees.

A third rationale is that it is possible – in theory, and in a closed economy - to design a corporate level tax on economic profit which is efficient in the sense of leaving economic behaviour unaffected. The particular property of such a tax is that it would be levied only on economic rent which is, by definition, profit over and above that necessary to justify a particular investment. This would be an attractive way of raising revenue, compared to other forms of taxation which are generally not efficient. Proposals for such taxes – a cash flow tax, or the ACE scheme described in section II.C.2, for example - have been made on numerous occasions over many years, and have even been implemented occasionally (for example, see the discussion on Croatia below). But there are several problems with this as a rationale for existing corporation taxes. First, typically, existing corporation taxes are not efficient: they are not just levied on economic rent, but on the entire return to equity, and so they do tend to distort the investment and financing decisions of companies. Hence this cannot be a rationale for taxes observed in practice. Second, even taxes on economic rents may not be completely neutral, since some economic decisions may be affected by them. For example, the choice of a business as to whether or not to incorporate may depend on the taxes paid in either form, and a high source-based tax on economic rent may induce a company to locate in some other lower-tax jurisdiction.

Perhaps a fourth rationale is the most significant – at least to policy-makers. That is the popular perception that corporations ought to pay their fair share of tax. While this may be a powerful popular justification in political terms, it is incoherent on economic grounds, since corporations as such cannot bear any tax burden. Inevitably, the burden of the corporate income tax must be borne by individuals in their capacity as owners or employees of corporations and/or

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[19] Unfortunately, this rationale is weakened in a world of capital mobility, where the individual may reside in a country which is different from that where the income-generating activity takes place. A typical source-based corporation tax is levied where that activity is deemed to take place – say, Denmark. Yet the company undertaking that activity may be owned by individuals who live outside Denmark. And the residents that the Danish government seeks to tax may instead generate income outside Denmark. Hence the corporate level tax in the same jurisdiction may be a poor substitute for a personal level tax since the corporate tax rate is decided in one jurisdiction whereas the personal tax rate of the shareholder is decided in another jurisdiction. Thus, while capital mobility does not fully eliminate the role of the corporation tax as a 'backstop' to the personal income tax, it does weaken that role by making it more difficult to coordinate corporate and personal tax rates. Moreover, it is possible to levy a realizations-based personal tax on capital gains that does not distort the taxpayer's decision to realize his shares (see Auerbach and Bradford (2004)). The new Norwegian shareholder income tax described in section II.C.4 is an example of such a tax, as explained by Sørensen (2005a). The existence of a realizations-based capital gains tax that does not interfere with the decision to realize the gain also weakens the case for a separate corporation tax as a means of taxing retained corporate profits.

in their role as consumers of the goods and services produced by corporations. And since the corporation tax is an impersonal tax, it is not well suited to help policy-makers shape the profile of personal income distribution.

A more sophisticated version of the argument that companies as well as individuals ought to pay tax would acknowledge that the corporation tax must be passed on to individuals, but that – on the (strong) assumption that the effective incidence of tax is borne by the owners of capital – this is in any case fair. One particular aspect of this is of relevance in an open economy: that by levying a source-based corporation tax it may be possible to effectively tax rents accruing to non-residents (and hence non-voters).[20] From a national perspective this may be attractive on political grounds. Indeed, working with a comprehensive European data set, Huizinga and Nicodéme (2003) found a significant positive relationship between corporate tax burdens and the share of domestic companies owned by foreigners. Their estimate implies that European governments would have reduced their average effective corporate tax rates by about a quarter if all companies had been fully owned by domestic citizens. Since international economic integration tends to increase the share of domestic companies owned by foreigners, this particular aspect of globalization thus provides an incentive for governments to maintain and even increase the corporation tax, as emphasized by Mintz (1994). This may help to explain why effective corporate tax rates have not fallen more dramatically in recent decades, despite a sharp increase in capital mobility.

While politically convenient from a national perspective, a source-based corporation tax that falls partly on foreigners may also be legitimate on grounds of 'inter-nation' equity, as stressed by Musgrave and Musgrave (1989, ch. 33). Thus it is often argued that since source country governments provide the costly infrastructure and protection of property rights which are a precondition for the profitable use of capital, they are entitled to a (tax) share of the income earned by foreign investors within their jurisdiction. This view is reflected in the OECD Model Double Taxation Convention which allows source countries to tax the income from foreign-owned companies and permanent establishments doing business in the country.

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[20] Under perfect capital mobility foreigners can fully shift the burden of a source-based tax on the normal return to capital onto domestic immobile factors by withdrawing (part of) their capital, but they cannot shift that part of the corporation tax which falls on pure location-specific rents.

II.A.2 Properties of an efficient corporation tax in a world without capital mobility

To sum up the discussion of the previous section, there may be a role for the corporate income tax as a withholding tax on retained profits and on profits earned by foreign-owned companies, and there is also a case for a corporate level tax on pure profits. At any rate, it seems beyond dispute that governments would like to maintain taxes on corporate income. Given this, the issue arises: what are the desirable properties of such a tax? The broad answer from economic theory is that the tax should be as efficient as possible, that is, the desired amount of revenue should be raised in a manner that minimises the distortions to economic behaviour. We will now consider in more detail what is meant by an efficient corporate tax design. We start by abstracting from the complications caused by international capital mobility, postponing discussion of the open economy until the subsequent sections.

As already mentioned, a tax falling only on the pure rents in the corporate sector will be non-distortionary because it exempts the normal return to capital generated by the marginal investment projects. Some theoretical models of capital accumulation do in fact imply that it is inoptimal to tax the normal return to capital, even in the absence of international capital mobility, and even if governments are concerned with equity as well as efficiency. However, other theoretical models imply that the normal return to capital should indeed be taxed, although generally at a different marginal rate than labour income. Thus there is no universal theoretical consensus on the proper tax treatment of capital income,[21] but governments seem to have a revealed preference for maintaining some amount of tax on normal as well as above-normal returns to capital.

Assuming that the normal return to capital is to be taxed, discussions of tax policy often take for granted that an efficient system of capital income taxation is one that is *neutral* in the sense of imposing the same (effective) tax rate across all sectors, asset types, modes of investment finance and organizational forms. Under a neutral tax system the arbitrage behaviour of investors will ensure that the (risk-adjusted) marginal pre-tax rates of return to investment are equalized across all investment projects. In this way capital will be allocated so as to maximize the value of total output, and 'production efficiency' will prevail, that is, all firms will face the same cost of capital so that the allocation of capital input across firms and projects is not distorted by the tax system.

The so-called Production Efficiency Theorem of Diamond and Mirrlees (1971) is often seen as providing a rationale for a neutral tax system. This theorem says that, in a competitive economy, an optimal tax structure is characterised by production efficiency so long as all economic activities can be taxed and any pure profits can be taxed at 100 percent. In other words, even if taxes must inevitably distort consumer choices, it is optimal to leave the input choices of firms undistorted by taxes, thereby allowing minimisation of aggregate production costs.

Unfortunately the assumptions underlying the Production Efficiency Theorem do not hold in practice, since governments typically lack the instruments that would enable them to levy a 100 percent tax on pure profits. Economic research has shown that, if pure profits cannot be fully taxed away, it will generally be optimal to impose selective input taxes – including selective taxes on capital – on firms and sectors that generate pure rents or where rents are particularly

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[21] Sørensen (2005b) provides a more detailed discussion of the issue and the relevant literature.

high.[22] Thus it may be optimal to accept some tax distortions to the choice of capital inputs, since a selective capital tax may be an indirect means of imposing a tax on pure profits (which in itself is non-distortionary).

However, it is hard to turn this theoretical insight into operational guidelines for tax policy, since in practice it may be very difficult to estimate the magnitude of 'pure' profits and to separate these from the rewards to entrepreneurship and risk-taking. Moreover, there is no reason to believe that pure rents are systematically higher or lower in the corporate as opposed to the non-corporate sector, so there does not seem to be a case for a tax system that systematically discriminates against (or favours) the corporate sector. Furthermore, a large part of pure profit arises from the exploitation of land and natural resources. For the purpose of capturing such rents, a selective capital income tax seems a poorly targeted instrument compared to more specialised instruments such as taxes on land or real estate, royalties related to the extraction of mineral resources, and taxes on energy inputs, etc. In addition, if policy-makers were to adopt a general policy of systematically differentiating capital taxes across sectors and assets (to a greater extent than they already do!), they would probably open the door to intensive lobbying efforts from special interest groups pressing for tax concessions to their particular sector. Such lobbyism would hardly lead to an 'optimal' tax system.

Thus, on political economy grounds, and since policy-makers lack the information needed for an optimal differentiation of capital taxes, it seems preferable to stick to the traditional goal of tax neutrality. Of course, existing capital income tax systems are typically non-neutral, discriminating between corporate and unincorporated forms of business, between different assets and between sources of finance. In particular, the combined corporate and personal tax burden on corporate income often deviates from the tax burden on the returns to non-corporate investment, causing a misallocation of capital between the corporate and the non-corporate sector, and the total tax burden on corporate equity income often exceeds the (personal) tax burden on the interest on corporate debt, inducing companies to rely excessively on debt finance. Moreover, because of the deferral (or absence) of taxes on capital gains on shares, retained corporate profits often carry a lighter tax burden than distributed profits, thus distorting decisions on dividend payouts. Empirical research has documented that corporate and investor responses to all of these non-neutralities can be significant, causing substantial losses of economic efficiency.[23] Thus an important goal of any corporate tax reform should be to reduce or eliminate one or several of these distortions.

II.A.3 Efficient corporate taxation in the open economy: the international perspective

In an integrated world economy with capital mobility, production efficiency requires that the pre-tax marginal returns to investment be equalized across countries. This may be achieved if capital income taxation is based on a pure *residence principle* so that investors are taxed at the same (effective) rate on all of their worldwide income, regardless of the geographical source of the income. In that case 'capital export neutrality' (CEN) is said to prevail, and capital mobility

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[22] This was shown by Dasgupta and Stiglitz (1972).

[23] For example, Gordon and Mackie-Mason (1994, 1997) found that tax non-neutralities between the corporate and the non-corporate sectors in the U.S. cause a shifting of assets and taxable profits between the two sectors; Gordon and Lee 2001) documented the impact of the corporation tax on corporate debt ratios, and Poterba (2004) estimated a high elasticity of dividend payments with respect to the differential between the effective personal tax rates on dividends and capital gains.

will then tend to drive pre-tax rates of return into equality, since this will also ensure that the individual investor obtains the same after-tax return on domestic and foreign investment.

An alternative neutrality concept is that of 'capital import neutrality' (CIN) which is obtained when all foreign and domestic investors supplying capital to a given country are faced with the same (effective) tax rate on investment undertaken in that country. CIN will hold when taxation is based on a pure *source principle*, i.e., when investors are only taxed in the country where their capital is invested, and when the source country government imposes the same tax burden on domestic and foreign inward investors. Since capital mobility tends to equate after-tax returns across countries, source-based taxation will generate cross-country differences in pre-tax rates of return (and hence cause a violation of international production efficiency) when tax rates differ across countries. Indeed, a source-based capital income tax may be seen as a selective tax on the use of capital in a particular location.

From a global perspective, should the international tax order strive to attain production efficiency across countries? As shown by Keen and Wildasin (2004), the answer is: in general, no. Even if the strong assumptions underlying the Diamond-Mirrlees Production Efficiency Theorem are met, this theorem was derived for a closed economy with a single government budget constraint, and hence it cannot be directly applied in an international context with many independent governments subject to separate budget constraints. Indeed, if direct transfers among governments are not feasible, it may be second-best optimal to use distortionary source-based taxes combined with subsidies to capital exports to shift tax bases and fiscal resources towards 'fiscally needy' countries which are poor and/or which are faced with a high marginal cost of public funds (a high deadweight loss from taxation).

As demonstrated by Keen and Piekkola (1997), if governments cannot fully tax away pure profits, it is also optimal from an international perspective to allow capital-importing countries to use source-based taxes as an indirect way of taxing pure rents. Under certain simplifying assumptions these authors show that the internationally optimal total tax rate on cross-border investment is a weighted average of the domestic tax rates in the source country and in the residence country.[24] This means that the total effective tax rate on cross-border investment should lie somewhere between the rates implied by CEN and CIN. Furthermore, both the residence country and the source country should levy some amount of tax on the return to cross-border investment.

A system of worldwide income taxation with a foreign tax credit tends to achieve CEN (although in practice home country tax is usually only levied on repatriated income, with the foreign tax credit being limited to the amount of home country tax on the foreign income). On the other hand, a source-based system of capital income taxation where foreign source income is exempt from domestic tax tends to achieve CIN. The research findings summarized above imply that neither of these regimes are fully optimal. However, they also indicate that identifying the optimal total tax burden on cross-border investment is a complicated matter which requires a knowledge of the elasticities of capital supply and demand in both source and residence countries.

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[24] By 'domestic tax rate' we mean the tax rate levied on domestic investment undertaken by domestic investors. The simplifying assumptions referred to are that the residence and source countries have the same elasticities of capital supply and demand and that they tax pure profits at the same rate.

For practical purposes, the two most important policy implications seem to be the following: 1) The total tax burden on cross-border investment should never exceed the higher of the source-country and the residence-country tax rate on domestic investment. In other words, international double taxation can never be optimal and should be avoided. 2) From an international perspective, there is a good case for maintaining some amount of source-based capital income taxation as a surrogate for missing taxes on pure rents, and as a means of transferring resources towards 'fiscally needy' countries.

II.A.4 Efficient corporate taxation in the open economy: the national versus the international perspective

The previous section discussed capital income taxation from an international viewpoint, implicitly assuming that countries are willing to engage in some amount of international tax coordination. But the political will to engage in tax coordination remains limited, so in this section we briefly discuss the properties of an efficient system of capital income taxation as seen from a national perspective. A key question is whether an individual country pursuing its own national interest will tend to adopt tax policies that go against the international interest? This is a big issue which will continue to be much debated. Here we will just offer a few observations.

If capital is perfectly mobile internationally and there are no location-specific rents, an important result in the theory of optimal taxation says that a small open economy maximising its national welfare should not levy a source-based capital income tax. The reason is that such a tax will cause a capital flight which will reduce domestic factor incomes by more than the amount of tax collected from mobile capital. Hence the domestic (immobile) residents would be better off if they had to pay a corresponding amount of tax themselves (see, e.g., Razin and Sadka (1991)).

