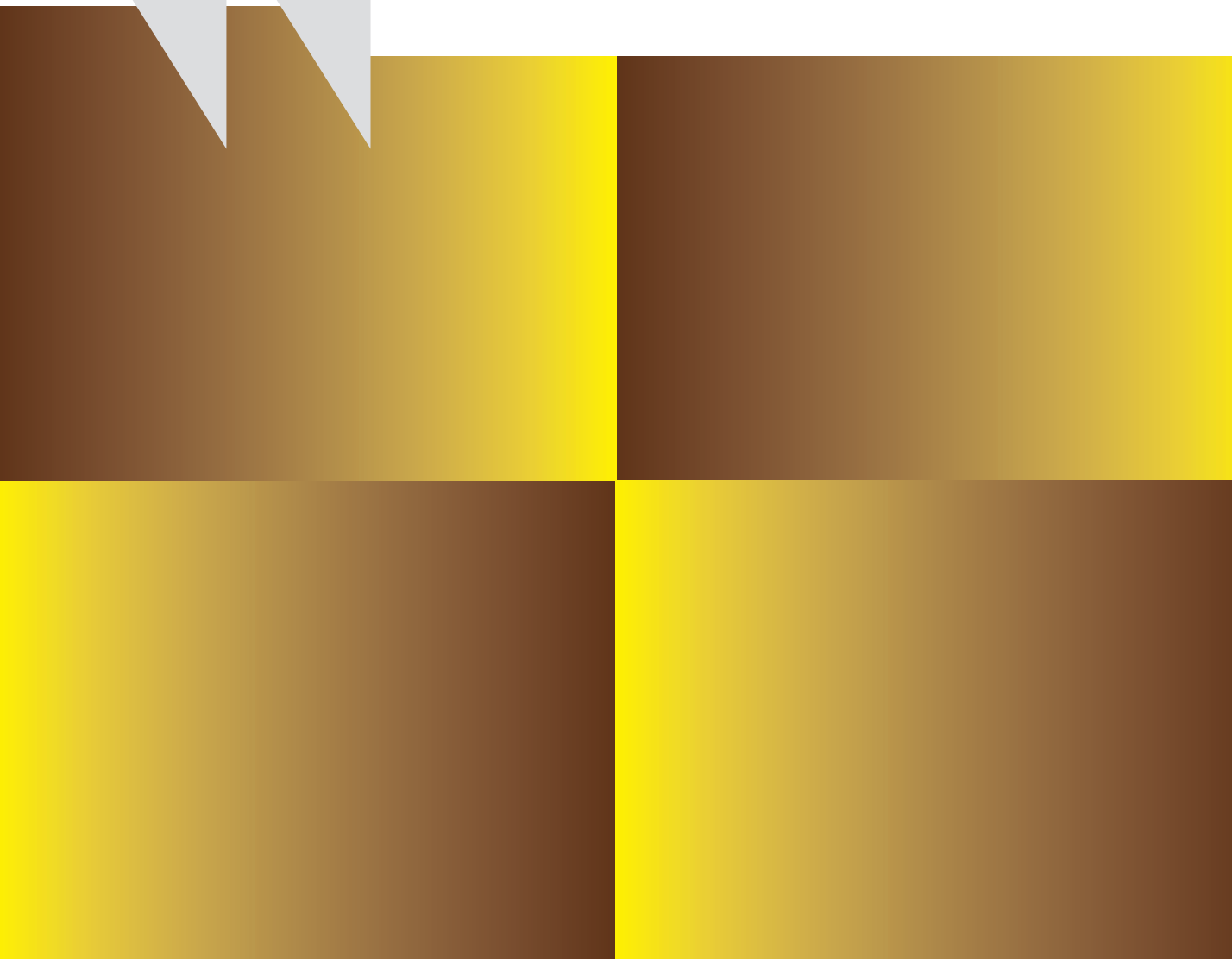
OECD Tax Policy Studies

Fundamental Reform of Corporate Income Tax



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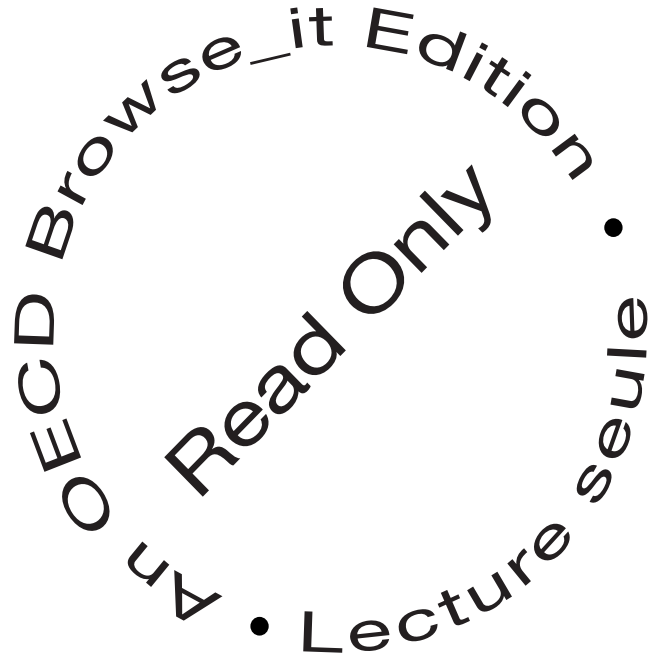

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Fundamental Reform of Corporate Income Tax

No. 16

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Foreword

This Report analyses fundamental reforms of corporate income tax systems in OECD countries. Corporate income tax reform has been on the political agenda in most OECD countries for many years as policy makers are concerned about whether they can maintain their current levels of corporate income tax revenues and how they can create a more attractive investment climate for domestic and foreign investors. In addition, governments are concerned about the distortions induced by their corporate income tax system and are looking for ways to reduce corporate income tax complexity.

This Report presents the recent trends in the taxation of corporate income in OECD countries and reviews the reasons why countries would want to tax corporate income. It also discusses the main drivers of corporate income tax reform in OECD countries. This analysis focuses on corporate tax-induced distortions under current corporate income tax systems from a domestic and international point of view. The Report also considers tax revenue and tax complexity issues.

Governments can fundamentally reform their corporate income tax systems in different ways. If governments decide to continue to tax corporate income, they might consider implementing a full imputation system, a corporate allowance for corporate equity (or capital) tax system, a shareholder allowance for corporate equity tax system, an allowance for shareholder equity tax system or a comprehensive business income tax system. These alternative corporate income tax systems are presented in this Report.

Instead of taxing corporate income, governments might implement a corporate cash-flow tax, which is sometimes referred to as a corporate tax of the consumption type. This Report discusses the different corporate cash-flow tax bases and analyses their implications with respect to efficiency, tax revenues and tax complexity. The taxation of financial services and transitional corporate cash-flow tax reform issues are also discussed. The destination-based corporate cash-flow tax system and the origin-based corporate cash-flow tax system (the Hall-Rabushka flat tax, the Bradford X-tax, and Zodrow and Mc Lure's two-tier progressive rate cash-flow tax) are presented in detail.

In addition to the theoretical analysis, this Report reviews the country experiences with fundamental reform of the corporate income tax. The Report presents the allowance for corporate equity tax system in Belgium and the allowance for shareholder equity tax system in Norway. The different corporate cash-flow taxes in the OECD are presented as well.

This study has been prepared in the OECD Secretariat by Bert Brys, with the assistance of Erik Vassnes. The Report draws on a study of "The corporate income tax: international trends and options for fundamental reform", which was prepared by Michael Devereux and Peter Birch Sørensen for the OECD. This study also draws on input from Delegates to the Working Party No. 2 on Tax Policy Analysis and Tax Statistics of the Committee on Fiscal Affairs.

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ISBN 978-92-64-03811-0
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Executive Summary

This Report analyses fundamental reforms of corporate income tax systems in OECD countries. Fundamental corporate income tax reform goes beyond the ongoing marginal corporate tax reforms, which consist of rate reductions and corporate base broadening, and centres around four major policy concerns. These policy concerns are reflected by the following four questions: How can countries maintain their current levels of corporate tax revenue? How can countries maintain or create an attractive investment climate? How can countries reduce the (mainly financial) tax-induced distortions? And how can countries reduce the increasing tax complexity?

Chapter 1 of this Report presents the trends in the taxation of corporate income in OECD countries. The data shows that corporate tax rates have been declining during the last decades. Larger-sized OECD countries continue to levy corporate taxes at higher rates than the smaller-sized OECD member countries. However, despite the strong reduction in statutory corporate tax rates, corporate tax revenues have kept pace with – or even exceeded – the growth in GDP and the growth in revenues from other taxes in many OECD countries. This might partly have been caused by the broadening of corporate tax bases, for instance through the provision of less generous tax depreciation allowances. Corporate tax rates will probably continue to decrease in the near future. However, whether it will be possible to further compensate these rate reductions by additional base broadening measures remains to be seen.

The reasons for levying a corporate tax are reviewed in Chapter 2. The analysis indicates that no strong case can be made for the exemption from tax of the return on capital income – either the normal return or the economic rents – at the corporate or personal level. In fact, there are good reasons to tax capital income at the corporate level. The main reason for imposing a corporate tax is that the tax plays an important withholding function, acting as a "backstop" to the personal income tax. The corporate tax might be needed to avoid excessive income shifting between labour income and capital income. The corporate tax also acts as a withholding tax on equity income earned by non-resident shareholders, which might otherwise escape taxation in the source country. Moreover, governments might levy a corporate tax because firms earn location-specific rents and/or because capital is not perfectly mobile. The analysis in Chapter 2 also discusses different factors that might influence the "optimal" mix between source-based corporate income taxes and residence-based personal capital income taxes.

Governments can implement either a corporate income tax or a corporate cash-flow tax. The latter might be referred to as a consumption type of corporate tax. Chapter 3 reviews the fundamental differences between income-based and consumption-based taxation. It is demonstrated that the immediate deduction of the investment outlays from the corporate cash-flow tax base exempts the normal return from corporate tax. Only

economic rents are effectively taxed under a corporate cash-flow tax (tax expenditure method). This chapter also discusses the different tax accounting systems (accrual accounting, realisation accounting and cash-basis accounting), which are at the centre of the discussion on fundamental corporate income tax reform.

The main drivers of corporate income tax reform are discussed in Chapter 4. The analysis focuses on the tax-induced distortions under current corporate income tax systems from a domestic and international tax point of view. The corporate income tax is likely to distort the total amount of investment and the type of investment projects that are undertaken, the corporate sources of finance and uses of profits, the location of the corporate tax base, the choice of a business's legal form and the tax might have an impact on corporate mergers and acquisitions. The chapter also reviews the impact of the corporate tax under the "new" view, the "traditional" view and the "new new" view.

The section on tax incidence concludes that capital as well as labour and consumption may partly bear the corporate tax. In addition to the Harberger model, the incidence of the corporate tax is discussed in an open-economy. It is argued that the easier it is to substitute foreign production for the home-country's production and the more mobile is capital, the lower is the burden of the corporate income tax on capital and the higher is the burden on the more immobile production factors such as labour. However, if capital is less substitutable (less internationally mobile), then the corporate tax burden will fall partly on capital.

Also tax revenue and tax complexity considerations are important drivers of corporate income tax reform. In addition to the sources of corporate tax complexity, the text presents the findings of the empirical literature that measures corporate tax compliance costs. Besides the international corporate income tax rules, corporations consider the accrual accounting rules, the capitalisation of assets and the sensitivity to timing to be the main sources of corporate income tax complexity and therefore of corporate compliance costs. Other important sources of tax complexity are the different tax treatment between debt and equity, the existence of different types of legal forms that are taxed differently, the tax rules with respect to business restructurings and the tax rules with respect to the transfers of business assets.

The main methods for integration of the corporate income tax and personal income taxes are introduced in Chapter 5. This chapter focuses especially on whether the integration systems realize tax-neutrality between debt and equity and between external and internal equity under a corporate income tax system.

Governments may tax corporate cash-flow instead of corporate income. Chapters 6 and 7 evaluate the corporate cash-flow tax respectively from a domestic and an international point of view. This Report discusses the different corporate cash-flow tax bases (the R-base, the R+F-base and the S-base) and analyses the implications with respect to efficiency, tax revenues and tax complexity of the introduction of a corporate cash-flow tax. The main advantages of a corporate cash-flow tax are in fact twofold. First, because the normal return on equity and interest payments are not effectively taxed at the corporate level, a corporate cash-flow tax does not distort the corporate choice between debt and equity and between internal and external equity. Second, the corporate cash-flow tax strongly reduces tax complexity because, for instance, assets no longer have to be capitalised and because the tax avoids many other complex timing-related problems. The Report also discusses the taxation of financial services and some transitional corporate cash-flow tax reform issues. Moreover, the text presents the impact of the corporate

cash-flow tax under the "new" view, the "traditional" view and the "new new" view and presents the differences between a destination-based and an origin-based corporate cash-flow tax.

Some countries have introduced a (kind of) corporate cash-flow tax. These country experiences are reviewed in Chapter 8. The UK North Sea Fiscal Regime and the petroleum tax system in Norway are presented. Also the regional tax on business activities in Italy and the Estonian corporate cash-flow tax are discussed.