The trend towards lower effective tax rates on corporate income documented in Part I confirms the theoretical prediction that growing capital mobility puts downward pressure on source-based capital income taxes. But in the real world many economic activities do generate rents, and if for practical reasons governments have to tax normal returns and pure profits at the same rate, the existence of location-specific (i.e., internationally immobile) rents provides an incentive for governments to maintain some amount of source-based taxation on the full return to capital, as shown by Huizinga and Nielsen (1997) and Sørensen (2004), and as already mentioned in section II.A.1. However, since taxes on the normal return are distortionary whereas taxes on (immobile) rents are not, governments also have an incentive to devise tax instruments that would allow them to charge a higher tax rate on rents. Indeed, economic theory suggests that if the appropriate instruments were available, the government of a small open economy would want to fully abolish taxes on the normal return to capital in order to avoid capital flight, while maintaining a positive tax on rents. Given that some rents earned by multinational companies are internationally mobile, it would not be optimal from a national perspective to impose a 100 per cent tax on rents, even if that were technically feasible, but in the presence of location-specific rents the optimal tax on above-normal returns to capital would be positive, even for a small open economy faced with perfect capital mobility.

The ACE scheme and the cash flow taxes discussed later on are examples of taxes that fall only on rents, leaving the normal return to capital free of tax. From an international as well a national perspective it is certainly efficient to tax rents at a higher rate than that imposed on normal returns. Moreover, even in the absence of capital mobility – that is, even from the perspective of the world economy as a whole – it may be optimal to have a zero marginal

effective tax rate on the normal return, as we mentioned earlier. Thus, if individual countries were to adopt an ACE system or a cash flow tax in response to growing capital mobility, the resulting tax structure might be desirable not just from a national but also from an international perspective.

However, since some rents earned by multinational companies are internationally mobile, as companies can relocate from one country to another, national governments acting in their own interest are likely to choose a lower tax rate on rents than would be optimal from a global perspective.[25] Achieving the appropriate level of taxation is therefore likely to require some international policy coordination.

II.A.5 The relationship with personal taxes on corporate income

Given that corporate equity income is taxed at the company level, a long-standing preoccupation of economists and policy-makers has been to identify the appropriate treatment of such income when it is received by shareholders, in the form of dividends or capital gains. Most countries – until very recently, the USA was the main exception – have avoided the so-called classical tax system, in which dividends (paid after corporation tax) were taxable in full under the personal income tax. Several alternative methods have been adopted to relieve this 'double' taxation: for example, a reduced rate of income tax, a lower corporate tax rate on that part of profit distributed, or an imputation system.

The main argument against the classical system is that it exacerbates the distortions discussed above, mainly since the overall tax rate is higher. That is, there is a greater disincentive to invest due to a higher overall effective marginal tax rate; there is a greater discrimination against equity finance and in favour of debt finance; and there is probably a greater disincentive to choosing corporate form.

However, the power of these arguments depends at least in part on the personal tax rates of all investors. In standard models of finance, with heterogeneous investors who have different personal tax rates (partly because they may reside in different countries), the overall impact of personal taxes on the value of the company depends on a weighted average tax rate across all investors. In a small open economy, domestic investors may represent a relatively small set of potential investors, and hence the domestic personal tax system may be relatively unimportant for determining company value and, implicitly, company decisions.[26] On the other hand, while this argument is relevant for companies listed on the stock exchange, personal taxes on corporate equity income still distort the cost of equity capital for small companies without access to the international stock market.[27] Moreover, empirical evidence suggests that investor portfolios are still characterized by a considerable amount of 'home bias', that is, even in small open economies a considerable part of the shares issued by domestic quoted companies may be held by domestic residents so that domestic personal taxes may have a non-negligible impact of the cost of finance even for these companies.

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[25] There is plenty of evidence that the international location decisions of multinationals are indeed affected by corporate taxes. For example, see Devereux and Griffith (1998) and the surveys by Hines (1999) and by Ederveen and de Mooij (2001).

[26] This point was elaborated by Boadway and Bruce (1992) and Fuest and Huber (2000), among others.

[27] See Sørensen (2005c) for a discussion of this issue.

Thus, while domestic double taxation of corporate equity income and the asymmetric tax treatment of distributed and retained earnings are likely to cause fewer distortions in the open economy, these non-neutralities may still be problematic, especially for small and medium-sized enterprises. Moreover, if all countries were to adopt a classical corporate tax system, based on the belief that domestic personal taxes on corporate-source income are non-distortionary – the resulting double taxation would still distort corporate decision-making from the viewpoint of the world economy as a whole.

From an international perspective there is thus a rationale for alleviating the double taxation of corporate income. Returning to the national perspective of a small open economy, if the purpose of double tax relief is to stimulate domestic investment, it is more efficient to grant relief at the corporate rather than at the personal (domestic) shareholder level, since corporate-level relief will reduce the cost of capital for all companies investing in the domestic economy, whereas relief at the domestic personal shareholder level will not affect the cost of finance for companies owned by foreign or institutional investors. Some of the reform proposals discussed below (the ACE and the various cash flow taxes) do in fact imply double tax relief at the corporate level.

II.A.6. A classification of alternative blueprints for corporate tax reform

With these preliminaries, we will now consider alternative proposals for corporate tax reform that seek to address the concerns of policy makers mentioned earlier: how can the corporation tax be designed to account for the growing mobility of capital and taxable profits and how can it be reformed to level the playing field for domestic investment?

Table 1 offers a classification of alternative ways of taxing corporate source income in an open economy.[28] The *rows* in the table categorize the different tax systems according to the location of the tax base. Specifically, the tax base may be the corporate income earned in the source country where production takes place, it may be the income earned in the residence country of the company's corporate or personal shareholders, or it may be the sales (net of costs) to the destination country where the final consumption of the company's products occurs. The choice between these alternative tax bases may have important implications for the allocation of capital and economic activity between the domestic and the foreign economy.

The *columns* in Table 1 classify the different capital income tax systems according to the type of income subject to tax. Traditionally, the corporation tax has been levied on the full return to corporate equity income which includes the normal return as well as pure rents. Alternatively, the corporation tax might be levied on the full return to *all* capital invested in the corporate sector, including debt capital. Finally, a number of reform proposals would impose corporation tax only on rents, leaving the normal return free of tax. Alternative policy choices in this dimension will affect the degree to which the corporation tax distorts the investment, financing and production activities of companies, and they may also affect international location decisions.

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[28] To limit the scope of this paper, we have deliberately left several empty cells in Table 1 and have chosen to focus only on those reform options that have been most widely discussed in the international tax policy debate.

Table 1. Alternative systems of capital income taxation

Location of tax base	Type of income subject to business tax		
	Full return to equity	Full return to capital	Rent
Source country	1. Conventional corporate income tax with exemption of foreign source income	4. Dual income tax; 5. Comprehensive Business Income Tax	6. Corporation tax with an Allowance for Corporate Equity; 7. Source-based cash flow corporation tax
Residence country of corporate head office	2. Residence-based corporate income tax with a credit for foreign taxes		
Residence country of personal shareholders	3. Residence-based shareholder tax		
Destination country of final consumption			8. Full destination-based cash flow tax; 9. VAT-type destination-based cash flow tax

Existing corporate income taxes typically belong to categories 1 or 2 in Table 1. Under these tax regimes the source country has the prime right to levy tax on corporate profits after deduction for interest payments. The residence country of a multinational parent company may then either exempt the income from foreign corporate affiliates from domestic tax (category 1), or it may subject foreign source profits to domestic corporate income tax but grant a credit for the source country tax against the domestic tax bill (category 2). Under the credit system the domestic tax on 'active' business income is typically deferred until the time of repatriation of foreign source income. For this reason, and because the foreign tax credit typically cannot exceed the amount of domestic tax on the foreign income, the effects on investment incentives of such 'worldwide' taxation are rather similar to the effects of the pure source-based system in category 1.[29] Some countries integrate the corporate and the personal income tax by offering a credit for

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[29] When the limitation on the foreign tax credit is binding, the net tax paid on the foreign income is equal to the foreign tax rate and the tax collected by the residence country of the parent company is zero, as would be the case under a pure source-based tax system.

(part of) the corporation tax against the personal taxes levied on shareholders. However, these countries typically do not extend such tax credits to foreign owners of shares in domestic companies.

As a first approximation, it is therefore fair to say that existing corporate income taxes are source-based. Given the high mobility of capital and the opportunities for international profit-shifting through transfer-pricing and thin capitalization, a source-based tax system is vulnerable to tax competition from foreign jurisdictions. This may be termed "the capital flight problem". All the reform proposals included in Table 1 can be seen as an attempt to reduce this problem in one way or another (as well as an attempt to create greater tax neutrality in the domestic sphere). Thus, a residence-based tax seeks to avoid the problem of capital flight by imposing the same effective tax rate on residents' investment at home and abroad and by exempting inward foreign investment from domestic tax. A source-based corporation tax with an equity allowance and a source-based cash flow tax potentially reduce the capital flight problem by exempting the normal international return to capital from tax, recognizing that this tax is likely to be shifted onto domestic immobile factors anyway. Furthermore, a destination-based cash flow tax provides no incentive to locate investment abroad rather than at home, and in its VAT type form it also avoids the problem of international profit-shifting, as we shall see. Finally, the Comprehensive Business Income Tax and the dual income tax seek to address the capital flight problem by broadening the tax base to keep the tax rate low.

In the following sections we will explain and discuss the various options for corporate tax reform summarized in Table 1. We start in section II.B by considering alternatives to source-based taxation, i.e., residence-based and destination-based taxes. The main rationale for these reform options is that they tend to minimise the distortionary impact of taxation on corporate location decisions. In section II.C we then proceed to discuss alternative forms of source-based taxation which are arguably easier to implement than residence-based taxes. In both sections we consider taxes that fall on the full return to (equity) capital and taxes that fall only on rents. Throughout the discussion we are assuming that, realistically, corporate tax reforms are unlikely to be undertaken in an internationally coordinated manner. Thus we consider reforms that are carried out by one country in isolation, so the discussion occasionally brings up coordination problems which may arise if other countries do not adopt similar reforms.

II.B ALTERNATIVES TO A SOURCE-BASED CORPORATION TAX

II.B.1 Taxing the full return to equity: A residence-based shareholder tax?
One radical option for reform, once advocated by McLure (1979) and Feldstein (1987), might be to abolish the source-based corporate income tax altogether and to impute all of the income of a company to its shareholders, subjecting that income to the residence-based personal income tax (option 3 in Table 1). The main rationale for such a reform is the point made earlier that only individuals can bear a tax burden and that the impersonal corporate income tax is ill suited to achieve distributional goals. A further argument is that such full imputation of corporate income to shareholders would ensure a fully identical tax treatment of corporate and noncorporate firms and a neutral tax treatment of the different sources of investment finance (debt, retained earnings and new equity). Third, since a residence-based tax can be avoided only by moving abroad, and since individuals are much less mobile across borders than capital, a switch to worldwide income taxation at the personal shareholder level would greatly reduce the capital flight problem, provided that tax on foreign source income can be enforced. Finally,

abolishing the whole edifice of the corporation tax might lead to considerable reductions in the costs of tax administration and compliance.

Nevertheless, there are a number of arguments against such a radical reform. First, as we have seen, there is indeed a case for maintaining some amount of source-based capital income taxation. From a national perspective, abolishing the source tax on corporate income would also be a give-away to foreign governments granting a foreign tax credit for taxes paid in the source country.

Second, subjecting retained corporate profits to personal tax at the shareholder level on an accruals basis would create a liquidity problem for shareholders who receive little or no dividend from the company. To alleviate this problem, the company could be required to pay the shareholder's tax on retained earnings on the shareholder's request, but this would complicate the administration of the system. Complications would also arise if the government wanted to tax (realized) capital gains on shares. To avoid double taxation, the shareholder should then be allowed to write up the basis of the shares by the accumulated retained earnings previously imputed to him during the holding period.

Third, it is hardly realistic to expect that foreign corporations or foreign tax authorities would be willing to provide the information necessary to impute the retained profits of foreign companies to domestic holders of foreign shares. In the absence of an accruals-based tax on capital gains on (foreign) shares, the domestic shareholder could then defer his tax on retained profits in foreign companies until the time of realization of the shares. This would favour the holding of foreign shares relative to investment in domestic shares. To eliminate tax discrimination between domestic and foreign shares, it would be necessary to give up imputing retained profits in domestic companies to their domestic shareholders and to rely instead on a personal tax on realized capital gains on shares. However, in the absence of tax at the corporate level, this would leave a large loophole in the tax system, allowing avoidance (or at least deferral) of personal tax through the shifting of income into the corporate sector. The deferral advantage would also violate domestic investment neutrality and cause a 'lock-in' of capital in existing corporations by reducing the cost of capital for corporate investment financed by retained earnings.

Fourth, in the absence of an effective system of international information exchange, it may be very difficult to enforce residence-based personal taxes on dividends and capital gains on the foreign shares held by domestic citizens. In that case the personal tax at the shareholder level may in practice degenerate into a source-based tax which will induce domestic residents to invest in foreign rather than domestic shares. If the domestic stock market is integrated in the world stock market, this may not significantly drive up the cost of equity finance for domestically-based multinational companies, but it may cause a shift of ownership of these companies from domestic to foreign investors.

Because of these problems, abolishing the corporation tax and imputing corporate income to shareholders is hardly a realistic reform option.

II.B.2 Taxing the full return to equity: A residence-based corporation tax?

As indicated above, an important function of the corporation tax is to ensure that at least some tax is levied on retained corporate profits. However, imposing tax on domestic-source

corporate profits accruing to *foreign* investors is *not* necessary if the main function of the corporation tax is to serve as a backstop to the *domestic* personal income tax. Thus one could imagine that the corporation tax were based on a consistent *residence* principle where all corporations headquartered in the domestic country are taxed on their worldwide income, but where no tax is levied on domestic-source corporate profits accruing to foreign owners of corporate capital operating in the domestic economy (option 2 in Table 1). In practice the elimination of source taxation could be implemented by granting a credit to foreign shareholders for (their proportionate share of) any corporation tax paid by foreign-owned companies operating in the domestic country. By abolishing source taxation in this way, the incentive for inward investment by foreign investors would greatly increase. Of course, this comes at the price of giving up the revenue from the taxation of inward foreign direct investment.