The alternative corporate income and corporate cash-flow tax systems are discussed in detail in Chapter 9. The analysis focuses on the impact of the reforms on efficiency, tax revenues and tax complexity, and on the transitional effects of these types of corporate tax reform. The following corporate tax systems are discussed: the full imputation tax system, the corporate allowance for corporate equity/capital tax system, the allowance for shareholder equity tax system, the shareholder allowance/credit for corporate equity tax system, the comprehensive business income tax system, the destination-based corporate cash-flow tax system and the origin-based corporate cash-flow tax system.

The *full imputation tax system* treats the corporation as a pass-through, providing full integration of the corporate tax on distributed and retained profits with the capital income taxes on the return on equity at the personal level. Under full imputation systems, the corporate tax is used merely as a prepayment of the tax on equity at the personal level. As a result, full imputation systems allow for neutrality between debt and equity in a closed-economy, but generally not in an economy where shares are held by foreign residents.

The *corporate allowance for corporate equity (corporate ACE) tax system* – as, for instance, implemented in Belgium – provides a deductible allowance for corporate equity in computing the corporation's taxable profits. Similar to the deductibility of interest payments from the corporate income tax base, the allowance for corporate equity equals the product of shareholders' funds (generally equals the company's total equity capital) and an appropriate nominal interest rate. The allowance therefore approximates the corporation's "normal" profits. The corporate tax is then confined to economic rents because only corporate profits in excess of the ACE are subject to corporate tax. As a result, the ACE tax system does not distort the choice between debt and equity as sources of finance at the corporate level.

The ACE tax system continues to have different tax rules for debt and equity (even though the debt-equity choice is no longer distorted at the corporate level). However, the allowance for corporate equity might be extended to corporate debt. Governments might allow corporations to deduct an *allowance for corporate capital (ACC)* from their taxable corporate earnings. The ACC would be calculated by imputing a return on the company's total capital. The ACC would then replace the current interest deductibility. The ACC will have the same economic implications as the ACE but might further reduce complexity as the actual difference between debt and equity for tax purposes ceases to exist.

The *allowance for shareholder equity (ASE) tax system* – as implemented in Norway – exempts the normal return on equity from double taxation as well. However, it provides tax relief for the normal return on equity not at the corporate level as under the ACE tax system, but at the personal level instead. The corporate tax therefore continues to play its withholding function. The ASE might be calculated as the value of the shares held by the household multiplied by an imputed return as, for instance, the after-tax interest rate on

medium term government bonds. As is the case for the ACE tax system which is equivalent to a corporate cash-flow tax, the ASE tax is equivalent to a personal level cash-flow tax.

Under *the shareholder allowance for corporate equity (shareholder ACE) tax system*, the allowance for corporate equity would be calculated in a similar way as under the corporate ACE tax system. However, instead of deducting the ACE from the corporate tax base, the corporation would divide the ACE by the number of shares. Each share would receive its part of the ACE and shareholders would be entitled to deduct the shareholder allowance from their personal income tax base – not from taxable interest payments – at the personal level. Instead of providing an allowance per share, governments might provide a tax credit for each share equal to the ACE that is assigned to each share multiplied by the corporate tax rate. This tax system might then be referred to as *the shareholder credit for corporate equity (shareholder CCE) tax system*.

The *comprehensive business income tax (CBIT) system* implements neutrality in the debt-equity choice in a different way. The CBIT taxes the return to capital of corporations only once. Under the CBIT tax authorities allow no deduction of either interest payments – the tax might therefore be seen as a way to broaden the corporate tax base – or the return on equity from taxable corporate earnings. Except for the CBIT rate, no additional taxes would be imposed on distributions to equity holders or on payments of interest.

The *destination-based corporate cash-flow tax* is levied on domestic sales with a deduction for the purchases from domestic suppliers – including investment goods – and for labour costs. Export sales do not have to be included and imports are not deductible from the tax base. The destination-based corporate cash-flow tax is a tax on domestic (either domestically-owned or foreign-owned) capital income and domestically-owned foreign capital income, as far as this income is consumed in the domestic market, net of new domestic (either domestically-owned or foreign-owned) investment and domestically-owned foreign investment.

The *origin-based corporate cash-flow tax* is levied on domestic and foreign sales with a deduction for the purchases from domestic and foreign suppliers – including investment goods – and for labour costs. It is a tax on domestic and foreign-owned domestic capital income net of domestic and foreign investment in the domestic country. Examples of an origin-based corporate cash-flow tax are the Hall-Rabushka flat tax, the Bradford X-tax and Zodrow and Mc Lure's two-tier progressive rate cash-flow tax.

The last part of the Report focuses on the main policy conclusions that can be drawn from this study. This section stresses that not only the type of corporate tax system but also the level of the corporate tax rate is a key factor for fundamental corporate tax reform to be successful.

ISBN 978-92-64-03811-0
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Introduction

Corporate income tax reform has been on the political agenda in most OECD countries for many years. Corporate tax reforms have been driven by the need to provide a more competitive fiscal environment. Four major policy concerns can be distinguished in the OECD area with respect to the corporate income tax, as summarised in the following four questions: how can countries maintain their current levels of corporate tax revenue? How can countries maintain or create an attractive investment climate? How can countries avoid tax-induced distortions? And how might countries reduce the increased tax complexity?

Will countries be able to raise the same levels of corporate tax revenue in the future? Tax rates have been declining during the last decades, partly as a result of increased corporate tax competition and in response to increased international corporate tax planning. However, larger-sized OECD countries continue to levy corporate taxes at higher rates than the smaller-sized OECD member countries. Until recently, these rate reductions have been compensated by base-broadening measures in many OECD countries. In fact, taxes on corporate income as a percentage of GDP and total tax revenue have increased over time for many OECD countries. Corporate tax rates will probably continue to decrease in the near future. However, whether it will be possible to further compensate these rate reductions by additional base broadening measures remains to be seen. Moreover, tax revenue is put under pressure at an increasing rate as corporations in a globalised world engage more and more in tax-minimizing strategies.

How can countries maintain or create an attractive investment climate, not only for domestic investors but also for investors that have their residence abroad? Governments try to prevent their country's production capacity being reallocated to lower-tax jurisdictions, and they might try to attract more foreign direct investment. At the same time, governments attempt to avoid taxable corporate tax bases being shifted out of the country and they might consider how they can attract more corporate tax bases from multinationals.

The debt-equity distortion is one of the main distortions in current corporate tax systems, which is responsible for many tax-avoidance schemes. The second main corporate tax-induced distortion is the distortion in the allocation of profits (and losses) over different locations. Multinational firms make especially use of the different tax treatment of debt and equity and they adjust the prices they charge on intra-group transactions (prices, interest rates) such that their overall tax liabilities are minimised. Also the different tax treatment of external equity (newly issued equity) *versus* internal equity (retained earnings) distorts the corporation's domestic and international finance and investment decisions. Moreover, the corporate tax system is not neutral with respect to mergers and acquisitions, with respect to the choice of investment projects and influences the business's choice to either incorporate or not. This report studies whether fundamental corporate income tax reform might alleviate these tax-induced distortions. The quantitative size of these distortions is however not assessed in this report.

How might governments reduce the increased complexity in their corporate tax systems, which finds its causes in the globalisation and the increased openness of economies and is the response of authorities to the increased corporate efforts to minimize tax liabilities? Tax compliance and tax enforcement costs have been increasing. Stronger efforts to fight tax avoidance and evasion might probably be necessary in the future.

Given these major corporate tax policy concerns, this report discusses the most important *fundamental* corporate tax reforms that have been prominent in the international tax policy debate in recent decades. Fundamental tax reform analyses tax changes that go beyond simple base-broadening measures and tax rate changes. It concerns tax reform that fundamentally changes the way in which corporate taxes are levied.

The report studies the role and impact of fundamental corporate tax reform. It presents the advantages and disadvantages of fundamental corporate income tax reform as opposed to ongoing marginal corporate tax reforms that consist of rate reductions and corporate base broadening. The report also offers a broad discussion of the most important issues concerning fundamental corporate income tax reform. The different fundamental corporate tax reform proposals are discussed in detail. However, it is beyond the scope of the report to provide a detailed description of how the different proposals can be implemented in practice.

The report consists of five parts. Part I of the report sets the stage for the fundamental corporate income tax reform discussion. Chapter 1 presents the recent trends in the taxation of corporate income in OECD countries. Chapter 2 studies why countries would want to tax corporate income. Sections 2.1 and 2.2 discuss the reasons for taxing capital income and the reasons for taxing corporate income respectively. The pros and cons of residence-based and source-based capital income taxes are evaluated in Section 2.3. Chapter 3 analyses the main differences between fundamental corporate income and consumption type of tax reforms and points out that the differences in accounting systems are at the centre of the fundamental corporate income tax reform discussion.

Part II of the text focuses on domestic and international corporate income tax issues. Chapter 4 discusses the main drivers of corporate income tax reform in OECD countries. Section 4.1 considers the efficiency of the corporate income tax from a domestic point of view. Section 4.2 discusses the distortions created by the corporate income tax in an international context. Section 4.3 focuses on corporate tax incidence; this section studies whether capital, labour or consumption bears the burden of the corporate income tax. Considerations with respect to tax revenue and tax complexity are presented respectively in Sections 4.4 and 4.5. Chapter 5 reviews the main methods that integrate the corporate income tax and the capital income taxes at the personal level. These integration methods might restore neutrality between debt and equity, which is not achieved under the corporate income tax.

Part III of the report focuses on domestic and international corporate cash-flow tax issues. Chapter 6 discusses the corporate cash-flow tax, which might constitute an alternative to a corporate income tax. Section 6.1 discusses the different corporate cash-flow tax bases. The efficiency of the corporate cash-flow tax at the corporate level is discussed in Section 6.2. Section 6.3 focuses on the efficiency of the corporate cash-flow tax when taxes at the personal level are also taken into account. The impact on corporate tax revenues and on tax complexity is analysed in Sections 6.4 and 6.5 respectively. Financial services under the corporate cash-flow tax are the topic of Section 6.6. Section 6.7 presents transitional corporate cash-flow

tax reform issues. Chapter 7 focuses on the corporate cash-flow tax in an international context and discusses destination-based *versus* origin-based corporate cash-flow taxes. Chapter 8 presents country experiences with corporate cash-flow type of taxes.

Part IV of this report presents different fundamental corporate tax reforms (Chapter 9). The following corporate tax systems will be discussed: the full-integration system (Section 9.1), the allowance for corporate equity tax system and the allowance for corporate capital tax system (Section 9.2), the allowance for shareholder equity tax system (Section 9.3), the shareholder allowance for corporate equity tax system (Section 9.4), the comprehensive business income tax system (Section 9.5), the destination-based corporate cash-flow tax system (Section 9.6), and the origin-based corporate cash-flow tax system (the Hall-Rabushka flat tax, the Bradford X-tax, and Zodrow and Mc Lure's two-tier progressive rate cash-flow tax) (Section 9.7).

The main policy conclusions of the analysis are presented in Part V.

PART I

Setting the Stage

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ISBN 978-92-64-03811-0
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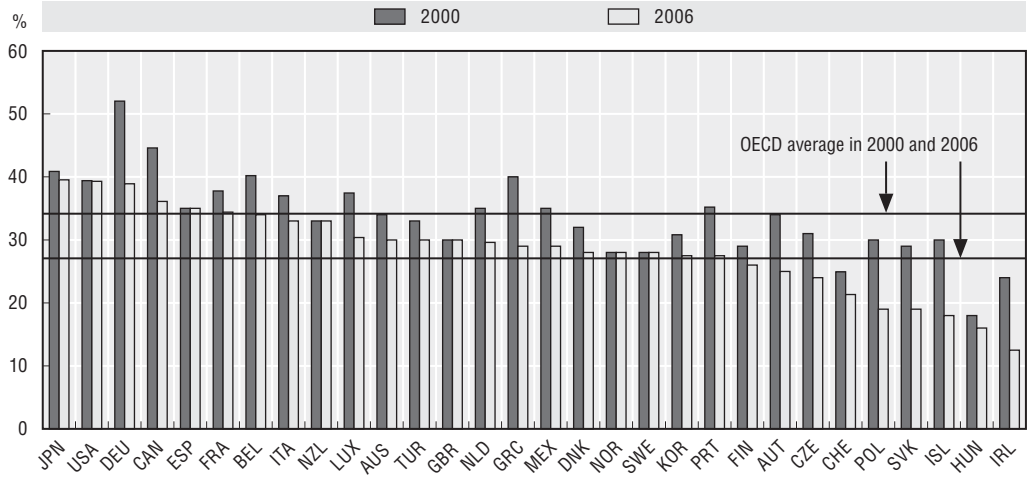
PART I

Chapter 1

Trends in the Taxation of Corporate Income in OECD Countries

This chapter presents the trends in the taxation of corporate income in OECD countries. The statutory corporate income tax rates in OECD countries are presented in Figure 1.1. The OECD average in 2000 equaled 33.6 per cent and it dropped to 28.4 per cent in 2006. The rate decreased in 25 countries between 2000 and 2006. The strongest reductions occurred in the Slovak Republic (–10 percentage points), Poland and Greece (both –11 percentage points), Ireland (–11.5 percentage points), Iceland (–12 percentage points) and Germany where the corporate tax rate has been lowered by 13.1 percentage points. Minor reductions have taken place in the US (–0.1 percentage points), Japan (–1.3 percentage points) and Hungary (–2 percentage points). The rate did not change in New Zealand, Norway, Sweden, Spain and the United Kingdom between 2000 and 2006. The variation in the corporate income tax rates in the OECD increased slightly; the standard deviation increased from 6.58 in 2000 to 6.85 in 2006.

Figure 1.1. **Statutory corporate income tax rate**[1]



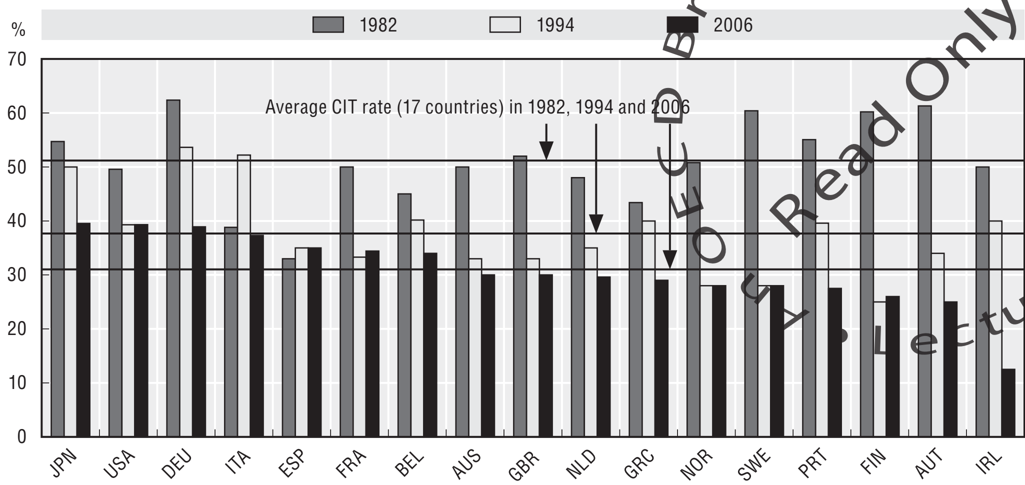
1. The basic combined central (inclusive of surtax [if any]) and sub-central statutory corporate income tax rate given by the adjusted central government rate (which includes the deductions in respect of sub-central income tax [if applicable]) plus the sub-central rates.
The corporate tax rate in 2000 for Ireland is the rate that applied generally; it is not the rate of 10 per cent that applied only to the manufacturing sector. This distinction ceased to exist in 2003, when a general 12.5 per cent corporate income tax rate was introduced.

Source: OECD Tax Database.

1.1. Statutory corporate tax rates 1982-2006

Figure 1.2 shows the corporate tax rate for each OECD member country for which this data is available for 1982, 1994 and 2006. Over this period, the statutory corporate tax rate fell in most of these 17 countries. The tax rate increased only in Spain (from 33 to 35 per cent). In many cases, the fall has been substantial. In 1982, 11 out of 17 countries had corporate tax rates equal to or in excess of 50 per cent; in 2006 there were none. In 1982, there was no country with a corporate tax rate lower than 30 per cent. In 2006, there were 10 countries that had a rate equal to or lower than 30 per cent.

Figure 1.2. **Statutory corporate income tax rate: 1982-2006**[1]



1. Data for 1982 was only available for 17 OECD countries (Japan, the US, Germany, Italy, Spain, France, Belgium, Australia, the UK, the Netherlands, Greece, Norway, Sweden, Portugal, Finland, Austria and Ireland). In the case of Ireland, there was a reduced corporate tax rate of 10 per cent for the manufacturing sector in 1982 and 1994.

Source: Institute for Fiscal Studies (IFS) and OECD Tax Database.

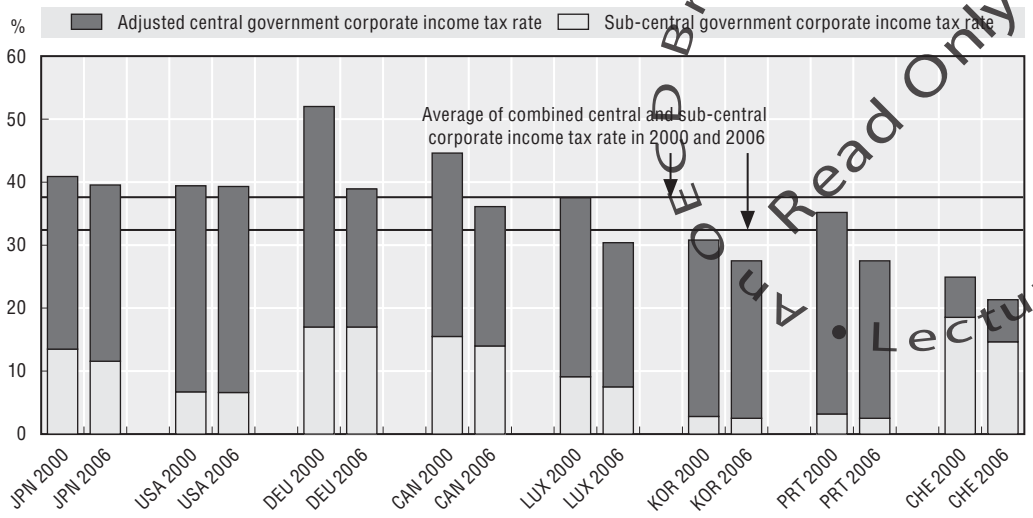
The fall in the corporate tax rate over time was fairly continuous, though most pronounced in the late 1980s. The average corporate tax rate for these 17 countries strongly decreased from 50.9 per cent in 1982 to 41.8 per cent in 1990. It was 37.6 per cent in 1994. The average rate increased between 1994 and 1997 to 38.3 per cent, but it continued to decrease since then. The average CIT rate for these 17 countries was 30.8 per cent in 2006, which was slightly higher than the OECD-average (28.4 per cent).

1.2. Central and sub-central government corporate income tax rate

Corporate income is taxed at the central and the sub-central government level in eight OECD member countries (Japan, the US, Germany, Canada, Luxembourg, Korea, Portugal and Switzerland). Figure 1.3 presents their combined corporate income tax rate (inclusive of any surtax) for the years 2000 and 2006 as the sum of the sub-central government corporate income tax rate and the adjusted central government corporate income tax rate, which includes the deduction in respect of the sub-central income tax in case of Germany, Japan, Switzerland and the US.

The average combined corporate income tax rate in these 8 countries decreased from 38.2 per cent in 2000 to 32.6 per cent in 2006 (a change of –14.7 per cent), compared to an average corporate tax rate of 32 per cent in 2000 and 26.8 per cent in 2006 in the other 24 OECD member countries (a change of –16 per cent). The adjusted central government corporate income tax rate decreased from 27.4 per cent in 2000 to 23 per cent in 2006 (–15.9 per cent). However, the decrease in the sub-central government corporate income tax rate was lower. It decreased from 10.8 per cent in 2000 to 9.5 per cent in 2006 (–11.6 per cent).

Figure 1.3. **Central and sub-central corporate income tax rate**



Source: OECD Tax Database.

1.3. Statutory corporate income tax rates across different-sized countries and across regions

Table 1.1 presents statutory corporate income tax rates over time for large-sized, medium-sized and small-sized OECD countries depending on their level of GDP (2005 values). The table shows that larger countries have a higher corporate income tax rate on average.

Table 1.1. **Corporate income tax rate and GDP**

	Statutory corporate income tax rate (%)		
	2000	2005	2006
Large-sized OECD countries			
USA-JPN-DEU-GBR-FRA-ITA	39.5	35.9	35.9
Medium-sized OECD countries			
CAN-ESP-KOR-MEX-AUS-NLD	35.7	31.7	31.2
Small-sized OECD countries			
BEL-CHE-TUR-SWE-AUT-POL-NOR-GRC-DNK-IRL-FIN-PRT-CZE-HUN-NZL-SVK-LUX-ISL	30.9	25.2	24.9
OECD total	**33.6**	**28.6**	**28.4**

In 2006, the corporate tax rate in large-sized countries was on average 4.7 percentage points higher than the corporate tax rate in medium-sized countries and the rate in these countries was on average 6.3 per cent above the corporate tax rate in the small-sized OECD countries. Across all OECD countries, there is a strong positive correlation between size of the country (in terms of GDP) and the level of its corporate tax rate (correlation coefficient of +0.52 for the 2005 corporate tax rates and GDP values). On average in the large-sized OECD countries, the corporate tax rate has decreased by 3.6 percentage points since 2000. It decreased 4.5 and 6 percentage points respectively in medium-sized and small-sized OECD countries.

Table 1.2 presents the corporate tax rates over time for different regions in the OECD. On average, the corporate tax rate has decreased by 4.9 percentage points in OECD America. For the US, Canada and Mexico, there is a positive correlation of +0.8 between GDP and the level of the corporate tax rate (in 2005). The correlation is even higher for the countries in the OECD Pacific region (correlation coefficient of +0.83). For Japan, Korea, Australia and New Zealand, the corporate tax rate has decreased by 2.2 percentage points from 2000 to 2006 on average. On average in OECD Europe, the corporate tax rate has decreased by 5.8 percentage points. Across these countries, there is a positive correlation of +0.6 between GDP and the corporate tax rate (in 2005). In 2006, the corporate tax rate in large-sized OECD Europe countries was on average 6.6 percentage points higher than the corporate tax rate in medium-sized OECD Europe countries. The rate in these latter countries was on average 5.2 per cent above the corporate tax rate in the small-sized OECD Europe countries.

Table 1.2. **Corporate income tax rate across regions**

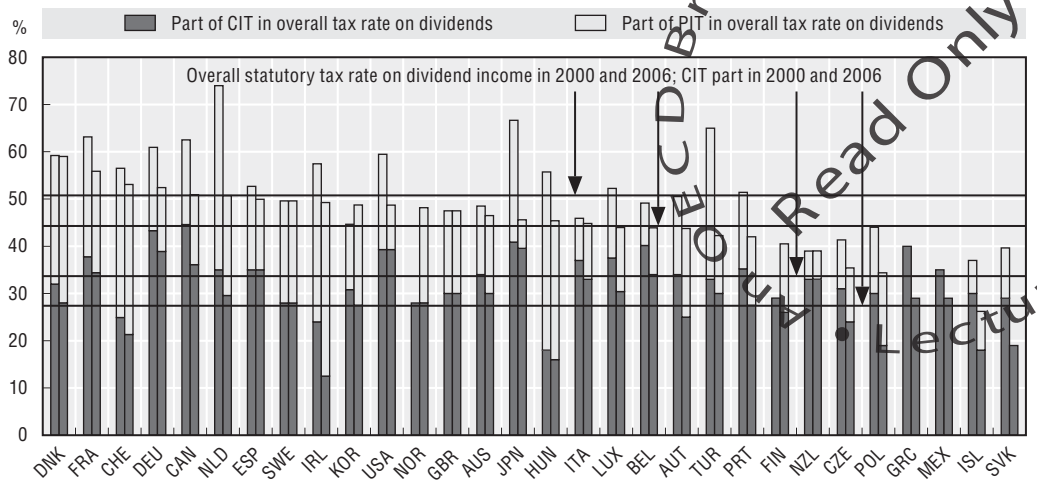
	Statutory corporate income tax rate (%)		
	2000	2005	2006
OECD America			
USA-CAN-MEX	39.7	35.1	34.8
OECD Pacific			
JPN-KOR-AUS-NZL	34.7	32.5	32.5
OECD Europe	32.6	27.1	26.8
Large-sized countries	37.8	33.9	33.5
Medium-sized countries	32.2	27.3	26.9
Small-sized countries	29.2	21.9	21.7

Note: Large-sized countries in OECD Europe (in terms of GDP, 2005 value): Germany, the UK, France, Italy, Spain and the Netherlands. Medium-sized-countries are: Belgium, Switzerland, Turkey, Sweden, Austria, Poland, Norway, Greece, and Denmark. Small-sized countries in OECD Europe are Ireland, Finland, Portugal, the Czech Republic, Hungary, the Slovak Republic, Luxembourg and Iceland.

1.4. Top tax rate on dividend income

Figure 1.4 presents the overall statutory tax rate on domestic-source dividend income for a resident shareholder paying top marginal rates in 2000 and 2006. This measure takes account of the statutory corporate income tax rate, the taxes on dividends at the personal level and any type of integration or relief to reduce the effects of double taxation. The overall dividend tax rate in Figure 1.4 is divided into the part that is paid as corporate income tax and the part that is paid as personal income tax. The overall statutory tax rate on dividend income has decreased over time. It was 50.2 per cent in 2000 and it decreased by 6.4 percentage points to 43.8 per cent in 2006. The largest part of this reduction is attributable to the reduction in the corporate income tax rate. The part of the tax that is paid as corporate income tax decreased 4.9 percentage points: from 33.3 per cent in 2000 to 28.4 per cent in 2006 on average in the OECD. A smaller part of the reduction in the statutory tax burden on dividends is due to a decrease in personal income tax rates. The part of the tax that is paid as personal income tax decreased 1.4 percentage points: from 16.9 per cent in 2000 to 15.5 per cent in 2006 on average. This then shows that, on average, OECD member countries did not increase their residence-based taxes on capital income in response to their reduced source-based corporate income tax.