To avoid international double taxation, the residence-based corporation tax could be combined with a credit for taxes paid abroad. In principle, this would ensure capital export neutrality (if the credit were given without limitation) and would eliminate the incentive for resident multinationals to invest in foreign low-tax countries rather than at home. Even if the foreign tax credit were limited to the amount of domestic tax payable on the foreign income (in line with current practice), the residence-based corporation tax would still eliminate the incentive for domestic multinationals to locate their foreign subsidiaries in foreign tax havens.

However, company headquarters may be quite mobile internationally, so a residence-based corporation tax may not enable a country to maintain an (average) effective tax rate significantly above that prevailing in other countries, since companies can escape a high tax rate by moving their residence to a low-tax country.[30]

Moreover, it would be very hard to implement a consistent residence-based corporation tax (see Sørensen (1993)). The main problem would be the auditing of and enforcement of domestic tax on profits of foreign affiliates that are retained abroad. In practice this would probably require assistance from foreign tax authorities who have no incentive to provide such aid in collecting taxes for another government. Realistically, it would thus be necessary to defer domestic corporation tax on foreign source profits until the time of repatriation. Such tax deferral would imply that the tax system would not be neutral between domestic and foreign investment. It would also mean that the nominally residence-based corporation tax would work very much like a source-based tax, since a large part of foreign direct investment is financed by retained earnings abroad (see Hartman (1985)).

In summary, implementing a consistent residence-based corporation tax meets with serious practical difficulties.

II.B.3 Taxing rents: A destination-based corporate cash flow tax?

A main argument for maintaining the corporation tax is that it serves partly as a non-distortionary tax on pure rents. If such rent capture is seen as the main function of the corporation tax, there is a case for designing it so as to leave the normal return to capital free of tax. This case is strengthened in a small open economy where capital mobility implies that a tax on the normal

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[30] In practice the mobility of corporate headquarters may be limited by the fact that shareholders often have to pay a toll charge on capital gains since share-for-share exchange and other options may not be available for corporate reorganizations.

return to capital tends to be shifted onto the less mobile factors of production, as we explained earlier.

A cash flow tax on the real and/or financial surplus of firms allows an immediate expensing of investment. Because the present value of the cash flows from a marginal investment is just equal to the initial investment outlay, the cash flow tax therefore leaves marginal investment projects free of tax, falling only on pure rents. In the terminology of Part I, the marginal effective tax rate is zero under a cash flow tax. In a closed economy this feature would ensure that a cash flow tax would be nondistortionary. However, in an open economy the rents earned by multinational companies often derive from firm-specific assets and may be generated in many alternative locations. When the fixed costs of doing business are so large that multinationals choose to serve several national markets from a single location rather than producing in all countries, a cash flow tax on internationally mobile rents will therefore affect the international location decisions of multinationals, even though it will not reduce the privately optimal scale of local investment once a company has decided to locate in a particular country.

A cash flow tax on the net total of the firm's real and financial flows is essentially a dividend tax with a deduction for new share issues. In principle this tax base is more narrow than the conventional corporate tax base. In recent years most discussions of the cash flow tax have assumed that the tax would be levied on the so-called R-base which includes only cash flows from the firm's 'real' transactions, leaving out financial transactions, including interest payments. This is also the assumption made here (although it may be worth considering whether the tax base for firms in the financial service industry should include financial cash flows).

As indicated by options 7, 8 and 9 in Table 1, there are several alternative ways of designing a cash flow corporation tax in an open economy.[31] One unconventional option is a so-called full destination-based cash flow tax (option 8). Under this system domestic corporation tax would be levied only on domestic sales, with a deduction for the cash expenses incurred in the production of the goods sold domestically. Note that the tax would not only fall on companies located in the domestic economy; it would also fall on companies servicing the domestic market from abroad. This is the attraction of the destination base: because the tax on sales to the domestic market cannot be avoided by moving production abroad, the system minimizes the tax incentive to relocate.

However, there are some specific problems with the full destination-based cash flow tax. The first one is that the tax requires the identification of the costs incurred in the production of goods and services sold in the domestic market. In integrated multinational companies with many different activities in many different locations, it may be very difficult to allocate the variable and fixed overhead costs across the sales in different national markets, especially without the help of foreign tax authorities. A system requiring such an allocation of costs could become an administrative nightmare and could leave multinationals with a huge scope for tax base shifting.

A second problem is that current international tax law only allows imposition of local corporation tax on firms with a physical presence (a 'permanent establishment') in the local

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[31] A by now classical treatment of cash flow taxation was given by the Meade Committee (1978). Destination-based cash flow taxes were considered by Bradford (2000) and Grubert and Newlon (1997). Bond and Devereux (2002) and Bradford (2004) analyse alternative cash flow taxes in an open economy.

jurisdiction, whereas the destination-based cash flow tax would also be levied on foreign companies serving the domestic market from abroad. Presumably foreign governments would not accept such a break with the current rules for dividing the international tax base.

Potentially these problems with the 'full' destination-based cash flow tax could be solved by adopting the alternative of a VAT-type destination-based cash flow tax (option 9 in Table 1). The tax base under this scheme is sales to domestic customers minus purchases from domestic suppliers and minus labour costs. Thus, export sales still are not taxable, whereas all imports are taxed. Essentially the tax base is therefore equal to the current VAT base minus labour costs. Because of the formal similarity with the VAT, it is possible that such a tax could get the status of an indirect tax consistent with current international tax law so that domestic tax could also be levied on the domestic sales of foreign-based firms. Furthermore, the VAT-type cash flow tax does not require an allocation of costs across domestic and foreign sales. It only requires identification of the costs of domestic as opposed to imported inputs, and these can be audited by the local tax authorities. Because it allows deduction for wage costs, the VAT-type cash flow tax is basically a tax on domestic consumption out of non-wage income. Pure rents are taxed only to the extent that they are consumed by residents in the domestic jurisdiction. Hence the VAT-type cash flow tax will not distort the investment and location decisions of firms, but at the same time it will not enable the domestic government to capture any of the rents accruing to foreigners.

A very attractive feature of the VAT-type destination-based cash flow tax is that it eliminates the transfer-pricing problem: since the proceeds of a sale to a foreign customer are not included in the tax base, the price that related companies within a multinational group use to account for an export transaction has no impact on the amount of tax paid. The same holds for an import from a related foreign party: the price set by the parties does not matter for tax purposes because there is no deduction.

On the other hand a destination-based cash flow tax raises a special transition problem: since exports are tax exempt whereas imports are taxed, the domestic-currency prices of exports have to fall (or the domestic price level has to increase) by the amount of the tax to restore equilibrium in domestic and foreign product markets. Because of short-run nominal wage and price rigidities, this adjustment process could cause considerable friction unless the exchange rate is flexible. But even if the adjustment were handled smoothly through an appreciation of the domestic currency, there would be windfall gains and losses as domestic residents with net claims on foreigners would experience an erosion of the real value of these claims, whereas domestic residents with net liabilities vis á vis foreign countries would benefit from a fall in the real value of their debts. If investors dealing with foreigners anticipate the switch to the destination-based cash flow tax, they will try to rearrange their portfolios so as to reap a gain and/or to avoid a loss. The resulting capital flows could cause disruptions in capital markets and foreign exchange markets around the time of reform. Any future anticipated tax rate changes after the introduction of the tax would tend to cause similar disruptions.

Because of these problems with a destination-based tax, it seems worthwhile to consider the alternative of a source-based cash flow tax.

II.C ALTERNATIVE SOURCE-BASED CORPORATE TAX SYSTEMS

II.C.1 Taxing rents: A source-based corporate cash flow tax?

As mentioned earlier, there is an efficiency case as well as an (inter-nation) equity case for taxing domestic rents accruing to foreigners. This may be achieved through a *source-based* cash flow tax where tax is levied on the net cash flow from domestic production, i.e., the cash flow from domestic and foreign sales minus the cash expenses on the purchase of domestic and imported inputs, including the purchase of capital goods, and minus labour costs. Such a tax will cut into all pure rents earned from domestic production.

As long as the tax does not induce companies earning mobile rents to relocate their production, the source-based cash flow tax is a nondistortionary means of shifting rents from foreigners to domestic residents (via the public budget). However, if the tax becomes too high, it will cause a shift of production out of the domestic economy. The stronger the local agglomeration forces and the better the local infrastructure, the greater is the element of location-specific rent in the total rent earned by companies, and the higher is the cash flow tax rate which may be sustained without deterring investors. Like the existing corporation tax, a source-based cash flow tax will give a tax incentive for multinationals to manipulate the transfer prices used in intra-company transactions. Indeed, compared to a traditional tax, at the same revenue, the statutory cash flow tax rate would be higher, giving greater incentive to shift profits away.

To counter the transfer-pricing problem, Bradford (2003) proposed that all cross-border real and financial cash flow transactions between related parties in a multinational group should be included in the tax base. The idea is that if, say, a parent company charges an artificially low royalty payment to its foreign subsidiary, the parent will subsequently receive a higher dividend from the subsidiary than if it had claimed an arm's length royalty. But if the dividend from the foreign affiliate is included in the tax base of the parent, any saving in the parent's tax due to understating the royalty is offset by an equal increase in tax as a result of the consequently higher dividend. In principle, the fact that the parent's tax payment is deferred is no problem under a cash flow tax which does not tax the normal return to capital, since the timing of tax payments does not matter under such a system. By contrast, under a conventional income tax deferral *does* generate a gain to the taxpayer.[32]

Introducing a cash flow tax – be it destination-based or source-based - could cause significant transition problems.[33] For example, initially the tax will fall mostly on the cash flows from 'old' investment and will have the character of an (unanticipated) capital levy. This could create liquidity problems for capital-intensive and heavily indebted companies, necessitating extensive grandfathering rules such as a continuation of depreciation allowances for 'old' capital and continuation of deductions for interest on 'old' debt. The more extensive the grandfathering, the smaller will be the efficiency gain from the cash flow tax.

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[32] To see this, suppose a taxpayer earns a capital income of 1 euro which is immediately taxed at the capital income tax rate t, leaving him with an after-tax income of $1-t$. If he saves this income, his wealth after one year will be $X=(1-t)(1+r(1-t))$, where r is the pre-tax interest rate. On the other hand, if the taxpayer can defer the tax on the initial income by one year, he can invest the full pre-tax income of 1 euro in the capital market during the year. He will then earn a net interest of $r(1-t)$ and end up with an amount of wealth equal to $Z= r(1-t)+1-t$ after payment of tax. His gain from the deferral of tax will therefore be $Z - X = t\,r(1-t)$. This gain is positive under an income tax where $t > 0$, but it is zero under a cash flow tax that effectively leaves the normal return to capital free of tax.

[33] The problems involved in the transition to cash flow taxation are carefully discussed by Zodrow (2002, 2003) and Bradford (2004).

Unanticipated tax rate changes occurring after the introduction of the cash flow tax will also generate windfall losses or gains. Moreover, a fully anticipated tax rate change could seriously disrupt the timing of investment. For example, if firms expect a future increase in the cash flow tax rate, they will postpone their investment to be able to deduct the investment expenditure against the higher future tax rate. Conversely, if they expect a future fall in the tax rate, firms will bring forward investment to take advantage of the expensing of investment against the higher current tax rate. Thus a cash flow tax with a time-varying tax rate may generate significant investment distortions and macroeconomic instability, as emphasized by Bradford (2004).

Another problem is that countries operating a foreign tax credit system may not be willing to recognize a cash flow tax as a tax eligible for foreign tax credit.

Despite the many theoretical virtues of cash flow taxation, introducing and operating a cash flow tax may thus meet with considerable practical difficulties. On the other hand, the recent Estonian experience reviewed in Box II.1 suggests that, at least in countries that do not have a long tradition of conventional income taxation and where the overall level of taxation is fairly low, some form of cash flow taxation may in fact be implementable.

Box II.1. The Estonian business tax experiment : Towards a neutral cash flow tax?

Since 2000 Estonia has undertaken a remarkable experiment in business taxation. From that year Estonia abolished her conventional corporate income tax, replacing it by a tax on corporate *distributions*. This distribution tax is levied on dividends and on certain other corporate expenses which could be seen as hidden dividends. These include fringe benefits not subject to personal income tax, loans to participators, non-business expenses and donations to charities above a given limit. The distribution tax is payable by all Estonian resident companies and by Estonian permanent establishments of foreign companies. To avoid cascading effects, a resident company with a 20 percent shareholding that receives dividends from a resident subsidiary gets a credit against its distribution tax liability for the distribution tax paid by the subsidiary. Corporations are not taxed on their capital gains unless these gains are distributed.

The distribution tax is levied on dividends paid to resident as well as non-resident shareholders. No further withholding tax is imposed on dividends paid to individual non-resident shareholders and to non-resident corporate shareholders controlling at least 20 per cent of the shares in the Estonian subsidiary. The tax rate on distributions is currently 24 per cent of the gross distribution, but this rate will be lowered to 22 per cent in 2006 and to 20 per cent from 2007.

The Estonian distribution tax comes close to a source-based cash flow tax. In fact, if the Estonian distribution tax had allowed a deduction for the firm's revenue from new share issues, making it a tax on *net* distributions, it would be equivalent to a so-called S-based cash flow tax, in the terminology of the Meade Committee (1978). As long as such a rent tax is not so high that it induces multinationals earning mobile rents to relocate their production, it will be neutral towards the firm's investment and financing distributions. The reason is that under a tax on net distributions the government implicitly participates as a passive shareholder in all the firm's transactions with a share corresponding to the tax rate. Thus, via the deduction for new share issues, the government effectively contributes a share of the firm's equity base corresponding to the share of the dividends that it subsequently taxes away.

For mature corporations which can satisfy all of their need for equity through retained earnings, a dividend tax like the Estonian distribution tax is obviously equivalent to an S-based cash flow tax on net distributions. For these firms the tax is therefore neutral (abstracting from internationally mobile rents), but for young and expanding firms that need injections of new equity a dividend tax does discourage investment. As mentioned, this non-neutrality of the Estonian distribution tax could be eliminated by allowing a deduction for new share issues.

For unincorporated businesses Estonia has also moved towards cash flow taxation. Thus sole proprietors are allowed an immediate deduction for all expenses for the acquisition of fixed and current assets. They are also entitled to open a special tax-free bank account in which they may keep funds for investment purposes. Any increase in the balance on such an account is deductible from taxable income (up to the amount of the firm's annual profit); any decrease is added to it. However, since the Estonian tax on unincorporated businesses allows a deduction for interest on business debt while at the same time allowing immediate expensing of investments in real assets, it tends to be overly generous compared to a consistent R-based cash flow tax. Indeed, the current Estonian tax rules for noncorporate firms tend to drive the (risk-adjusted) cost of capital down to the level of the after-tax interest rate whereas a neutral tax system would imply a cost of capital equal to the pre-tax interest rate.

Estonia's system of business taxation may be seen as an attempt to eliminate tax distortions to entrepreneurial investment and saving decisions. In line with this, the Estonian personal income tax exempts dividends from tax at the shareholder level. It also exempts interest received from credit institutions in any EU Member State or from Estonian branches of credit institutions residing outside the EU. On the other hand, since realized capital gains on shares are subject to the flat 24 per cent tax rate on personal income – corresponding to the tax rate on corporate distributions – one can also see the Estonian corporate tax system as an attempt to tax realized corporate equity income just once, at the same uniform rate as that applying to other income (of course, since the capital gains tax is deferred until the time of realization, the effective tax rate on accrued gains is lower than the statutory rate).

Estonia's rate of investment is very high, averaging more than 30 per cent of GDP in 2001-2003, but on the basis of time series data it is still too early to judge the extent to which the corporate tax reform in 2000 has contributed to the strong investment performance. Using a calibrated model of corporate investment based on Tobin's 'q-theory', Funke (2002) has estimated that the tax reform will raise the equipment capital stock of domestic Estonian companies by 6.1 per cent in the long run.

In a recent paper, Kari and Ylä-Liedenpohja (2005) have taken issue with the popular view that Estonia's zero corporate tax rate on retained profits makes the country a tax haven. They argue that although that feature of Estonia's tax system reduces the cost of capital when investment is financed out of intramarginal retained profits, the distribution tax does increase the 'entry' cost of capital when foreign direct investors consider establishing themselves in Estonia. According to the authors' estimates, the marginal cost of capital for direct investment into Estonia is roughly at the same level as the cost of capital for domestic investment in Finland.

Nevertheless, the zero tax rate on retentions does make Estonia vulnerable to tax avoidance strategies, as Michielse (2003) has pointed out. For example, an investor running an unincorporated business can borrow to finance the acquisition of an asset, deduct the interest on the borrowed funds as a business expense, accumulate the return to the asset within a corporation free of tax, and move abroad before selling the shares in the corporation to avoid Estonian capital gains tax.

Because it exempts retained earnings, the base of the Estonian distribution tax is more narrow than that of a conventional corporate income tax, but it still raises a non-negligible amount of revenue. Due to very generous transition rules during the phase-in of the new tax regime, the revenue in 2000 and 2001 was quite low, but over the 3-year period 2002-2004 the revenue from the distribution tax averaged 1.6 per cent of GDP. This is lower than the average for the EU-15, but it is interesting to note that while the revenue from the Estonian distribution tax amounted to 1.2 per cent of GDP in 2002, the revenue from the German corporation tax was only 1.0 per cent of GDP in that year.

The Estonian distribution tax has met with resistance from the European Union which considers it to be a withholding tax on dividends rather than a corporate income tax. According to the EU Parent-Subsidiary Directive, EU Member States are not allowed to impose withholding taxes on dividends paid from a subsidiary in one Member State to a parent company residing in another Member State. As part of the negotiated terms of accession to the EU, Estonia has therefore agreed to reform her corporate tax system from 2009 to conform to the Parent-Subsidiary Directive. At the moment, it is not clear what the content of such a reform will be. If

Estonia decides to exempt profit distributions to companies in other EU countries from distribution tax, it would trigger an issue under the EU's Code of Conduct for business taxation by creating a ring-fenced advantage for these companies. Hence Estonia may be forced to reintroduce a traditional corporation tax, including profit determination rules, complicated merger provisions, transfer pricing provisions, etc.

II.C.2. Taxing rents: An Allowance for Corporate Equity?

As an alternative to a cash flow tax, the Allowance for Corporate Equity (ACE) proposed by the Capital Taxes Group of the Institute for Fiscal Studies (1991) and by Devereux and Freeman (1991) may be a more realistic way of implementing a tax on pure rents, causing fewer transitional problems and ensuring greater conformity with current international tax law. Under the ACE system (option 6 in Table 1) companies are allowed to deduct an imputed normal return on their equity from the corporate income tax base, parallel to the deduction for interest on debt. In this way the ACE seeks to ensure neutrality between finance by debt and finance by equity. The ACE system may be combined with personal taxes on interest, dividends and capital gains, ensuring taxation of the normal return at the shareholder level.

One attractive feature of the ACE - originally pointed out by Boadway and Bruce (1984) - is that it offsets the investment distortions caused by deviations between true economic depreciation and depreciation for tax purposes. For example, if firms write down their assets at an accelerated pace, the current tax saving from accelerated depreciation will be offset by a fall in future rate-of-return allowances of equal present value, since accelerated depreciation reduces the book value of the assets to which future rates of return are imputed. In fact, regardless of the rate at which firms write down their assets in the tax accounts, the present value of the sum of the capital allowance and the ACE allowance will always equal the initial investment outlay, so the ACE system is equivalent to the immediate expensing of investment allowed under a cash flow tax.

Another attraction of the ACE is that the symmetric treatment of debt and equity eliminates the need for thin capitalization rules to protect the domestic tax base: since firms get a deduction for an imputed interest on their equity as well as for the interest on their debt, multinationals have no incentive to undercapitalize a subsidiary operating in a country with an ACE system.

The neutrality properties of the ACE system will depend on whether the imputed rate of return on equity is set at the 'right' level. In principle it is not necessary to include a risk premium in the imputed rate of return, provided the tax reduction stemming from the ACE allowance is a 'safe' cash flow from the viewpoint of the firm (see Bond and Devereux (1995)). This requires full loss offsets, including unlimited carry-forward of losses with interest. With limitations on loss offsets, the imputed return should include a risk premium, but in practice the tax authorities would not have the firm-specific information necessary to choose the 'correct' risk premium. Hence some distortion of the pattern of investment and risk taking would be unavoidable under incomplete loss offsets.[34]

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[34] In particular, many small businesses may be credit-constrained and may therefore have a higher cost of equity finance than large companies with easier access to capital markets, but in practice the deductible imputed cost of equity finance would probably have to be the same for all firms.

Like a cash flow tax, the ACE system is a tax on pure rents. Such a tax inevitably imposes a higher average tax rate on highly profitable firms than on less profitable firms (indeed, firms earning only normal returns go free of tax). In the context of an open economy where firms earn mobile rents, this may be a problematic feature of the ACE system if policy makers raise the corporate tax rate to offset the revenue loss caused by the introduction of the ACE allowance. In that case the transition to the ACE system will raise the relative and absolute tax burden on the most profitable firms, possibly inducing them to relocate abroad, and leaving the domestic economy with the less profitable (and hence presumably the less dynamic) firms, as pointed out by Bond (2000).

Moreover, in so far as transition to an ACE requires a rise in the statutory tax rate, it will increase the country's vulnerability to outward profit-shifting via transfer-pricing.

However, these are general points about all taxes on rents, and are not a particular weakness of the ACE system. Indeed, the ACE shares several strengths and weaknesses with other rent taxes such as the various cash flow taxes. On the positive side, both the ACE and the cash flow taxes eliminate distortions due to deviations between true economic depreciation and depreciation for tax purposes, and both types of taxes are in principle neutral towards corporate financing decisions. On the negative side, by exempting normal returns from tax, rent taxes tend to require higher statutory tax rates to secure the desired revenue. This is likely to deter inward investment by highly profitable multinationals and to provoke outward profit-shifting through transfer-pricing.

One important difference between the ACE and cash flow taxation is that anticipated tax rate changes may cause serious distortions to the timing of investment under the latter tax system, as we explained in the previous section. Introducing cash flow taxation is also likely to cause more significant transition problems. On the other hand, we noted that in practice it may be difficult to set the imputed cost of equity finance at the 'right' level under the ACE.

Interestingly, Croatia has tested an ACE in practice. The Croatian experience is reviewed in Box II.2.

Box II.2. The Croatian Experiment with an ACE

From 1994 to the beginning of 2001 Croatia experimented with an ACE in practice (see Rose and Wiswesser (1998) and Keen and King (2002)). During this period all corporate as well as non-corporate firms operating in Croatia were allowed to deduct an imputed return on their equity from taxable profits. The equity base for the current year was calculated as the equity at the start of the previous year plus retained earnings over the year plus any injection of new equity in the firm. The imputed rate of return to equity, denoted as 'protective interest' (PI), was equal to 5 per cent plus the rate of increase of industrial product prices. If taxable profits were negative, that tax loss could be carried forward for five years with interest added to it, at the PI rate. The taxable profit after deduction for the PI was taxed at 35 per cent.

During its short life, a number of criticisms were raised against the PI deduction under the Croation profit tax. First, it was argued that the PI deduction tended to favour capital-intensive over labour-intensive activities. However, this criticism fails to recognize that the ACE does not distort factor choices since it is in principle a non-distortionary tax on pure rents. A second criticism was that the PI deduction favoured large state-owned enterprises and previously state-owned enterprises with overvalued assets. But while overvaluation of the assets existing at the time of the introduction of the ACE does reduce tax revenue, it does not distort the subsequent investment and financing decisions of firms. A third concern was that the Croatian profits tax might not be considered a 'true' income tax by foreign governments so that foreign multinationals investing in Croatia might not be able to obtain a foreign tax credit from their home country for profits tax paid in Croatia. Yet in practice multinationals based in countries offering a foreign tax credit do not seem to have had any difficulties obtaining credit for their Croatian tax payments. A fourth complaint was that the Croation ACE system was complex. The main reason for this complexity was that the PI deduction was calculated month by month on the basis of the recorded monthly changes in the firm's equity base. This was done to minimize the incentive for a firm to time its transactions around balance-sheet dates so as to reduce its tax liability. A final objection to the Croatian PI deduction was that it generated a revenue loss. Keen and King (op. cit.) estimate that by 2000 the PI deduction may have cut business tax revenue in half, assuming that it did not generate any additional investment. However, they also point out that in practice the PI deduction must have generated additional investment. Moreover, if the PI deduction had not been granted, the Croatian government might have chosen a lower profits tax rate in order not to deter investment. For these reasons the revenue loss from the PI deduction was probably much less than 50 per cent.

Although most of the criticisms against the Croation ACE system appear to have been unfounded, the PI deduction was abolished from January 2001 as part of a wider set of changes to the taxation of businesses introduced by a new government.

No clear explanation was given for the decision to abolish the PI system, but a main motive seems to have been a desire to set a lower headline profit tax rate, perhaps coupled with a scepticism against the very novelty and uniqueness of the PI system. According to Keen and King (2002, p. 417), "..the abolition of the PI system did not reflect any irremovable technical flaw in the system; ….in many ways it worked rather well. In that sense, at least, the ACE passed its first practical test."

II.C.3 Taxing the full return to capital: The Comprehensive Business Income Tax

The ACE aims at tax neutrality between equity and debt by allowing a deduction for the (opportunity) cost of equity as well as debt. The so-called Comprehensive Business Income Tax (CBIT) proposed by the U.S. Treasury in 1992 also seeks to end the tax discrimination in favour of debt finance, but it does so by eliminating the deductibility of interest payments.[35] The aim of the CBIT proposal was to secure a single uniform tax on all corporate source income at a rate (roughly) equal to the top marginal personal tax rate on capital income. In this way the CBIT would in principle make personal taxes on corporate source income redundant, given the Treasury's goal of ending the classical double taxation of such income.

Given the practical problems of enforcing residence-based personal taxes on interest income and the prevalence of tax-exempt institutional investors investing in debt instruments, it seems realistic to assume that a large part of total interest income currently goes untaxed in most countries. By essentially introducing an interest income tax at source, the CBIT might therefore imply a significant increase in the cost of debt finance. Clearly this could act as a significant deterrent to debt-financed inward investment. On the other hand the broadness of the CBIT tax base would allow a relatively low corporate tax rate, for any given amount of revenue collected. The low statutory tax rate would imply a relatively low average effective tax rate on highly profitable companies. If the same amount of business tax revenue had to be collected under an ACE system, a higher statutory tax rate would be needed, so despite the non-deductibility of interest under the CBIT, this tax system might well be more attractive for high-yielding companies than the ACE. Since highly profitable companies are often high-tech multinationals generating significant positive externalities in the host country of investment, a small open economy may prefer the CBIT to the ACE because the former system may generate more inward investment with positive spillovers on the domestic economy.

On the other hand, the CBIT and the ACE may be seen as alternative methods of eliminating the classical double taxation of corporate equity income, so if the revenue from the CBIT is required to compensate for the loss of revenue from personal taxes on dividends and capital gains on shares, there is less scope for lowering the statutory corporate tax rate under this tax system. Still, since part of the shares in domestic companies are held by foreigners and by tax-exempt institutional investors, alleviating double taxation at the corporate level – as is done under the ACE – will almost surely involve a greater revenue loss than double tax relief at the domestic personal shareholder level.

The effects of a revenue-neutral transition from a classical corporate tax system to the CBIT may thus be summarized as follows: for low-yielding companies relying mostly on debt, the cost of capital could rise significantly, but for high-yielding companies relying mainly on equity the overall cost of capital would most likely fall.

However, the assumption of revenue-neutrality may be unrealistic: to prevent too many bankruptcies as a result of the transition to a CBIT with no deduction for interest payments, it would probably be necessary to apply a rather low corporate tax rate under this tax system. Since

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[35] The Comprehensive Business Income Tax is described and discussed in the report of the U.S. Treasury (1992). Bond (2000) discusses the pros and cons of the ACE versus the CBIT.

the CBIT proposal also abolishes personal taxes on shareholder income, the reform might lead to a non-negligible revenue loss, given the need for a low corporate tax rate.