Figure 1.4. **Overall statutory tax rate on dividend income in 2000 and 2006**[1]



1. For each country, the first column presents the data for 2000; the second column presents the data for 2006.
Source: OECD Tax Database.

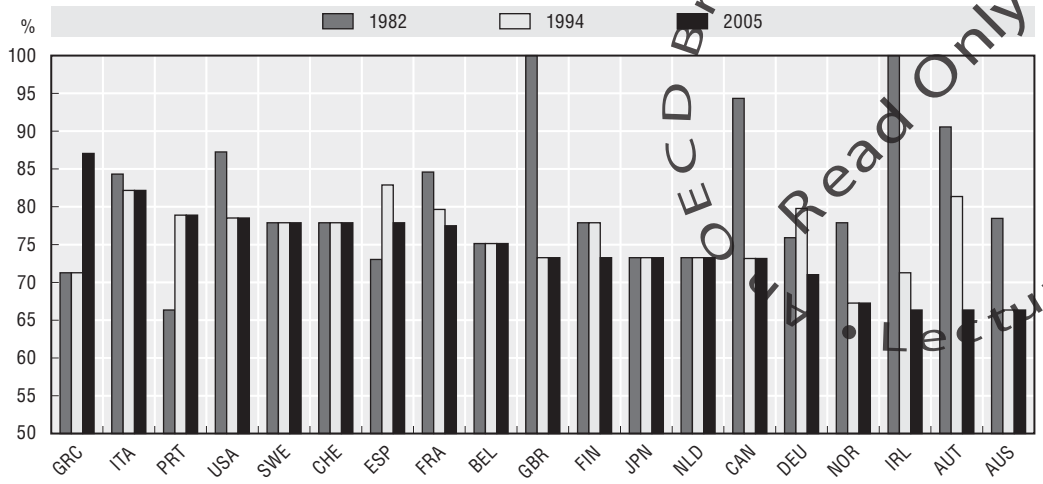
1.5. Corporate tax base

In all OECD countries, the definition of the corporate tax base is extremely complex. The definition involves a vast range of legislation covering everything from allowances for capital expenditures, to the deductibility of contributions to pension reserves, the valuation of assets and inventories and the extent to which different expenses can be deducted. It is not possible to present a measure which reflects all of these factors. This section therefore focuses on depreciation allowances for capital expenditures. Figures 1.5 and 1.6 present estimates of the present discounted value of the depreciation allowances for investment in plant and machinery, expressed as a percentage of the initial cost of the investment. The present discounted value would be zero in the absence of tax depreciation allowances and would be 100 per cent if the investment could be immediately expensed.

Figure 1.5 shows the present value of the depreciation allowances for 19 OECD countries for which these data are available, based on a nominal discount rate which is the same for all countries and all years. The analysis therefore abstracts from changes in the inflation rate and the real interest rate, which would affect the discount rate applied to future allowances. The differences in the present values of the depreciation allowances in 1982, 1994 and 2005 then reflect changes in the rates of depreciation set by governments. A decrease in the present value implies less generous depreciation allowances which, in turn, imply that the corporate tax base has been broadened.

Of the 19 countries, 11 have reduced their tax depreciation rates for investment in plant and machinery between 1982 and 2005. The less generous depreciation allowances have contributed to base broadening especially in Ireland and the UK. The present value of the depreciation allowances decreased from 100 per cent to 66 per cent in Ireland and to 73 per cent in the UK. The corporate tax base has also strongly been broadened as a result of less generous deprecation allowances in Austria and Canada. In 8 of the 11 countries, the tax base has been broadened during the period 1982-94. Only Austria, Finland and Germany broadened their tax base primarily in the period between 1994 and 2005. In that period, the corporate tax base has been broadened in Spain, but not enough to offset the

Figure 1.5. **Present discounted value of depreciation allowances**[1]

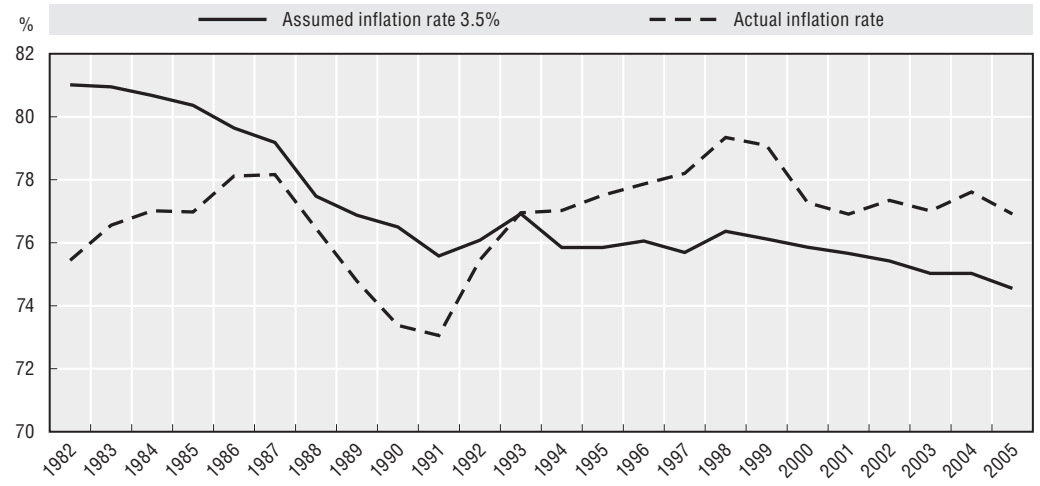


1. Data for investment in the manufacturing sector; only data for 19 OECD countries was available. Countries are ranked in decreasing order with respect to the present discounted value of depreciation allowances in 2005. The values are calculated for an investment in plant and machinery. Special first year allowances are included if applicable. Where switching between straight-line and declining-balance methods is allowed, such switching is assumed at the optimal point. The assumed real discount rate is 10 per cent; the assumed rate of inflation is 3.5 per cent. These rates are kept constant across time and countries.

Source: Institute for Fiscal Studies (IFS).

Figure 1.6. **Present discounted value of depreciation allowances**

Unweighted average over time[1]



1. Data for investment in the manufacturing sector; only data for 19 OECD countries was available. The present discounted value of depreciation allowances are determined as explained in Figure 1.5, except for the series that is based on the actual inflation rate in every year for every country (implying static expectations), rather than an assumed fixed inflation rate of 3.5 per cent.

Source: Institute for Fiscal Studies (IFS).

more generous depreciation allowances that had been implemented between 1982 and 1994. Besides Spain, depreciation allowances became more favourable in Greece and Portugal during the period 1982-2005.

Figure 1.6 shows the unweighted average of the present value of depreciation allowances over time under the assumption of a fixed inflation rate of 3.5 per cent. These results show that the corporate tax base has been broadened especially during the second

half of the eighties. The reductions in the tax depreciation rates, and therefore the broadening of the corporate tax bases, have been less pronounced in the 1990s. Figure 1.6 also shows the tax depreciation allowances when the actual inflation rate is used in every year and for every country. The results show that the effects of the lower tax depreciation rates – and therefore of the base broadening – have been fully offset by lower discount rates due to lower inflation rates since the 1990s. The lower inflation rates have therefore resulted in a recovery of the unweighted average of the present discounted value of depreciation allowances. This result also reflects the fact that in most countries, tax depreciation allowances are based on the investment's historical cost and not on the investment's replacement costs.

1.6. Marginal effective tax rates

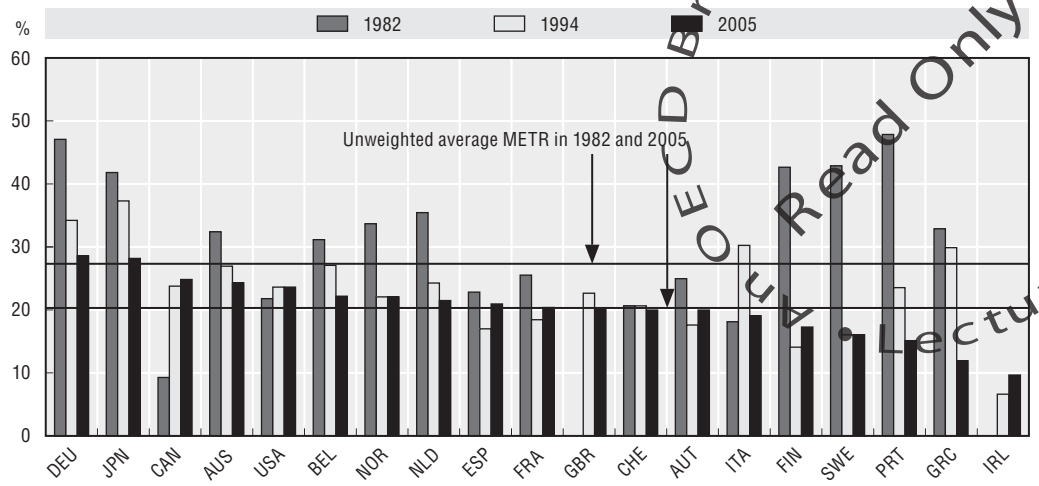
This section presents the evolution of marginal effective tax rates over time. The traditional method of measuring the impact of corporate income tax on the level of capital investment is through the user cost of capital – defined as the pre-tax real required rate of return on an investment project, taking into account the financial cost of the investment as well as depreciation (Hall and Jorgenson [1967], King [1977], King and Fullerton [1984]). 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 taxation on the cost of capital is measured by the marginal effective tax rate (METR). A higher marginal effective tax rate increases the cost of capital, and therefore reduces the stock of capital.

The marginal effective tax rates are measured by considering the impact of the corporate tax system on a hypothetical investment project. The form of the investment modelled is, of necessity, simple and limited. In common with other such measures, risk is ignored. The underlying method assumes a mature manufacturing firm. The marginal effective tax rates presented here also apply only to an investment in plant and machinery, financed by equity; estimates for investment in other assets and for other sources of finance are not presented. The tax treatment of losses or other forms of tax exhaustion is not considered. The taxes that are levied on shareholders and taxes paid by corporations that are not based on profit are not included. The underlying method does not include any industry-specific measures and does not allow for any form of tax avoidance. 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.

Figure 1.7 and Figure 1.8 show the development of marginal effective tax rates over time for 19 OECD countries for which these data are available. In Figure 1.7, the inflation rate is held constant across countries and years. Figure 1.8 presents the unweighted average of marginal effective tax rates both with the inflation rate fixed, and using the inflation rate of the period in which the investment is assumed to take place.

Of the 19 countries (see Figure 1.7), 14 countries have reduced their marginal effective tax rates over the period 1982-2005. The largest reductions have been observed in Finland, Greece, Portugal and Sweden. The marginal effective tax rates have increased only in Canada, the UK, Ireland, Italy and the US. The unweighted average decreased from 27.9 per cent in 1982 to 20.3 per cent in 2005.

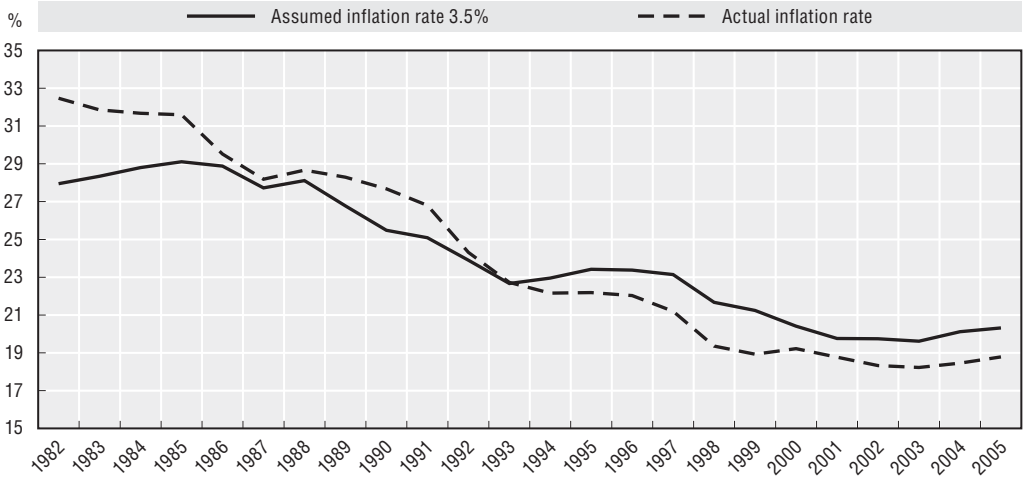
Figure 1.7. **Marginal effective tax rates**[1]



1. Data for investment in the manufacturing sector; only data for 19 OECD countries was available. Countries are ranked in decreasing order with respect to the marginal effective tax rate in 2005. The calculations are 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 per cent; inflation rate: 3.5 per cent; economic depreciation rate: 12.25 per cent.

Source: Institute for Fiscal Studies (IFS).

Figure 1.8. **Marginal effective tax rates: unweighted average over time**[1]



1. Data for investment in the manufacturing sector; only data for 19 OECD countries was available. The present discounted value of depreciation allowances are determined as explained in Figure 1.7, except for the series that is based on the actual inflation rate in every year for every country (implying static expectations), rather than an assumed fixed inflation rate of 3.5 per cent.

Source: Institute for Fiscal Studies (IFS).