II.C.4 Taxing the full return to capital: The dual income tax

As previsously noted, the theoretical case for a zero tax rate on the normal return to capital is not clear-cut, and most governments apparently prefer to maintain some amount of tax on normal returns, including returns accruing to foreigners. However, the international mobility of capital and the opportunities for international profit-shifting impose a tight constraint on the level of source-based corporate taxes that can be sustained in a small open economy in the absence of international tax coordination. Hence it will be optimal to keep the source-based corporate tax rate fairly low in a small open economy, especially in a 'peripheral' country where business does not benefit from significant agglomeration forces. For revenue and distributional reasons it will therefore typically be necessary to have a top marginal tax rate on labour income which is significantly higher than the corporate tax rate.

Some years ago the Nordic countries decided to make a virtue out of this necessity by introducing the so-called dual income tax (option 4 in Table 1). [36] The dual income tax imposes a low flat uniform tax rate on all income from capital (including corporate income) and applies a progressive tax schedule to labour income. In the pure version of the system, the tax rate in the lowest bracket of the schedule for labour income is aligned with the capital income tax rate so that only labour income above a certain level is taxed at a higher rate. Thus the dual income tax may also be described as a combination of a proportional tax on all income and a progressive surtax on high labour income. The flatness and uniformity of the capital income tax may be seen as an attempt to achieve the greatest possible degree of neutrality in a tax system that attempts to tax the full return to capital.

The cleanest version of the dual income tax is found in Norway where the double taxation of corporate source equity income is fully alleviated. [37] For dividends this is done through an imputation system, and for capital gains it is achieved through the 'RISK' system which allows the shareholder to write up the basis of his shares with (his proportionate amount of) the retained profit which has already been subjected to corporation tax. Thus the personal capital gains tax is imposed only on (realized) income which has not already been taxed at the corporate level. [38] Because all capital income is taxed uniformly and business income is taxed only once, the Norwegian dual income tax is in principle neutral towards investment and financing decisions.

However, since labour income is taxed more heavily than income from capital, the dual income tax gives the taxpayer an incentive to relabel his labour income as capital income. This option is mainly open to (controlling) owners of small firms who work in their own business. To

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[36] The rationale for the Nordic dual income tax is explored in Sørensen (1994, 2005b) and Nielsen and Sørensen (1997). Sijbren Cnossen's preferred version of the system is described in Cnossen (2000). Elements of dual income taxation have been introduced in several European countries; see the survey by Eggert and Genser (2004). Recently variants of a dual income tax for Germany have been proposed by Sinn (2003, ch. 6) and by the German Sachverständigenrat (see Spengel and Wiegard (2004)). Keuschnigg and Dietz (2005) propose a 'Swiss Dual Income Tax' which essentially combines the ACE with the new Norwegian shareholder income tax described below.

[37] From 2006 this will no longer be the case as a result of the recent Norwegian tax reform described below.

[38] Interestingly, a system similar to the Norwegian RISK regime was proposed already in 1966 in the Canadian Carter Report on the integration of corporate and personal taxes.

prevent such income shifting, the Norwegian tax rules require that the income of the self-employed and of 'active' owners of corporations be split into a capital income component and a labour income component. The capital income component is calculated as an imputed return on the value of the business assets in the firm's tax accounts. The residual business profit is then taxed as labour inome (up to a certain ceiling beyond which the profit is again categorized as capital income).[39]

Since the capital income tax is flat and uniform across all taxpayers, the dual income tax allows taxes on corporate source income to be collected as withholding taxes at the corporate level, as under the Comprehensive Business Income Tax. In practice, the Nordic countries reduce withholding taxes on interest and dividends paid to foreign residents in accordance with bilateral double tax treaties.

To make the enforcement of tax on interest income more effective in an open economy context, Cnossen (2000) has proposed that the current dual income tax be combined with a withholding tax on interest income paid out to foreign (personal and corporate) investors, levied at the same rate as that applying to all other domestic-source capital income. This would move the dual income tax system closer to the source-based CBIT (which is why the two tax systems are placed in the same box in Table 1). While the Cnossen proposal would reduce the current tax advantage to debt finance (arising from ineffective enforcement of tax on interest income), it would for the same reason increase the cost of debt finance and could potentially lead to a capital flight if implemented unilaterally by a small open economy. The discouraging German experience with a withholding tax on interest in the early 1990s suggests that it is very difficult for a single country to impose even a low withholding tax on interest at source.

As noted above, a dual income tax requires a system of mandatory income splitting for small firms. In Norway this system has turned out to work reasonably well for the self-employed, but not for so-called active owners of small companies. A shareholder is deemed to be 'active' and hence liable to income splitting if he carries out some minimum amount of work in the company and controls at least two thirds of the shares (alone or together with his closest relatives). In practice it has turned out to be quite easy to avoid mandatory income splitting by inviting 'passive' owners into the company. In this way many Norwegian owner-managers have been able to have all of their income taxed at the low capital income tax rate even when a substantial part of the income must realistically be considered labour income. Indeed, the number of small companies subject to mandatory income splitting has been steadily falling since the introduction of the dual income tax, so this part of the Norwegian tax system has turned out to be its Achilles heel.

Because of these problems with the income splitting system, the Norwegian parliament has recently passed a tax reform bill to take effect from 2006, following recommendations from an expert committee. The reform will replace the problematic income splitting system for 'active' shareholders by a so-called shareholder income tax (in Norwegian: 'aksjonærmodellen'). This is a personal residence-based tax levied on that part of the taxpayer's realized income from shares which exceeds an imputed rate of interest on the basis of his shares. As described in Sørensen (2005a), the shareholder income tax will in principle be neutral, since it exempts the normal

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[39] The problems of income splitting under the dual income tax are discussed in more detail in Hagen and Sørensen (1998) and Sørensen (2005b).

return from tax. Shareholder income in excess of the imputed normal return is supposed to be taxed as ordinary capital income. At the margin, the total corporate and personal tax burden on corporate equity income will then come close to the top marginal tax rate on labour income. Hence corporate owner-managers will not gain much by transforming labour income into dividends and capital gains, allowing the abolition of the mandatory income splitting system for active shareholders.[40]

To avoid discrimination against investment in foreign shares, the rate-of-return allowance under the shareholder income tax will be granted to holders of foreign as well as Norwegian shares. Compared to the present situation where no double tax relief is offered to holders of foreign shares, the rate-of-return-allowance will give Norwegian taxpayers an incentive to report their foreign shareholdings.

It remains to be seen whether the new Norwegian shareholder income tax will provide a satisfactory solution to the problem of income shifting under the dual income tax. However, it should be noted that this problem is not specific to the dual income tax. In most OECD countries the existence of social security taxes implies that the marginal effective tax rate on labour income often exceeds the marginal tax rate on capital income by a considerable margin. In all such cases taxpayers will have an incentive to try to relabel labour income as capital income.

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[40] An alternative would be to tax shareholder income in excess of the imputed rate of return as labour income and to grant a credit for the underlying corporation tax already paid. This would completely eliminate any gain from income shifting, as pointed out in Sørensen (2005b).

II. D. SUMMING UP AND COMPARING
ALTERNATIVE BLUEPRINTS FOR REFORM

In the previous sections we have tried to provide a balanced overview of the pros and cons relating to a number of proposals for fundamental corporate tax reform that have been prominent in the international tax policy debate in recent decades. In Table 2 below we attempt to summarize how the various blueprints for reform address the concerns of policy makers, that is, the extent to which they eliminate or reduce the most important distortions caused by existing corporate tax systems.

In principle, the ACE, the CBIT, the dual income tax (DIT), the residence-based shareholder tax and the different variants of the cash flow tax all eliminate the tax distortions to the choice between debt and equity and between new equity and retained earnings. The ACE and the cash flow tax do so by exempting the normal return to capital from tax, whether it takes the form of interest on debt or whether it accrues as a return to corporate equity. By contrast, the CBIT and the DIT (in the variant proposed by Cnossen (2000)) achieve financial neutrality by taxing all returns to debt and equity at the corporate level and at the same uniform rate, and the residence-based shareholder tax eliminates the corporate tax distortion to financial choices by simply abolishing the corporation tax.

Proponents of the CBIT and the cash flow tax have presented these tax systems as blueprints for a general business tax, to be applied to corporate and non-corporate firms alike. Furthermore, although the ACE was originally proposed as a model for corporate tax reform, there is no reason why it could not be extended to all types of firms. Indeed, under the Croatian ACE non-corporate firms could opt for the equity allowance. When applied across the board, the CBIT, the cash flow tax and the ACE thus ensure tax neutrality with regard to the choice of organizational form.[41] The DIT also strives to achieve neutrality between the corporate and non-corporate sector by alleviating the double taxation of corporate equity income and (under current Norwegian rules) by subjecting companies with 'active' owners to tax rules similar to those applying to proprietorships and partnerships. However, since companies with 'passive' owners are treated differently from those with 'active' owners, the DIT does not achieve full tax neutrality across different types of firms, as indicated by the asterisk in Table 2.[42]

Once companies have made a decision on their international location, the ACE and the cash flow tax ensure that decisions regarding the scale of investment are left undistorted by taxation. The reason is that both types of tax imply a zero marginal effective tax rate, driving no wedge between the international cost of finance[43] and the required pre-tax return on investment. Hence the statement in Table 2 that these tax systems eliminate the distortion to domestic real investment. By contrast, source-based taxes that include the normal return to capital

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[41] The benefits from neutrality in this dimension may be non-negligible. For example, using data for the period 1959-1986, Gordon and Mackie-Mason (1997) estimated that the deadweight loss from tax distortions to the choice of organizational form in the US amounted to 16 percent of total business tax revenue.

[42] This will continue to be true under the new Norwegian DIT to take effect from 2006. Under this system the owners of companies will become subject to the new shareholder income tax, whereas proprietors will continue to be taxed under a streamlined version of the current income splitting system.

[43] The international cost of finance is the pre-tax world interest rate on 'safe' assets (the opportunity cost of capital from the viewpoint of a small open economy), appropriately adjusted for a risk premium on business investment (which will generally differ across debt and equity).

in the tax base will cause the required pre-tax rate of return to deviate from the international cost of finance. Residence-based taxes will also be distortionary unless depreciation for tax purposes happens by chance to equal the true economic depreciation of the asset. For these reasons only the ACE and the cash flow tax are claimed to be neutral towards domestic investment in Table 2.

In so far as a consistent residence-based shareholder tax can be administered (involving full imputation of domestic and foreign source corporate income to individual shareholders), it will be neutral towards the international location of corporate investment, as long as shareholders maintain their residence. Thus the international tax policy game would change from the current fierce competition to attract highly mobile corporate capital to a competition to attract the less mobile individual shareholders. However, we also noted that implementing a residence-based system of full imputation and doing away with the corporation tax would most likely meet with insurmountable practical difficulties. A consistent residence-based corporate income tax with an unlimited foreign tax credit is arguably easier to implement, but it is vulnerable to the fact that corporate headquarters can be quite mobile. In practice this reform option is therefore unlikely to ensure full neutrality with regard to the international location of investment, as suggested by the asterisk in Table 2.

**Table 2. Distortions addressed by
alternative proposals for corporate tax reform**

Distortion to	Reform proposal addressing distortion
Choice between debt and equity	ACE, Cash flow tax, CBIT, DIT, Residence-based shareholder tax
Choice between new equity and retained earnings	ACE, Cash flow tax, CBIT, DIT, Residence-based shareholder tax
Choice of organizational form	ACE, Cash flow tax, CBIT, DIT*, Residence-based shareholder tax
Domestic real investment	ACE, Cash flow tax
International location of real investment	Residence-based shareholder tax, Residence-based corporate income tax*, Destination-based cash flow tax
International location of tax base	Residence-based shareholder tax, Residence-based corporate income tax*, VAT-type destination-based cash flow tax

* This reform proposal only partially alleviates the distortion mentioned. ACE = Allowance for Corporate Equity; CBIT = Comprehensive Business Income Tax; DIT = Dual Income Tax.

In principle, a destination-based cash flow tax ensures neutrality towards location decisions, but as we explained in section II.B.3, this tax regime involves special transition problems relating to residents with net foreign assets or liabilities.

To the extent that it can be implemented, a consistent residence-based tax will solve the problem of international profit-shifting via transfer-pricing and thin capitalization, since companies and/or their owners will gain nothing from shifting corporate profit from domestic to foreign entities within a multinational group. But again, enforcing the residence principle is a daunting task. In comparison, a destination-based cash flow tax of the VAT type could surely be administered – after all, most OECD countries are already running a VAT system – but it does raise transition problems as well as the problem that anticipated tax rate changes might seriously distort the timing of investment.

Because they treat debt and equity finance alike, the ACE, the cash flow tax, the CBIT and the source-based DIT proposed by Cnossen (2000) all eliminate the problem of international profit-shifting though thin capitalization. However, the standard transfer-pricing problem remains with all of these systems, and it is likely to be exacerbated under the ACE and under the cash flow tax, because these tax regimes will tend to require a higher statutory tax rate, given that tax is levied only on rents.

The basic message from this discussion is that governments are faced with trade-offs in multiple dimensions. For example, according to Table 2 the move to a destination-based cash flow tax of the VAT type – that is, a tax on domestic consumption out of non-wage income - would in principle eliminate all the important distortions on which policy-makers have tended to focus. However, this is achieved only through a radical departure from current tax practices, i.e., by giving up the taxation of normal returns to capital[44] and the taxation of domestic-source income accruing to foreigners.

As another example, while rent taxes like the ACE and the cash flow tax achieve neutrality in many important dimensions, they also tend to increase the transfer-pricing problem by making it harder to keep the statutory tax rate low. And while the CBIT and the source-based DIT do in principle allow a low statutory rate because these taxes are levied on a broad base, in practice a source-based tax on the normal return (especially a source tax on interest) is likely to exacerbate the problem of capital flight.

From a practical administrative viewpoint, the ACE and the DIT seem easier to implement than the other reform options considered here. Indeed, both of these tax systems have already been tested in practice. The fundamental policy decision to make when choosing between these two alternatives is whether a business tax should tax the normal return to capital or not.

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[44] In principle, of course, it would still be possible to combine a business tax on pure profits with a personal income tax on interest, dividends and capital gains to ensure some amount of tax on normal returns.

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Figure 1. Statutory Corporation Tax Rates 1982 and 2004
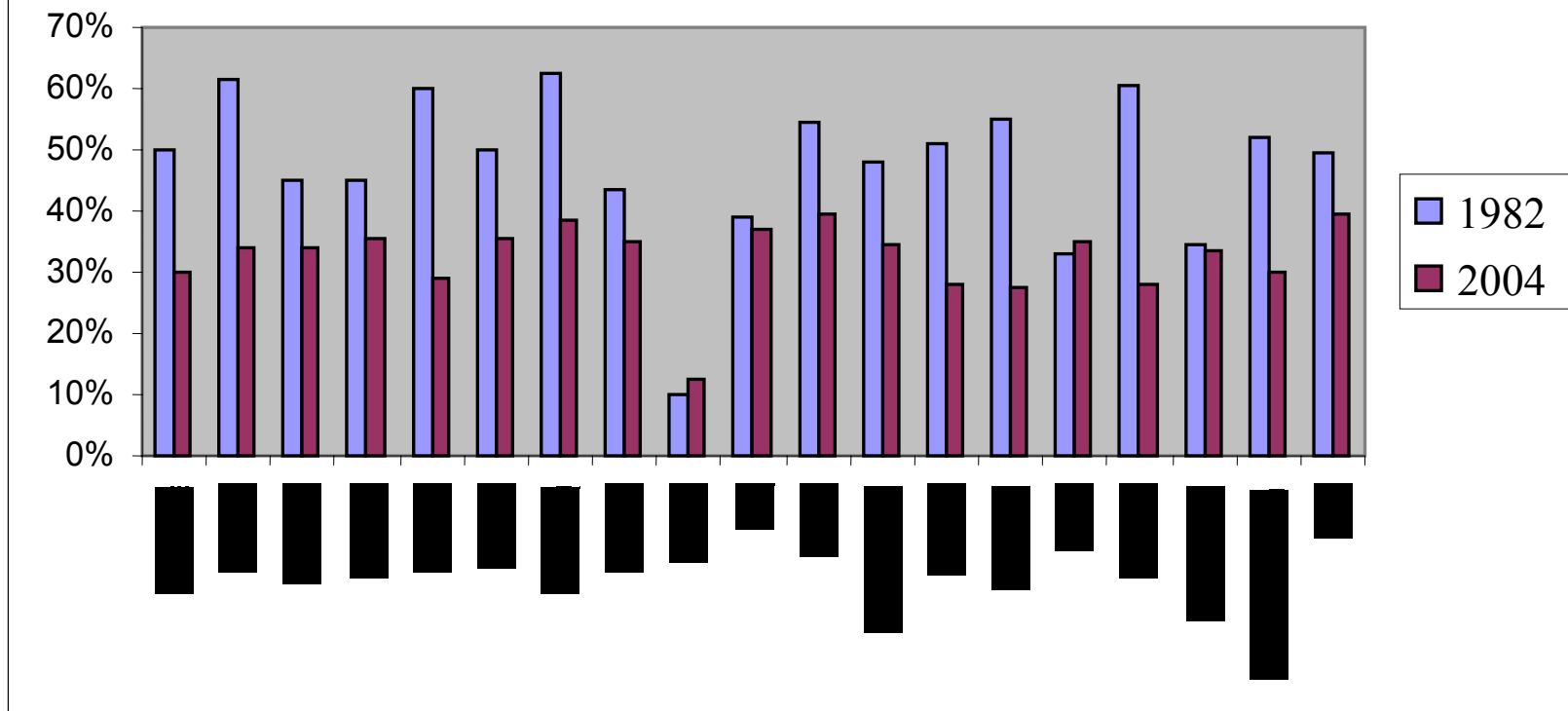
Notes: For countries using different tax rates, the manufacturing rate is chosen. Local taxes (or the average across regions) are included where they exist. Any supplementary taxes are included only if they apply generally, rather than only under particular circumstances. Data for Denmark and Luxembourg are missing.
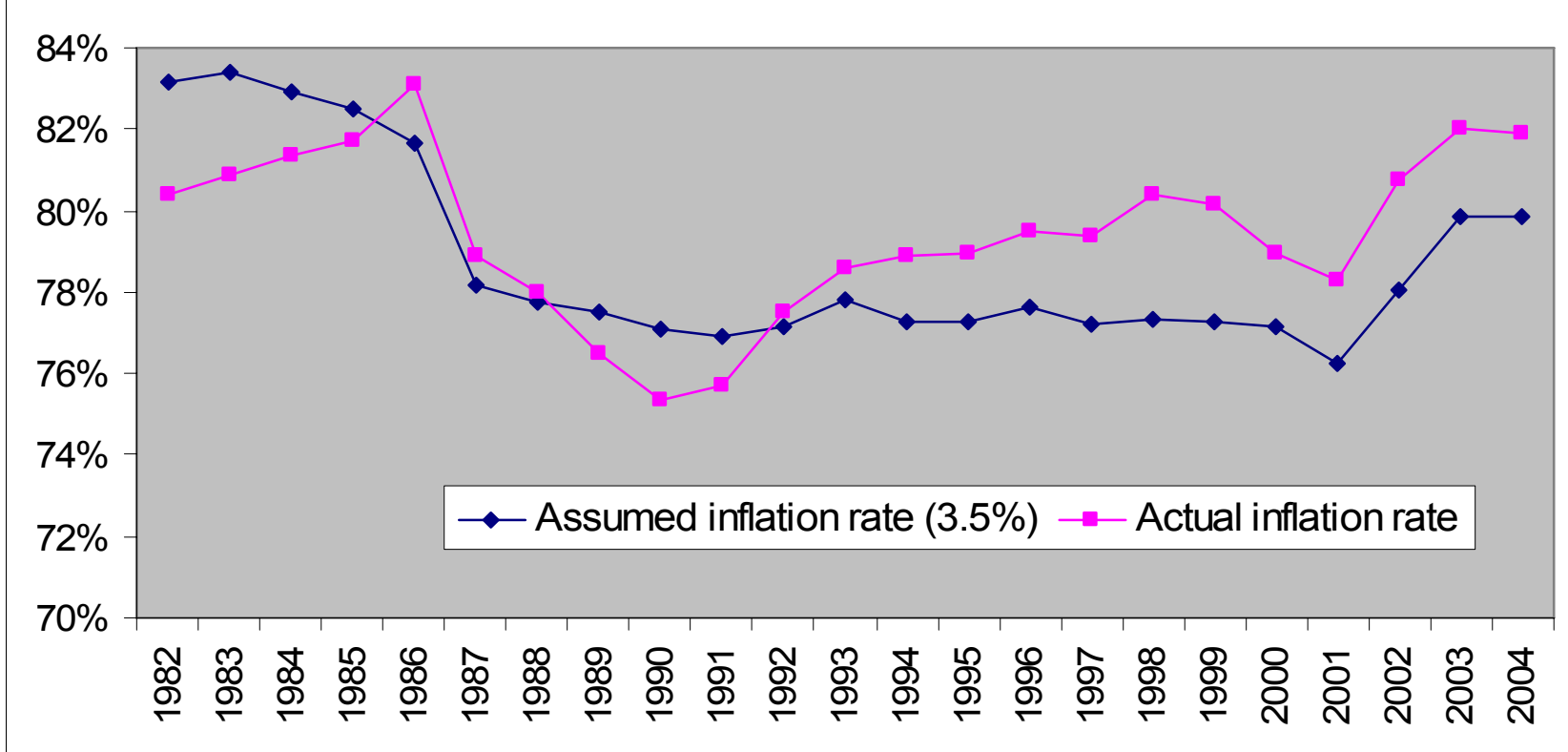
Figure 2. Average Statutory Corporation Tax Rates
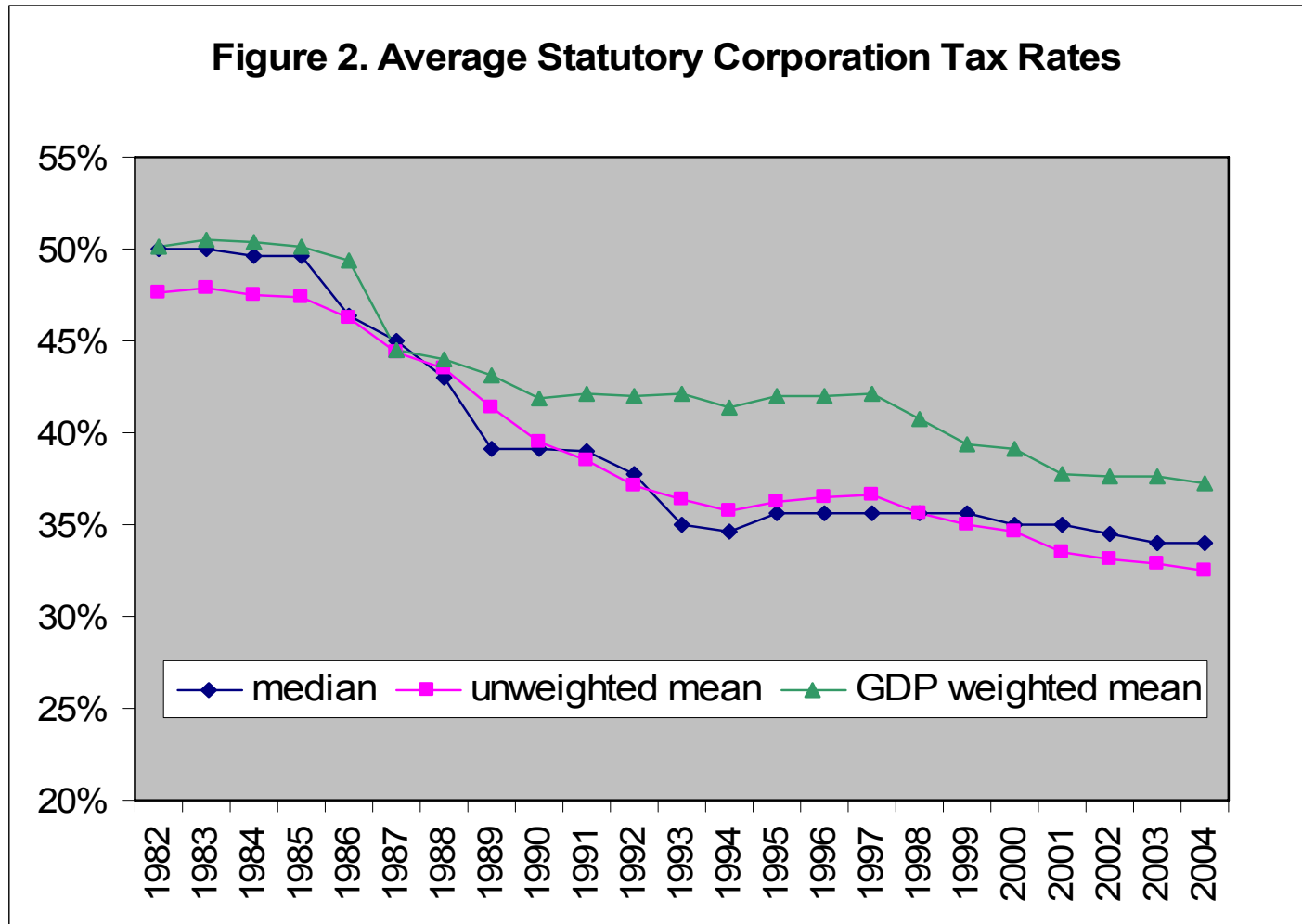
Notes: Statutory tax rate defined as in figure 1. Average weighted by GDP in US$. Denmark and Luxembourg have been excluded from the average in every year due to missing data in some years.

Figure 3. PDV of Depreciation Allowances
1982 and 2004
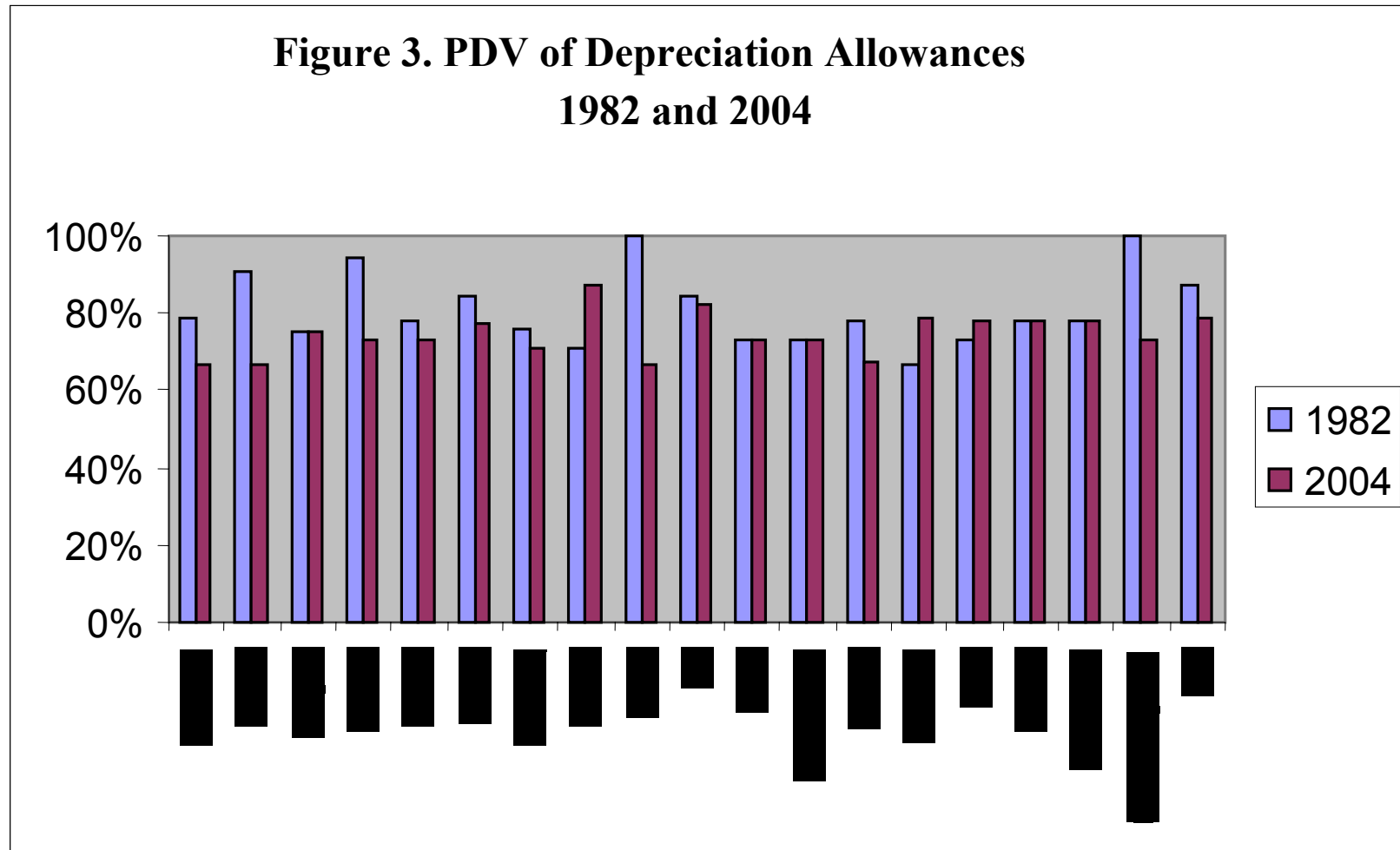
Notes :The PDV of allowances is calculated for an investment in plant and machinery. Special first year allowances are included if applicable. Where switching between straight-line and reducing balance methods is allowed, such switching is assumed at the optimal point. The assumed real discount rate is 10%, the assumed rate of inflation is 3.5%. Data for Denmark and Luxembourg are missing.