Figure 1.8 shows that, given a fixed inflation rate of 3.5 per cent, the unweighted average of the marginal effective tax rates has remained fairly stable until 1988 and between 1993 and 1997. The unweighted average dropped substantially between 1989 and 1993 and between 1997 and 2001. It has remained fairly constant since then.

A larger and more pronounced reduction in the unweighted average of the marginal effective tax rates can be observed if the actual inflation rates in each country and year are used. This result reflects the fact that with a lower inflation rate, a given tax depreciation allowance is more generous, leading to a lower marginal effective tax rate. Since 2002, this decrease has stopped. The average remains relatively constant since 2001 at an average of 18.5 per cent.

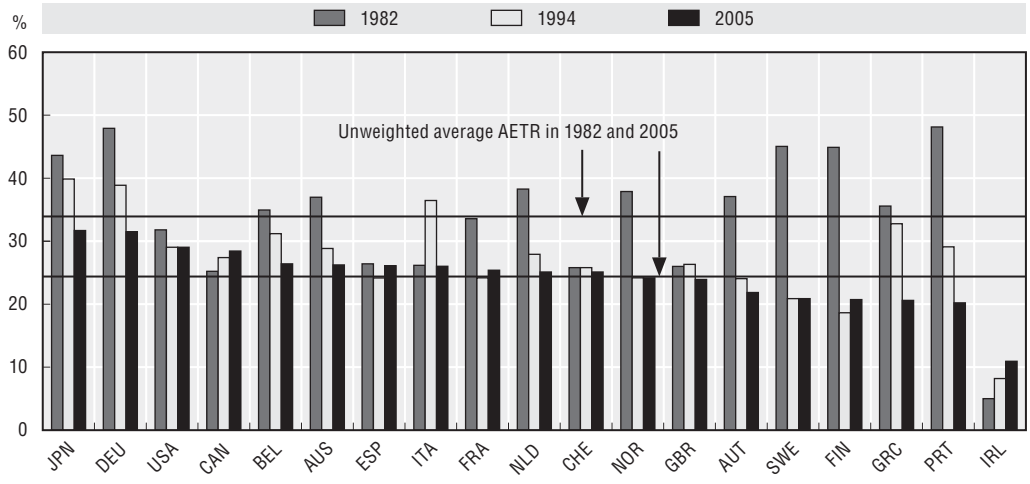
This reduction in marginal effective tax rates over time then shows that the reductions in the statutory corporate tax rates have had a stronger impact on the marginal corporate tax burden than the base broadening measures that have been undertaken as well.

1.7. Average effective tax rates

Corporate tax systems also have an influence on the discrete choices made by, for instance, 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. The firm might 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 average effective tax rate (AETR). Conditional on this location choice, the scale of the investment will be determined by the cost of capital and the METR.

Figure 1.9 and Figure 1.10 show the development of average effective tax rates over time for 19 OECD countries for which these data are available. As before, the inflation rate is held constant across countries and years in Figure 1.9. Figure 1.10 then presents the unweighted average of the average effective tax rates across these countries both with inflation fixed, and using the inflation rate of the period in which the investment is assumed to take place.

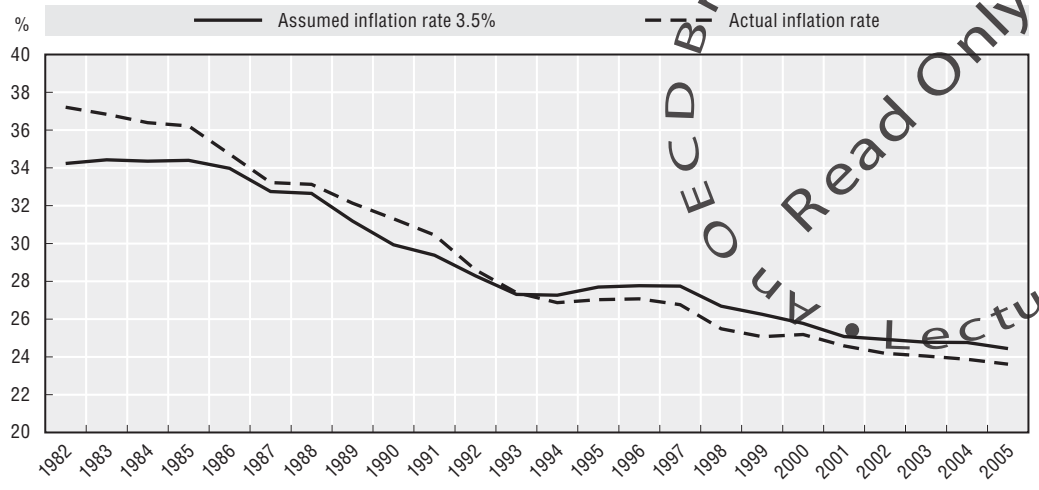
Figure 1.9. **Average effective tax rates**[1]



1. Data for investment in the manufacturing sector; only data for 19 OECD countries was available. Countries are ranked in decreasing order with respect to the average effective tax rate in 2005. The calculations are 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 per cent. Other assumptions: real discount rate: 10 per cent; inflation rate: 3.5 per cent; economic depreciation rate: 12.25 per cent.

Source: Institute for Fiscal Studies (IFS).

Figure 1.10. **Average effective tax rates: unweighted average over time**[1]



1. Data for investment in the manufacturing sector; only data for 19 OECD countries was available. The present discounted value of depreciation allowances are determined as explained in Figure 1.9, except for the series that is based on the actual inflation rate in every year for every country (implying static expectations), rather than an assumed fixed inflation rate of 3.5 per cent.

Source: Institute for Fiscal Studies (IFS).

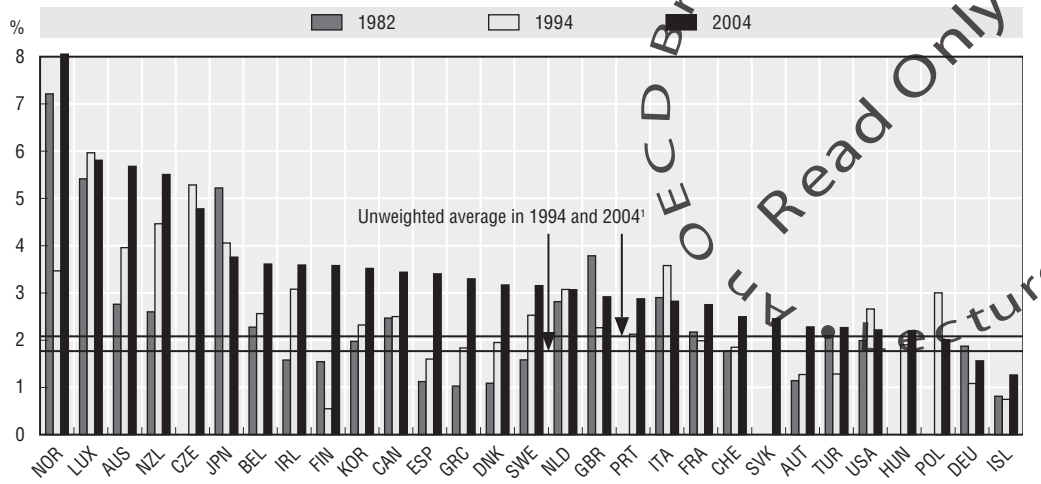
As shown in Figure 1.9, the majority of the countries have reduced their average effective tax rate over the period 1982-2005. The largest reductions have been observed in Finland, Germany, Portugal and Sweden. The average effective tax rate has increased only in Canada and Ireland. The unweighted average decreased from 34.2 per cent in 1982 to 24.4 per cent in 2005.

Figure 1.10 shows that, given a fixed inflation rate of 3.5 per cent, the unweighted average of the average effective tax rates has remained fairly stable until 1986 and between 1993 and 1997. The unweighted average dropped substantially between 1987 and 1993 and between 1997 and 2001. It has declined very little since then. A larger and more pronounced reduction in the unweighted average of the average effective tax rates can again be observed if the actual inflation rates in each country and year are used. Since 2002, this decrease has become very small. In 2005, the average equalled 23.6 per cent. The differences between these two series are smaller in the case of average effective tax rates than in the case of marginal effective tax rates (Figure 1.8), since the average effective tax rates depend rather more on the statutory corporate tax rate and rather less on tax allowances. Nevertheless, the two approaches give a similar qualitative picture of the development of the corporate effective tax rates. This result therefore confirms that the reductions in the statutory corporate tax rates have had a stronger impact than the base broadening measures that have been undertaken.

1.8. Corporate tax revenues as a percentage of GDP

Figure 1.11 presents the taxes on corporate income (category 1200 of the OECD classification of taxes) as a percentage of GDP. In 2004, the ratio ranged between 9.96 per cent in Norway and 1.26 per cent in Iceland. The unweighted average (Norway not included) was 2.6 per cent in 1994. It increased to 3.2 per cent in 2004.

Figure 1.11. **Taxes on corporate income as a percentage of GDP**



1. Missing data in 1982 for the Czech Republic, Portugal, Slovak Republic, Hungary, Poland and Mexico; in 1994: the Slovak Republic and Mexico; in 2004: Mexico. The unweighted average does not include Norway.

Source: Revenue Statistics 1965-2005.

From 1982 to 2004, the taxes on corporate income as a percentage of GDP decreased in Japan (–1.5 percentage points), the UK (–0.9 percentage points), Germany (–0.3 percentage points) and Italy (–0.1 percentage points). It increased in the 20 other member countries for which the information was available in both years. The ratio increased with more than 2 percentage points in Norway, Australia, New Zealand, Ireland, Finland, Spain, Greece and Denmark.

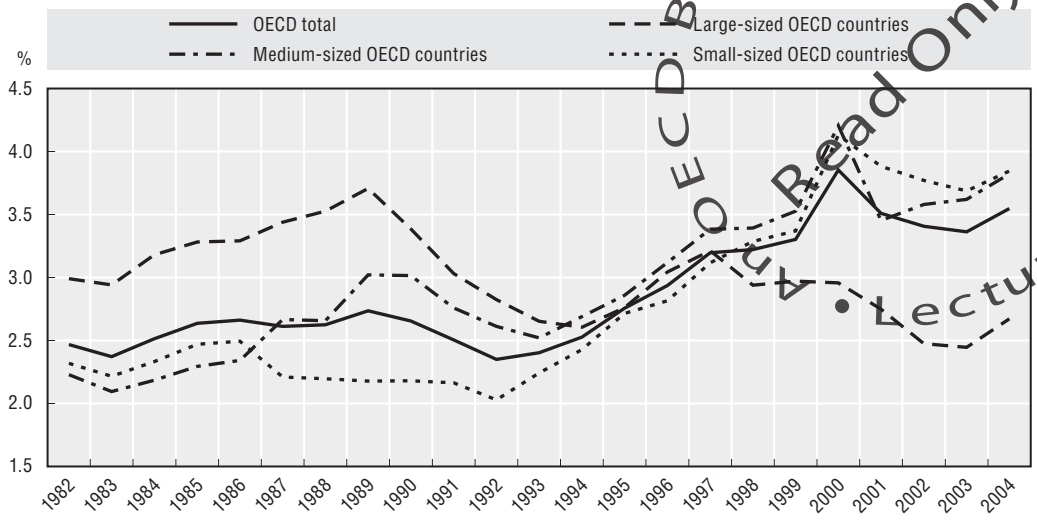
Figure 1.12 presents the unweighted OECD average of the corporate income taxes as a percentage of GDP over time. The Czech Republic, Hungary, Mexico, Poland, Portugal and the Slovak Republic have been omitted due to missing data in some years. The figure also shows the unweighted average for the large-sized, medium-sized and small-sized OECD member countries.

The unweighted OECD average (Norway included) increased from 2.5 per cent in 1982 to 3.5 per cent in 2004. The ratio increased for the small-sized OECD countries from 2.3 per cent to 3.8 per cent and for the medium-sized OECD countries from 2.2 per cent in 1982 to 3.8 per cent in 2004. As a result of high corporate taxes on the profits of the oil industry, the corporate tax to GDP ratio for Norway has increased strongly since 2000 (from 4.6 per cent in 1999 to 8.9 per cent in 2000 and 9.96 per cent in 2004). If Norway had not been included, the average ratio for the small-sized OECD countries would be 0.4 percentage points lower on average for the period 2000-04 than in Figure 1.12. However, not including Norway would lower the average ratio in the period 1990-99 by only 0.11 percentage points on average.

The corporate tax to GDP ratio has decreased for the large-sized OECD countries from 3 per cent in 1982 to 2.7 per cent in 2004. This downward trend is primarily caused by the decrease in the corporate tax to GDP ratio in Japan; it decreased from 5.2 per cent in 1982 to 3.8 per cent in 2004. The ratio has remained relatively constant over time for the other large-sized OECD countries. The average ratio for the US, Germany, UK, France and Italy ranged between 2.3 per cent and 3 per cent during this period; from 2.6 per cent in 1982 to 2.5 per cent in 2004.