Figure 4. Weighted Average PDV of Depreciation Allowances

Notes: Allowances defined as in figure 3, except for the second series which is based on actual inflation rates (implying static expectations), rather than an assumed fixed rate of 3.5%. Average weighted by GDP in US$. Denmark and Luxembourg have been excluded from the average in every year due to missing data in some years.
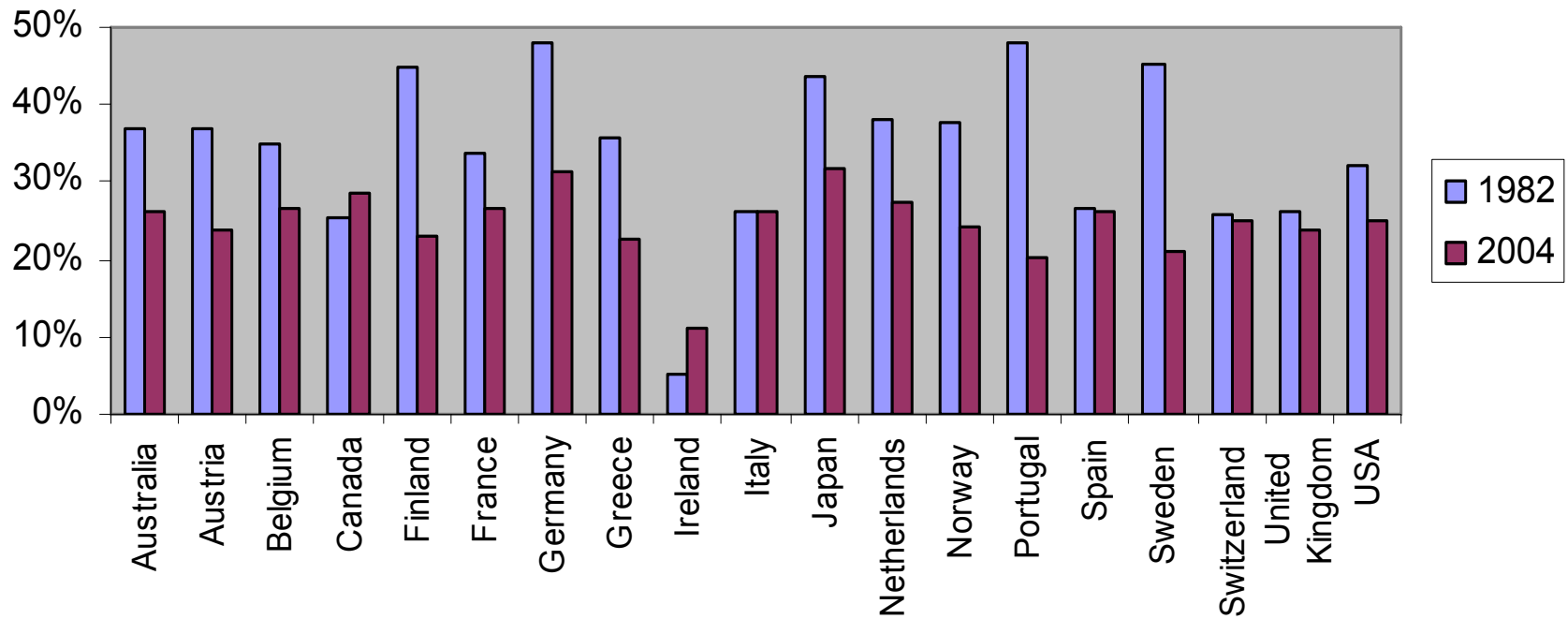
Figure 5. Effective Marginal Tax Rates 1982 and 2004
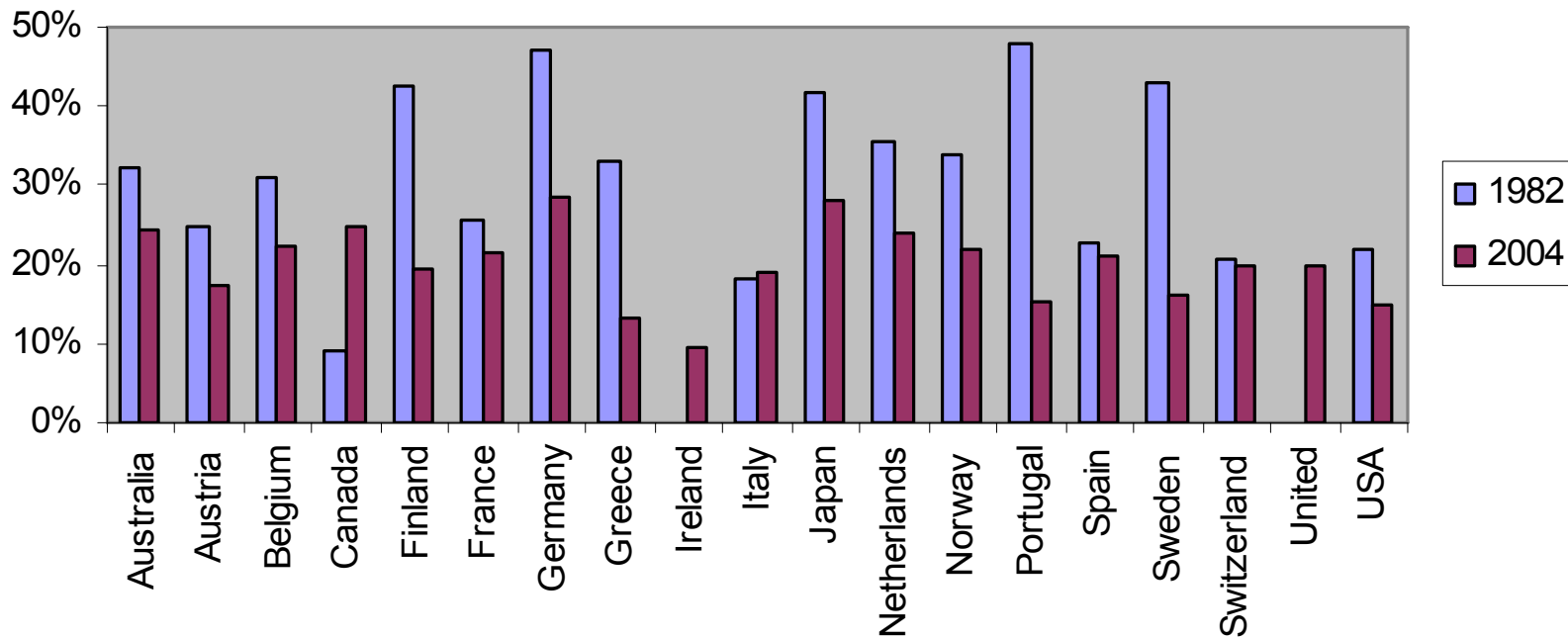
Notes: Calculations based on a hypothetical investment for one period in plant and machinery, financed by equity or retained earnings (but not debt). Taxation at the shareholder level is not included. The project is expected to break even, i.e. there is no economic rent. Other assumptions: real discount rate: 10%, inflation rate: 3.5%, depreciation rate: 12.25%. Data for Denmark and Luxembourg are missing.

Figure 6. Weighted Average Effective Marginal Tax Rates
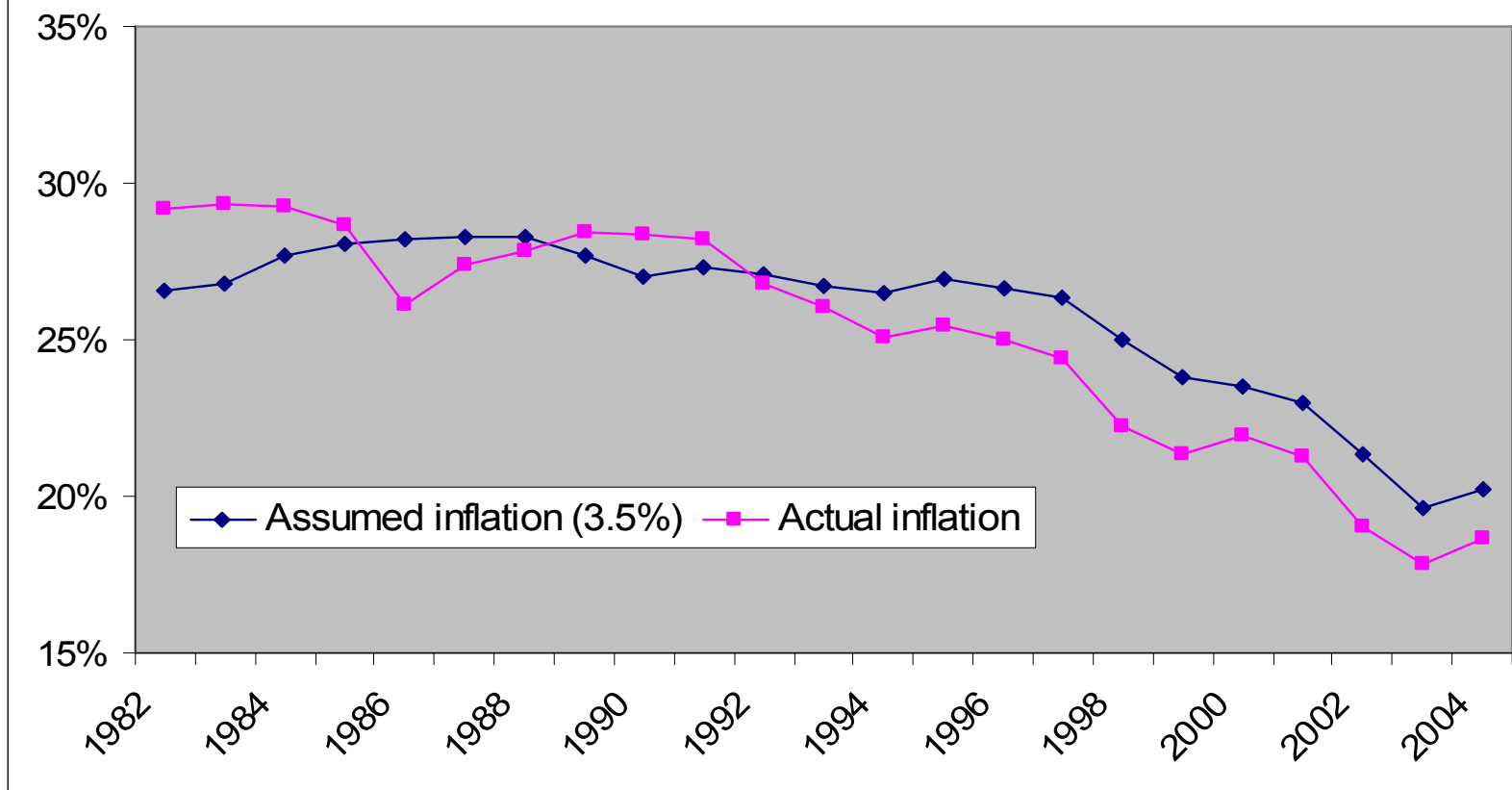
Notes: Effective marginal tax rate defined as in figure 5, except for the second series which is based on actual inflation rates (implying static expectations), rather than an assumed fixed rate of 3.5%. Average weighted by GDP in US$. Denmark and Luxembourg have been excluded from the average in every year due to missing data in some years.

**Figure 7. Effective Average Tax Rates 1982 and 2004**

Notes: Calculations based on a hypothetical investment for one period in plant and machinery, financed by equity or retained earnings (but not debt). Taxation at the shareholder level is not included. The expected rate of economic profits earned is 10% (implying a financial return, p, of 20%). Other assumptions: real discount rate: 10%, inflation rate: 3.5%, depreciation rate: 12.25%. Data for Denmark and Luxembourg are missing.