Figure 1.12. **Taxes on corporate income as a percentage of GDP**

Unweighted OECD average over time

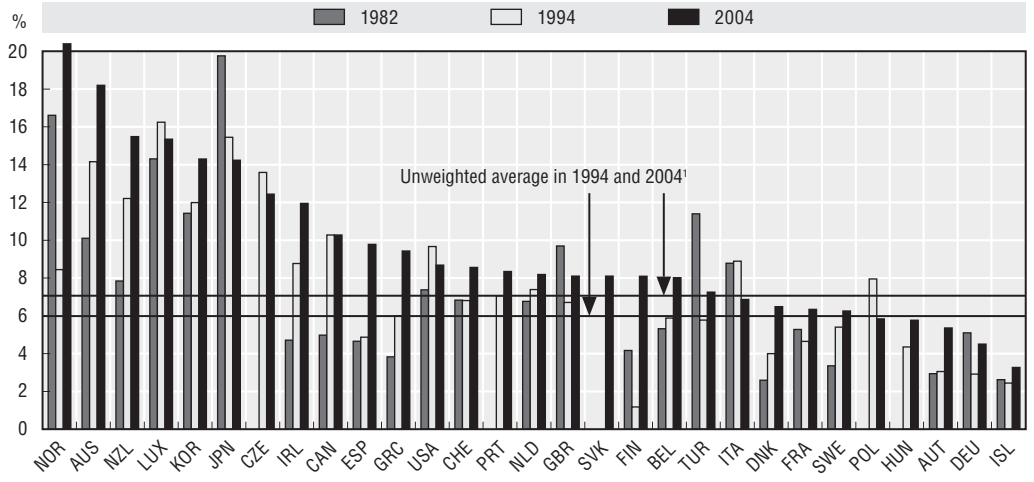


Note: The Czech Republic, Hungary, Mexico, Poland, Portugal and the Slovak Republic have been omitted due to missing data in some years. The large-sized OECD countries are the US, Japan, Germany, the UK, France and Italy. The medium-sized OECD countries are Canada, Spain, Korea, Mexico, Australia and the Netherlands. The small-sized OECD countries are Belgium, Switzerland, Turkey, Sweden, Austria, Poland, Norway, Greece, Denmark, Ireland, Finland, Portugal, the Czech Republic, Hungary, New Zealand, the Slovak Republic, Luxembourg and Iceland.

1.9. Corporate tax revenues as a percentage of total tax revenue

Figure 1.13 presents the taxes on corporate income as a percentage of total tax revenue across the OECD. In 2004, the ratio ranged between 22.6 per cent in Norway and 3.3 per cent in Iceland. The unweighted average (Norway not included) was 7.7 per cent in 1994. The unweighted average increased to 9.1 per cent in 2004.

Figure 1.13. **Taxes on corporate income as a percentage of total tax revenue**



1. Missing data in 1982 for the Czech Republic, Portugal, Slovak Republic, Hungary, Poland and Mexico; in 1994: the Slovak Republic and Mexico; in 2004: Mexico. The unweighted average does not include Norway. For Portugal: 2003 instead of 2004 information.

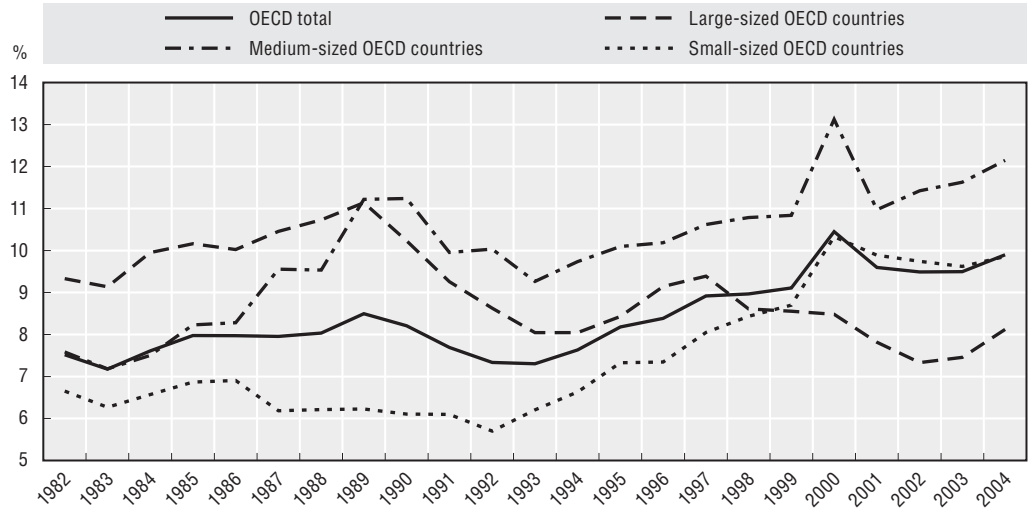
Source: Revenue Statistics 1965-2005.

From 1982 to 2004, the taxes on corporate income as a percentage of total tax revenue decreased only in Japan (–5.5 percentage points), Turkey (–4.1 percentage points), Italy (–1.9 percentage points), the UK (–1.6 percentage points) and Germany (–0.6 percentage points). It increased in the 19 other member countries for which the information was available in both years. The ratio increased by more than 5 percentage points in Norway, Australia, New Zealand, Ireland, Canada, Spain and Greece.

Figure 1.14 presents the unweighted average of the corporate income taxes as a percentage of total tax revenue over time for the entire OECD and for the large-sized, medium-sized and small-sized OECD countries. The Czech Republic, Hungary, Mexico, Poland, Portugal and the Slovak Republic have again been omitted due to missing data in some years. The unweighted OECD average (Norway included) increased from 7.2 per cent in 1982 to 9.9 per cent in 2004.

Figure 1.14. **Taxes on corporate income as a percentage of total tax revenue**

Unweighted OECD average over time



Note: The Czech Republic, Hungary, Mexico, Poland, Portugal and the Slovak Republic have been omitted due to missing data in some years. The large-sized OECD countries are the US, Japan, Germany, the UK, France and Italy. The medium-sized OECD countries are Canada, Spain, Korea, Mexico, Australia and the Netherlands. The small-sized OECD countries are Belgium, Switzerland, Turkey, Sweden, Austria, Poland, Norway, Greece, Denmark, Ireland, Finland, Portugal, the Czech Republic, Hungary, New Zealand, the Slovak Republic, Luxembourg and Iceland.

The corporate income taxes as a percentage of total tax revenue have increased for the small-sized OECD countries from 6.7 per cent to 9.9 per cent and for the medium-sized OECD countries from 7.6 per cent in 1982 to 12.1 per cent in 2004. The ratio of the medium-sized OECD countries is considerably higher than the ratio of the small-sized OECD countries. This difference is caused by Australia which raises relatively more tax revenue from corporate income than the other medium-sized and small-sized OECD countries (except for Norway). If we do not include Australia but only Canada, Korea, the Netherlands and Spain in the medium-sized category, the difference between the medium-sized and small-sized OECD countries would follow a pattern that is rather similar to the corresponding difference in Figure 1.12. On average, these 4 medium-sized OECD countries raise more revenue from taxing corporate income than the small-sized OECD countries. The difference with the ratio for the small-sized OECD countries (including Norway) would

however be lower than in Figure 1.14. Similarly to the results in Figure 1.14, the difference (if Australia is not included) has been decreasing over time; it was 4.4 per cent in 1990 and 0.8 per cent in 2004. Of course, this difference would be larger if Norway is not included in the small-sized OECD countries. In that case, the difference between the medium (not including Australia) and small-sized (not including Norway) OECD countries for the period 2000-04 would on average be 1.5 per cent in every year.

The ratio decreased for the large-sized OECD countries from 9.3 per cent in 1982 to 8.1 per cent in 2004. Again, this downward trend is primarily caused by the decrease in the ratio of Japan; it decreased from 19.8 per cent in 1982 to 14.2 per cent in 2004. The ratio has remained relatively constant over time for the other large-sized OECD countries. The average ratio for the US, Germany, UK, France and Italy ranged between 6.3 per cent and 8.5 per cent during this period; from 7.2 per cent in 1982 to 6.9 per cent in 2004.

1.10. Lower tax burdens but no decrease in corporate tax revenues

Despite the strong reduction in statutory corporate tax rates, corporate tax revenues have kept pace with – or even exceeded – the growth in GDP, and the growth in revenues from other taxes in many OECD countries. The fact that small-sized and medium-sized OECD countries now raise more revenue from taxing corporate income and that large-sized OECD countries, except for Japan, do not raise less revenue seems to be inconsistent with the strong reductions in statutory corporate tax rates and marginal and average effective tax rates. Indeed, this is a puzzle which requires further research and explanation. A number of arguments might however offer an explanation. Of course, some of these arguments will be more relevant than others in explaining a particular country's corporate tax revenue trends.

First, the strong reductions in statutory corporate tax rates have been partly offset by the expansion of the corporate tax base through the implementation of less generous tax depreciation allowances and through the elimination of special tax deductions and provisions. Less generous tax depreciation allowances have broadened the corporate tax base especially during the second half of the 1980s, as shown in Figure 1.6.

Second, changes in corporate profitability may explain the increased corporate tax revenues as more profitable corporations pay more corporate taxes. This might not only be part of a cyclical movement but might also be the result of fundamental changes in profitability. Becker and Fuest (2007) for instance demonstrate for Germany that globalisation has increased pre-tax profitability in the economy, thus leading to higher corporate tax revenues. Moreover, the reduction in the corporate tax rate may have increased the total amount of investment that is undertaken by the corporate sector, which then might have increased the corporate tax liabilities and corporate tax revenues as well.

The increase in corporate tax revenues in low-tax countries may be caused by the inflow of investment and/or mobile corporate profits that are shifted out of high-tax countries in order to avoid corporate taxes. For example, Ireland has had a low 10 per cent tax rate on manufacturing activity since the early 1980s. One consequence has been a strong increase in inward investment – and probably inward flows of profit: this in turn has boosted corporate income tax receipts as a share of GDP and as a share of tax revenues, despite the continuing low tax rate. This argument may partly explain why corporate tax revenues in small-sized OECD countries have increased more than in large-sized OECD countries.

Another argument that might offer an explanation is that lower corporate tax rates have increased the incentive to incorporate and to shift income from the non-corporate into existing corporations, thereby increasing the relative size of the corporate sector. Fuest and Weichenrieder (2002) have studied the share of corporate savings in total private savings for OECD member countries. They show that higher capital income tax rates at the personal level may increase the fraction of saving performed within corporations. Lower corporate tax rates may then shift significant amounts of savings from the household sector to the corporate sector. De Mooij and Nicodème (2007) analysed income shifting via incorporation using a panel of European data. They found that the increasing gap between personal income and corporate income taxes has a significant positive effect on the incorporation of new and existing firms. The revenue effects of lower corporate tax rates will then partly show up in lower personal income tax revenues rather than lower corporate income tax revenues.

In addition, Sorensen (2006) notes that the growing importance of the corporate sector might also be explained by the decline of certain sectors such as agriculture where the non-corporate organisational form was dominant. Auerbach (2006) suggests that the rising share of the financial sector in the economy might have partly caused the increase in corporate tax revenues as well.

Moreover, the reduction in statutory and effective corporate tax rates reduces the benefits of (excessive) corporate tax-planning. Lower corporate tax rates reduce for instance the benefits of profit-shifting through transfer pricing and thin capitalisation (see also Haufler and Schjelderup [2000]). This might also have reduced the corresponding corporate tax compliance costs, which are deductible from the corporate tax base. The reduced corporate tax-planning efforts might therefore have increased the taxable corporate tax base, which may have partly offset the tax revenue loss due to the lower statutory and effective corporate tax rates.

Finally, the fact that corporate tax revenues did not decline may partly be caused by stricter corporate tax enforcement policies enacted by OECD countries. Indeed, OECD countries have increased their efforts to reduce the shifting of profits between jurisdictions. Some countries may also have intensified their tax audits in order to reduce corporate tax-avoidance and evasion behaviour.

1.11. 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 evolution of corporate income tax rates over time.

One of the central issues discussed in the empirical literature which discusses the possibility of a "race to the bottom" in tax rates, is the influence of capital mobility. Has increased capital mobility been influential in driving down the corporate income tax rates? If so, will corporate income tax rates fall further with or without further increases in capital 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 discussing 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. 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 corporate income tax rate, although measures based on tax receipts are also common. None of these studies use measures of effective corporate tax rates. 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 indices show a marked fall over time across the OECD, which does coincide with the fall in statutory corporate income tax rates.

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. 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 implicit average 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 US is a leader in setting tax rates – that is, whether other OECD countries respond primarily to the US. They find some evidence to support this claim, although their approach is based on a measure of tax revenues, rather than specific tax rates.

Devereux, Lockwood and Redoano (2004) test a model in which governments compete both over flows of capital (influenced by the marginal effective tax rate) 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 marginal effective tax rate. Furthermore, 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; it is also possible that co-movements in the statutory rate reflect competition for profit. The fact that statutory corporate income tax rates in OECD countries have fallen significantly over the last two decades is consistent with such competition.

However, some economic theories have predicted a much stronger "race-to-the-bottom" type of corporate tax competition. Until now, this has not been observed in OECD countries. In fact, there are some economic reasons why a race-to-the-bottom type of corporate tax competition might not have occurred. First, corporations might decide to produce in a particular country – despite the corporate tax rate that is levied on corporate profits – because they want to serve that country's domestic market. Or, corporations might decide to produce in a particular country because they want to benefit from the available qualified labour force, the infrastructure, the country's natural resources and its technology. Hence, corporations may want to produce in a particular country because they can earn location-specific rents. These agglomeration effects explain why larger-sized countries can afford to levy a higher corporate tax rate, as shown in Table 1.1, as long as the difference with the tax rate in the smaller-sized countries does not become too large.