**Figure 8. Weighted Average Effective Average Tax Rates**
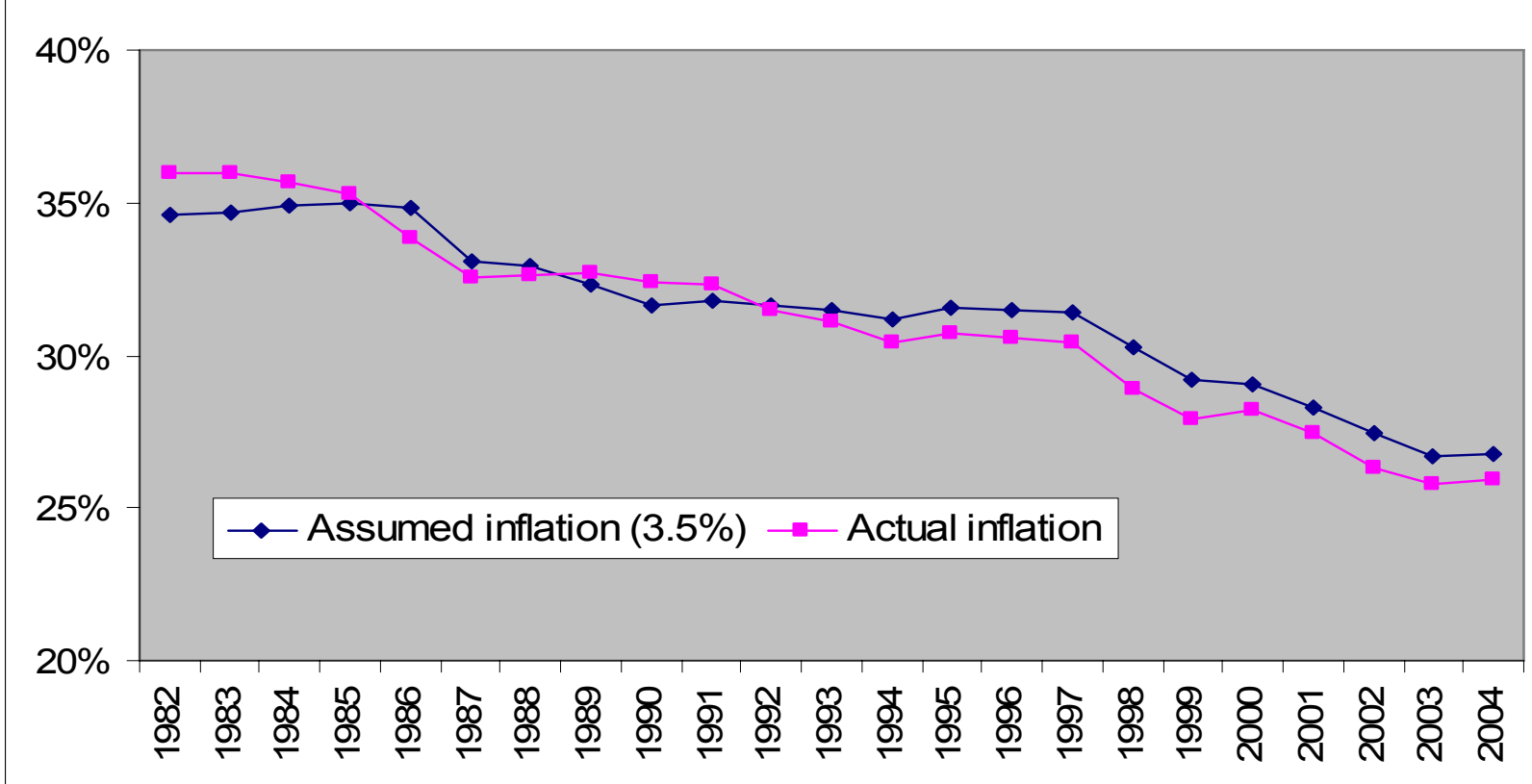
Notes: Effective average tax rate defined as in figure 7, except for the second series which is based on actual inflation rates (implying static expectations), rather than an assumed fixed rate of 3.5%. Average weighted by GDP in US$. Denmark and Luxembourg have been excluded from the average in every year due to missing data in some years.

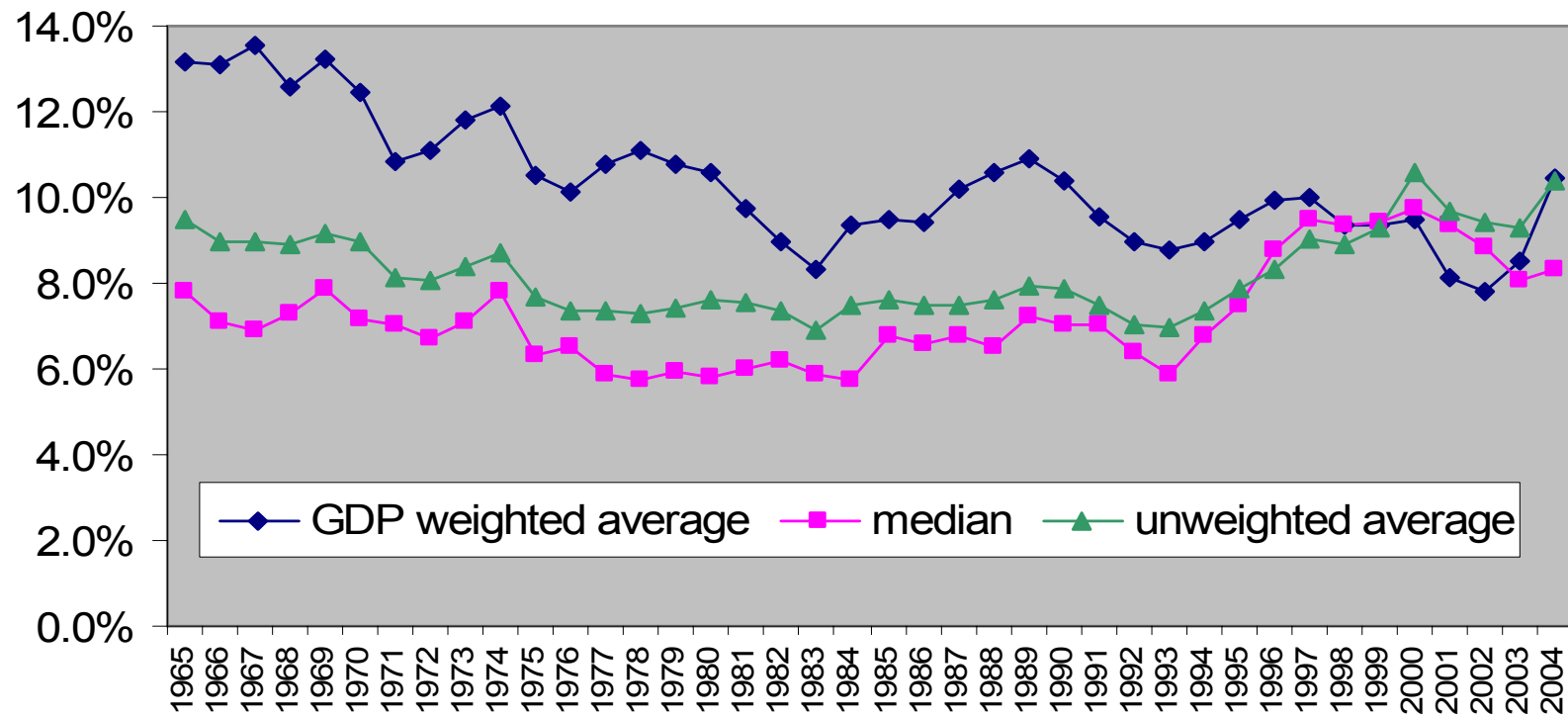# Figure 9. Corporation Tax Revenues 1965-2004 (% of GDP)
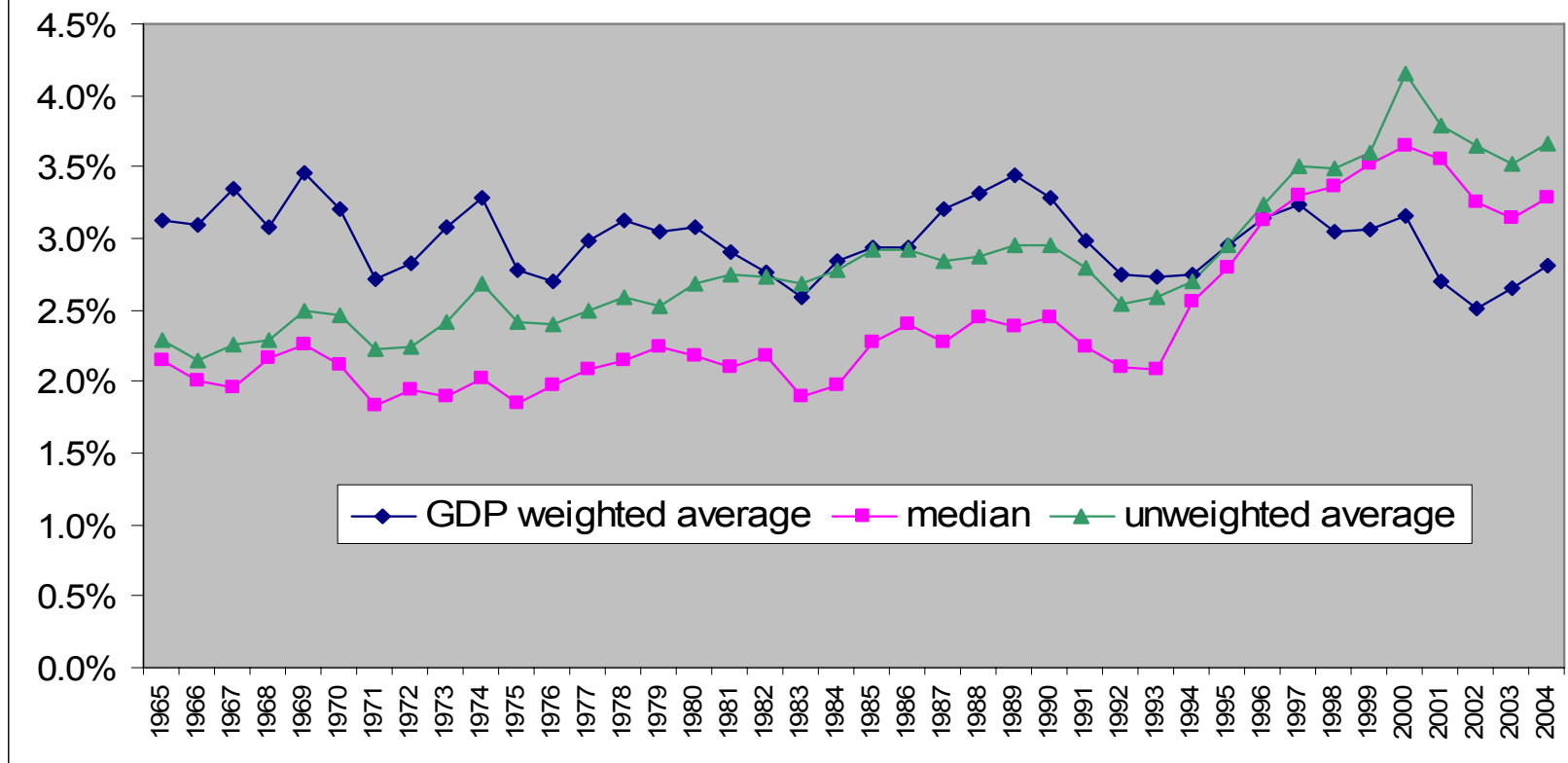
Notes: Average weighted by GDP in US$. Portugal has been excluded from the average in every year due to missing data in some years. All taxes levied on profits and capital gains of corporations are included. Source: OECD.

Figure 10. Corporation Tax Revenue (% of GDP)
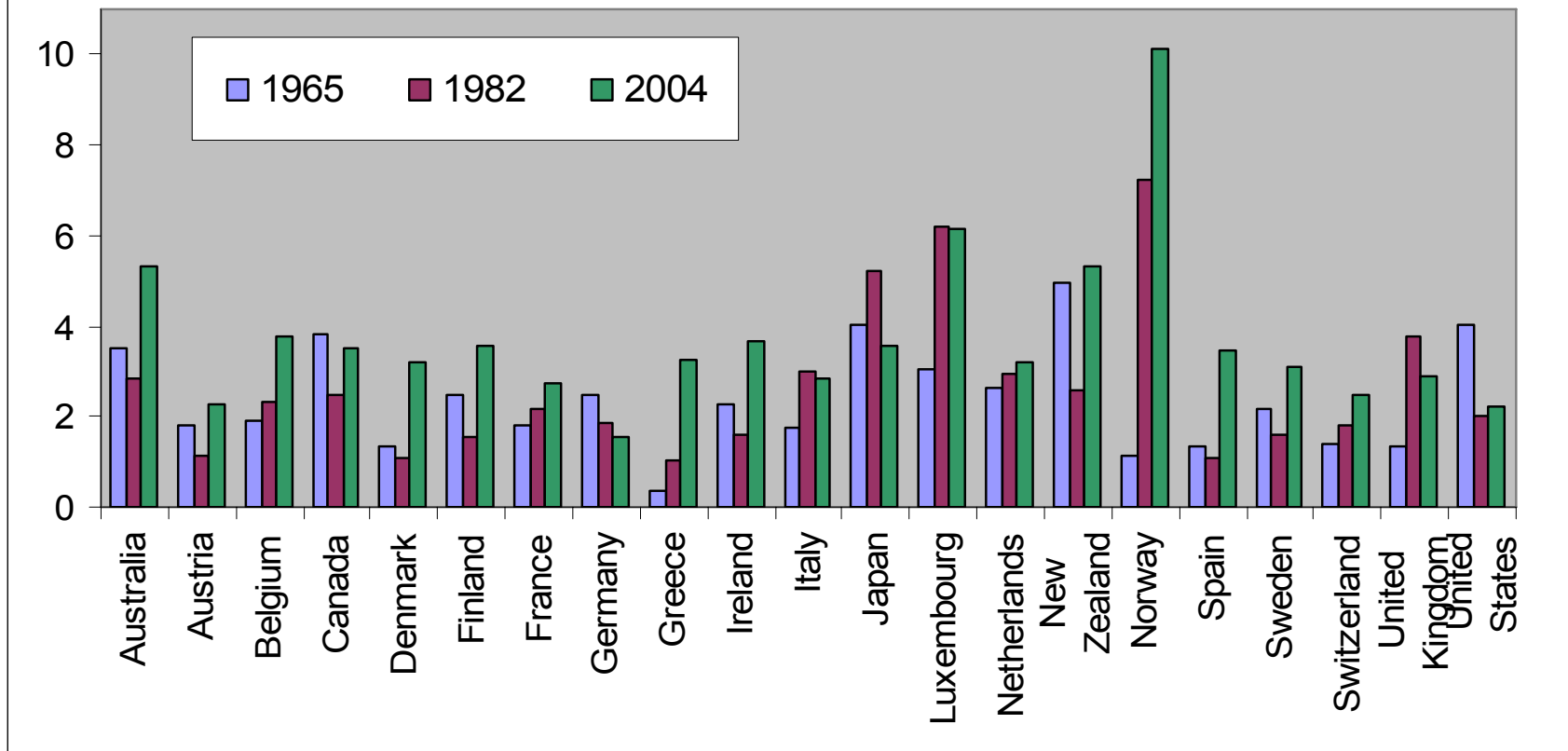
Notes: All taxes levied on profits and capital gains of corporations are included. Source: OECD. Data for Portugal are missing.

Figure 11. Total Corporation Tax Revenue 1965-2004 (% of Total Tax Revenue)

Notes: Average weighted by GDP in US$. Portugal has been excluded from the average in every year due to missing data in some years. All taxes levied on profits and capital gains of corporations are included. Source: OECD.