On the other hand, even larger-sized OECD countries might have become more vulnerable to tax competition. The costs for corporations to engage in international tax-minimizing strategies might have decreased over time and these strategies might therefore have become available to many corporations. Grubert (2001) has found that tax-induced income shifting of mobile profits from high-tax to low-tax jurisdictions is indeed increasing over time.

Moreover, economic geography models imply that location-specific rents decline with trade costs, as lower trade costs imply that corporations do not necessarily have to produce in the domestic market to serve that market or do not have to be close to the suppliers of their intermediate inputs. Increased globalisation and decreasing trade and transportation costs will therefore reduce the location-specific rents. This might undermine the government's ability to levy a corporate tax (Sorensen [2006]). On the other hand, location-specific rents might increase if the economic costs of transport would reflect the total cost to society, including all environmental costs. The implementation of higher environmental taxes might then indirectly protect a country's corporate tax base from activities in such sectors as, for instance, the manufacturing sector where transportation costs are considerable (but perhaps less the corporate taxes levied on profits earned in, for instance, the service sector).

A second reason why a race-to-the-bottom type of corporate tax competition has not yet occurred is because most countries actually need the corporate tax revenues. In fact, the data shows that the reduction in the statutory corporate tax rates has continued until 2006, but

not at the same rate as in the 1980s. This observation might indicate that many OECD countries cannot afford to engage in a race-to-the-bottom type of corporate tax competition. However, this argument seems to be less of a concern for other countries, as for instance some of the new member countries of the European Union. Some of these countries seem to raise their tax revenues primarily from other sources of income. Even in these cases, a race-to-the-bottom type of tax competition might not necessarily be triggered as long as these low-rate countries do not have the same type of infrastructure, skilled labour force and technology that is available elsewhere. Moreover, it might also be argued that foreign direct investment becomes locked-in to a particular country once the funds are actually invested in immovable property. The low-tax countries then have an incentive to raise their corporate tax rate after all. But on the other hand, too strong differences between corporate tax rates might further put corporate tax rates under pressure.

Using an applied general equilibrium model, Bettendorf, Gorter and van der Horst (2006) obtain that many EU countries do not face strong incentives to engage in corporate tax competition for a number of reasons. First, the international linkages, which might increase the benefits from corporate tax competition, are still quite moderate for many EU countries. The benefits from a reduction in the corporate income tax rate therefore depend not so much on the international spillovers, but especially on the way that the rate reduction is financed. For many EU countries, the authors find that it is not optimal to reduce the corporate income tax rate if this reduction is financed by an increase in consumption and labour income taxes. Moreover, if other countries reduce their corporate tax rate in response, the benefits of corporate tax competition are reduced even more. Bettendorf, Gorter and van der Horst (2006) therefore conclude that it is not beneficial for many EU countries to engage in corporate tax competition, except for these countries that have a highly distortive corporate income tax rate. Further integration of the European capital markets will aggravate the corporate income tax distortions, but this will not trigger an abolishment of the corporate income tax either.

Finally, a third reason why a race-to-the-bottom type of tax competition has not occurred is because governments have been increasingly tightening up rules for the taxation of international flows, as they are aware of the possibility that profits flow to low tax-rate jurisdictions. This type of activity may be partly responsible for revenues holding up as well.

What of the future? The existence of low tax-rate jurisdictions continues to place pressure on statutory corporate income tax rates. Driven by tax competition forces, it is likely that small open-economies will continue to take the lead in further lowering their corporate tax rates the most. The larger-sized countries might be obliged to reduce their corporate tax rates in response. However, there may be less scope in the future to offset reductions in statutory rates by expanding the corporate tax bases. Figure 1.6 showed that the tax base has been broadened especially during the 1980s. This trend continues during recent years, but at a much lower pace. This implies that the ability of governments to maintain effective tax rates while reducing statutory rates is likely to become weaker over time.

Eventually, there are two possibilities. Either revenue received from corporate income taxes will diminish, as tax rates are reduced without any further capacity to increase the corporate tax bases. Or the offsetting pressure to raise revenue from this source will break the reductions in statutory rates. This analysis has provided some evidence, perhaps, that both possibilities are happening.

ISBN 978-92-64-03811-0
Fundamental Reform of Corporate Income Tax – No. 16

PART I

Chapter 2

Why Levy a Corporate Income Tax?

This chapter reviews the reasons for levying a corporate income tax. Section 2.1 summarizes the main reasons for taxing capital income because in the absence of sufficient reasons to tax income from capital, it is unlikely that there are good reasons to tax capital income at the corporate level. The discussion concludes that there are more reasons to tax capital income than that there are reasons not to do so. The main reasons for levying a corporate income tax are then discussed in Section 2.2. The pros and cons of both source-based and residence-based capital taxation are evaluated in Section 2.3.

2.1. Reasons for taxing capital income

Many OECD countries have (semi-) comprehensive income tax systems. These tax systems are often considered to be in accordance with the principle of horizontal equity in the sense that individuals with the same level of annual income – whether it is received as wages, salaries, interest payments, dividends or capital gains – are considered to have the same ability to pay and are therefore taxed equally. Similarly, taxpayers with a higher level of annual income are considered to have a higher ability to pay and should therefore bear a larger part of the tax burden. In this case, the taxation of capital income is in accordance with the horizontal and vertical equity tax principle. However, if annual income is taxed, taxpayers with income that varies over time might have to pay more taxes than taxpayers with a more constant stream of earnings. This violates horizontal equity and argues for taxation on the basis of the taxpayer's life-time income. Horizontal equity then implies that taxpayers who have the same after-tax income in present value terms should be taxed in the same way, independently of their consumption pattern over the life-cycle. Individuals who postpone their consumption to later periods are not disadvantaged by the tax code only if the return on their savings is not taxed. Except in the case of bequests, horizontal equity in a life-time perspective therefore requires that the "normal" return on capital is not taxed. The taxation of the above-normal return on capital does not violate the horizontal and vertical equity concept (OECD [2006]).

Capital income taxes have large deadweight losses compared to other taxes. Standard economic models of optimal taxation assume that households save in order to consume tomorrow instead of today (no bequest motives, etc.). Savings are therefore related to expenditure on future consumption. If the return on savings is taxed, the decision to postpone consumption and the intertemporal allocation of resources is distorted by the tax system, as the tax drives a wedge between the prices of consumption at different dates. It is therefore more efficient, in addition to a tax on labour income, to tax consumption directly when households actually consume instead of taxing consumption indirectly through the taxation of the return on savings. Economic infinite-horizon models therefore often imply that the optimal tax on capital income is zero in the long-run (De Mooij [2005],

Sorensen [2006]).* For instance, if preferences are additively separable over time and the discount rate equals the pre-tax interest rate, households will prefer to keep their consumption and labour supply constant over time. Under these assumptions, it is optimal not to tax capital income such that the consumer decisions are not distorted by the tax system (Boadway and Keen [2003]). Because in the short run and the medium run, the relative price distortion caused by capital income taxation is finite, it is typically optimal to have a zero capital income tax rate only in the long-run (Sorensen [2006]). In fact, a positive capital income tax in the short run does not distort capital accumulation because it operates as a lump-sum tax on "old" capital, as suggested by Chamley (1986). The no-tax result is also found in the endogenous growth model of Lucas (1990) because a tax on capital income tends to permanently reduce the growth rate of the economy. Hence, these models indicate that governments that have sufficient tax and expenditure instruments for redistributional purposes will not find it optimal to tax capital income in the long run (Bernheim [2002]).

However, as pointed out by De Mooij (2005), these no-tax results are derived from models in which there are no pre-existing tax distortions (no labour market and no environmental distortions), there are no economic rents, there is no tax-arbitrage behaviour, markets are complete and there are no restrictions on the instruments that are available to the government to achieve its policy goals. If these conditions are not fulfilled, it might be optimal to tax capital income also from an efficiency point of view (De Mooij [2005]), as is suggested by the following examples.

The (labour and capital) income of proprietors is usually taxed under the personal income tax. In the case of a (closely-held) corporation, the income of the manager-owner is usually distributed partly as labour income, which is taxed under the personal income tax, and party as capital income. However, in the absence of taxes on capital income, the corporation receives a strong tax-induced incentive to pay no labour income and to distribute the income entirely as capital income (in the absence of income splitting rules). Moreover, this provides proprietors (unincorporated firms) with an incentive to incorporate in order to minimize their tax liabilities by labelling their income as capital income. The absence of a capital income tax would therefore strongly influence the choice of organisational form and it would undermine the revenues from the personal income tax as well.

* Sorensen (2006) demonstrates this result using a simple example. In order for households to consume one additional unit in period T, they will have to give up a small amount of consumption today. The amount of foregone first-period consumption depends on the return on savings r (as these funds will be invested until period T), on the capital income tax rate τ (which is levied on the return on the investment) and on the number of periods T. Under the assumption of constant variables over time, the amount of foregone first-period consumption equals $\left(\frac{1}{1+(1-\tau)r}\right)^T < 1$, which can be written as $\left(\frac{1}{1+r}\right)^T \cdot \left(\frac{1+r}{1+(1-\tau)r}\right)^T$ in order to separate the impact of the return on the investment/time delay (this first term is smaller than 1) and the impact of the capital income tax rate (this second term exceeds 1). Because the first term is decreasing in T and the second term is increasing in T, the distortion of the capital income tax rate becomes infinitely large. Because future consumption depends on the reinvestment of after-tax capital income, the effective tax rate on future consumption increases as T grows more remote and may become infinitely large (Honohan [2003]). As Sorensen (2006) argues, it is unlikely that there are circumstances in which an infinitely large tax-induced distortion would be optimal. This result then implies that it is not efficient to tax capital income in the long run.

Jacobs and Bovenberg (2005) demonstrate that positive capital income taxes alleviate the distortionary impact of labour income taxation on investment in human capital. Labour income taxes reduce the individual's investment in human capital and provide an incentive to accumulate financial capital (De Mooij [2005]). Even though the capital income tax distorts the level of saving, it reduces the distortion in the composition of savings. Capital income taxes might therefore mitigate the distortions created by labour income taxes. Jacobs and Bovenberg (2005) demonstrate that the capital income tax might be relatively high compared to the labour income tax if the learning distortions dominate saving distortions. In fact, the level of the capital income tax is directly linked to the level of the labour income tax. A higher tax on labour income will more severely distort the individual's human capital accumulation and therefore calls for a larger offsetting tax on capital income. Direct educational subsidies, on the other hand, might (partly) eliminate the case for positive capital taxes.

Capital income taxes might not only be optimal to reduce the existing labour market distortions. If production causes a harmful (negative) externality to the environment, Batina and Ihori (2000) demonstrate that a positive capital income tax rate may be optimal as well.

Moreover, the no-capital-income-tax result is derived from models that do not allow for economic rents. In the presence of pure profits, however, a positive capital income tax may be optimal.

A positive capital income tax rate might also be optimal in the presence of borrowing constraints (Hubbard and Judd [1986] and Bernheim [2002]). The standard model assumes that households can borrow at the beginning of their life-cycle, which might be optimal if the household has insufficient first period endowments and/or labour income in order to reach the optimal consumption path during its life-cycle. If households are forced to consume less at the beginning of their life-cycle because they cannot borrow to finance the additional consumption, a reduction in the capital income tax rate will not necessarily change consumption patterns over the life-cycle; the household will not necessarily consume more in the future as a result of the reduction in the price of future consumption. However, if the loss in tax revenue as a result of the reduced capital income tax rate is financed by an increase in the labour income tax rate, this tax increase will force the household to consume even less at the beginning of the life-cycle. In the presence of borrowing constraints, the efficiency costs as result of an increase in the tax on labour income may therefore exceed the efficiency gains that result from a revenue-neutral reduction in the capital income tax rate. A positive capital income tax rate might then again be optimal.

On the basis of the analysis of Arrow and Lind (1970), De Mooij (2005) makes another claim for a positive tax on capital income in the presence of uncertainty. Risk-averse taxpayers prefer a certain outcome over a weighted average of uncertain outcomes with the same expected value as the certain outcome. As capital income is risky by nature, by implementing a capital tax on positive capital income while providing a full loss-offset in case of negative capital income, the government reduces the taxpayer's uncertainty. The taxpayer will then require a lower risk premium which will reduce the cost of capital and increase investment.

In overlapping generation models, the zero capital income tax result in the long run does not hold except in special circumstances (Boadway and Keen [2003]). Erosa and Gervais (2002) obtain a positive capital income tax, if tax rates cannot be conditioned on

age, because future consumption is assumed to be more complementary to leisure than current consumption (see also Sorensen [2006]). A similar result is found when parents not only care about the wealth of their children but also care about the level of their bequests (Batina and Ihori [2000]).

Moreover, Abel (2007) shows that the neutrality implications of capital income taxation under immediate expensing at the firm level carry over to the general equilibrium. This implies that it is optimal, even in an infinite-horizon model, to levy a positive constant capital income tax rate in every period if firms are allowed to immediately expense their investments. Abel also shows that the capital income tax would be able to raise a substantial amount of tax revenue because, in a dynamically efficient economy, (taxable) capital income is larger than investment. In fact, the amount of tax revenue collected is proportional to the tax rate and the amount of revenue – in a closed-economy setting – is arbitrarily close to the amount of taxable capital income in the economy.

In summary, the extensions from the basic infinite-horizon models do not provide a strong case for the exemption of the return on capital income (normal return and economic rents) from the (corporate or personal) tax base. Batina and Ihori (2000) therefore conclude that it is unlikely that in a complex second-best environment a zero capital income tax rate would be optimal even in the long run. The recent work of Abel (2007) strengthens this conclusion.

2.2. Reasons for taxing corporate income

The main reason for imposing a corporate income tax is that the tax plays an important withholding function, acting as a "backstop" to the personal income tax (OECD [2001]). Corporate income that is distributed as dividends or interest is taxed at the personal level as it is earned. In the absence of a corporate income tax, however, business earnings that are retained escape taxation until the shareholder realizes its capital gains or losses. Tax authorities tax capital gains on realisation because it often is considered to be administratively and politically infeasible to tax capital gains at the shareholder level on an accrual basis. Moreover, in the absence of a capital gains tax, retained business earnings would not be taxed at all. Therefore, by levying a corporate income tax, tax authorities prevent shareholders from sheltering their equity income from taxation.

As pointed out in Section 2.1, if the difference between the tax burden on capital and labour income is too large, taxpayers obtain a tax-induced incentive to incorporate and transform their highly taxed labour income into lower taxed capital income. Especially if capital gains are untaxed or taxed upon realisation, a corporate tax might be needed in order to avoid excessive income shifting (Zodrow [2006]).

Governments may want to levy a corporate tax if corporations produce in a particular country – despite that country's corporate tax rate – because they can earn location-specific rents. Corporations might want to serve that country's domestic market; they might want to take benefit from the country's natural resources; they might want to be close to the other corporations that produce in that particular country (in order to minimize transportation and other trade costs, to benefit from technological spillovers between firms, etc.); or they might want to avoid trade barriers such as tariffs and quotas.

Another explanation for levying a corporate income tax is that it captures part of the benefits of public expenditures on goods and services (infrastructure, legal and regulatory system), of public expenditures on education and training (good qualified labour force, etc.)

and of the legal provisions (*e.g.*, limited liability) that are offered to the corporation (Mintz [1995] and OECD [2001]). However, there is no clear link between the corporate tax paid and the public benefits that the corporation has enjoyed. On the other hand, if user fees cannot directly be charged to the corporation for the public benefits it enjoys, the corporate income tax may serve as an imperfect substitute.

The corporate income tax also acts as a withholding tax on equity income (distributed dividends and retained earnings/capital gains) earned by non-resident shareholders, which would otherwise escape taxation in the source country (in the absence of a withholding tax on dividends distributed to foreign shareholders). In fact, the corporate income tax replaces a withholding tax at source on the profits of non-resident shareholders, but it does not replace a withholding tax at source on the interest payments received by non-resident bondholders.

In the case of non-resident shareholders, the corporate tax burden is effectively exported to the foreign owners of the domestic capital stock (Sorensen [2006]). In fact, Mintz (1994) has suggested that countries continue to levy a corporate tax because increased globalisation has increased the foreign ownership of shares. This result is supported by Huizinga and Nicodème (2003) who concluded, on the basis of data for Europe, that there is a significant positive relationship between the average effective corporate tax rate and the share of domestic corporations owned by foreigners. On the other hand, a (relatively high) corporate tax rate also provides a tax-induced incentive to foreign investors not to invest in the domestic market.

The corporate income tax might also attempt to transfer tax revenues from countries that tax their multinationals on their worldwide income but allow foreign tax credits for the corporate taxes paid at source. This is the so-called "treasury transfer" effect (Zodrow [2005]). In that case, not levying a corporate income tax in the host country might not affect the multinational's finance and investment behaviour but might only transfer the corporate tax revenue from the host country to the multinational's country of residence. However, this effect can only partly justify a corporate income tax. For instance, many countries do not tax multinationals on their worldwide income, some multinationals have more foreign tax credits than that they can use and multinationals would have to pay the host country's corporate tax immediately while the foreign tax credits could only be obtained when the profits are repatriated back home. Moreover, the effect implicitly assumes that the home country's corporate tax rate exceeds the host country's tax rate and ignores tax-planning by the corporation.

Sorensen (2006) points out that governments may want do levy a corporate tax because capital is not perfectly mobile. For instance, French and Poterba (1991) have found that individual portfolios are heavily specialised in domestic securities even though there are large potential gains from international diversification. The literature provides a number of reasons why capital is relatively immobile internationally. First, the actual relocation of capital is expensive. Second, Gordon and Bovenberg (1996) argue that asymmetric information might explain the relative immobility of capital. The fact that, especially small, foreign investors have poorer knowledge of domestic markets might induce them to over-invest in their home country and less in foreign markets. Third, investors will want to hold securities from different countries in order to diversify their portfolios as long as the corporate tax disadvantages are not too large (Sorensen [2006]).

Another argument for levying a corporate income tax is that it could be designed to only tax economic rents. Because economic rents are profits in excess of the required (normal) return, the corporate tax would not create any efficiency losses. In fact, the corporate tax revenue allows reductions in other distortionary taxes, which then would lead to an improvement in overall economic efficiency (OECD [2001]). Of course, this argument does not offer a justification for most current corporate tax systems that do tax the investment's normal rate of return. Moreover, even if only economic rents are taxed by the corporate income tax, the tax would continue to influence the decisions that depend on the average corporate tax burden, as for instance the choice of the business's legal form, the location of the investment and the profit shifting decisions between high and lower-taxed jurisdictions.

The popular view is that corporations should pay their fair share of the tax burden. Moreover, if the burden of the corporate income tax falls (only) on capital, it could be argued that the tax contributes to the tax system's progressivity as capital income is mostly concentrated in the upper deciles of the income distribution. However, the corporate tax will fall not only on the owners of the corporation, but possibly also on consumers who will have to pay higher prices for the goods and services and on workers that might receive a lower wage. This point (see also Section 4.3 on corporate tax incidence) therefore offers only a weak argument in favour of the corporate income tax and is possibly only relevant in the short run.

Finally, it is often argued that the corporate tax can be used to stimulate activities that are beneficial for society as a whole (as, for instance, research and development, investment in less affluent regions, etc.). However, this argument does not directly offer a justification for levying a corporate income tax, as these particular activities might be stimulated by providing direct subsidies instead of taxing them at lower (effective) corporate tax rates.

2.3. Taxing capital income at the corporate or personal level

Instead of taxing income at source under the corporate income tax, capital income might be taxed at the personal level instead. As the corporation is owned by its shareholders, the ability-to-pay tax principle makes a strong case for the allocation of corporate income to the corporation's underlying shareholders such that their total capital income can be taxed at the personal level in their country of residence. This raises the question of the optimal mix – in terms of efficiency, equity, tax revenue and complexity – of corporate level (source-based) and personal level (residence-based) taxation of capital income. This optimal mix of residence-based and source-based capital taxes might of course evolve over time and it might be different for different countries.

The taxation of capital income in the country of residence – at the personal instead of the corporate level – seems to be attractive for a number of reasons. First, the high mobility of capital implies that it is highly distorting to tax capital income at source. It also implies that the less mobile production factors will bear the largest part of the burden of the tax (see Section 4.3 on corporate tax incidence) and it is therefore more efficient to tax these factors directly instead of indirectly through the corporate tax. Corporate tax competition will result in lower corporate tax rates, which then puts a downward pressure on tax revenues which, in turn, might lead to under provision of public goods. Moreover, through tax-planning, corporations are often able to reduce their tax liabilities considerably. The

corresponding tax compliance costs are even deductible from the corporate tax base. In fact, under residence-based taxation, investors have an incentive to invest in the country where they face the most attractive investment opportunities, as similar returns earned in different countries will be taxed in the same way under the tax rules of the shareholder's country of residence. This capital export neutrality implies that the capital income tax system does not distort the international location of capital, investment and profits. Moreover, Sorensen (2006) argues that most household savings are channelled through institutional investors (insurance companies, pension funds, etc.) who can be taxed more easily in the household's country of residence.

On the other hand, the analysis in Section 2.2 has presented a number of arguments why taxation at source might be attractive. In addition, all shareholders would earn the same after-tax return irrespective of their country of residence, which implies capital import neutrality, if only source-based corporate taxes would be levied. De Mooij (2005) also points out that the residence principle in general is more difficult to enforce than the source principle. In order to implement the residence principle, the tax administration in the country of residence requires a lot of information with respect to the foreign-earned capital income of their residents. This creates tax evasion opportunities for taxpayers because their foreign-source taxable capital income might easily be concealed from their home country's tax authorities. In order to implement the residence tax principle successfully, it is therefore absolutely necessary that tax administrations of different countries exchange detailed taxpayer information.

In reality, many governments tax capital income at source under a corporate income tax (and possibly under an additional withholding tax) and tax the capital income of their residents at the personal level as well. This might result in double taxation of investment income. However, the combination of both source-based and residence-based taxation at lower rates probably creates fewer distortions, given the government's required tax revenue, than the implementation of either a source-based corporate income tax or a residence-based capital income tax at higher rates. The optimal mix of a (source-based) corporate income tax and (residence-based) personal income taxes on investment income might depend on different factors. Important agglomeration effects and a large amount of foreign investment in a particular country might favour a source-based corporate income tax. Factors that might lead to more residence-based capital taxes at the personal level are the amount of domestic investment income, the use of withholding taxes on domestic investment income, the mobility of capital, the ease with which residents' international investment income can be traced and the amount and the quality of the information that is received from other countries' tax administration.

ISBN 978-92-64-03811-0
Fundamental Reform of Corporate Income Tax – No. 16

PART I

Chapter 3

Fundamental Corporate Income *versus* Consumption Type of Tax Reform

Instead of a corporate income tax, governments may implement a corporate cash-flow tax. This tax is sometimes referred to as a consumption type of corporate tax. Before discussing in detail the corporate income tax in Part II and the corporate cash-flow tax in Part III of this report, this chapter sets the stage by reviewing the fundamental differences between income-based and consumption-based taxation – either implemented at the corporate or personal level. The different accounting systems are at the centre of this discussion on fundamental corporate income tax reform; they are therefore reviewed first.

3.1. Different types of accounting systems

Fundamental corporate income tax reform cannot be discussed in isolation of the effects of the different accounting rules that are (or might be) applied for tax purposes: accrual-basis (accrual) accounting, realisation accounting and cash-basis (cash, cash-flow) accounting. The main difference between these accounting systems is the moment at which income and expenses are considered in the tax base.

Under accrual-basis accounting, corporate income is included in the tax base when it is earned – not when cash is received – and corporate expenses are deducted when they are incurred – not when cash is paid. Accrual accounting implies that cash expenses creating benefits in later years cannot immediately be deducted from the corporate income tax base. Equivalently, cash which is received today but which relates to economic activity in the future should not be included in the current corporate tax base either. The corporate tax base under accrual accounting therefore consistently deviates from the firm's cash flow in any particular year. Accrual accounting then requires a detailed set of tax rules which defines the proper timing of inclusion of earnings and deduction of expenses (so-called "capitalisation" of assets (Edwards [2003]). This tax complexity might be reduced by the use of accounting standards.

There are two main issues that can be raised with respect to capitalisation of assets. First, tax authorities have to determine which assets require capitalisation rather than have their costs immediately deducted from the corporate tax base. The main rule is that assets that produce benefits in future years should be capitalised. These rules then imply that the purchase price of buildings, machinery, equipment, means of transportation and of intangible assets should be depreciated (amortised) over time.

Second, tax authorities have to stipulate tax depreciation rules which determine how investment expenses can be spread over time. This raises the issue of the particular method that can be applied and the length of the period over which the asset can be depreciated. Ideally, depreciation allowances match the asset's economic obsolescence, the loss in value from wear or tear and/or the change in monetary value of the asset over time (Chua [1995]).

Under these tax rules, the investment's revenue yield that is taxed under the corporate tax and the depreciation of the underlying investment – the loss in value due to the depreciation of the asset is a cost that can be deducted from the corporate tax base, which

then reduces the corporate taxes that are due – are separate issues. However, tax models often do make the link between the investment's return and the depreciation of the investment's asset. This approach provides a useful framework to analyse the impact of the tax depreciation allowances under accrual-basis accounting on the investment's after-tax rate of return, as will be discussed in the next paragraph.

In tax models, the return of an investment consists of a real return and a return to pay for the real decline in value of the investment. This return, however, is also taxed under the corporate tax. In order to offset this tax, the corporate income tax system allows the firm to deduct part of the investment from the corporate income tax base. In the case of economic depreciation allowances, the tax deprecation allowances exactly offset that part of the return which pays for the economic depreciation of the investment. This then implies that the return which the firm receives to pay for the asset's decline in value is effectively not taxed at the corporate income tax rate. Or, put differently, that the corporate tax rate is levied only on the real return of the investment. If tax depreciation allowances deviate from true economic depreciation of the asset, the corporation's taxable profits will exceed or be lower than the profits in real terms and will therefore deviate from the ideal tax base under accrual accounting.

Corporate income tax systems in OECD countries mainly use accrual accounting rules. The implementation of these rules, however, is sometimes impractical and would entail high administrative costs. The tax treatment of some corporate assets and liabilities are therefore based on realisation-basis accounting. The corporate capital gains tax, for instance, can often be deferred until capital gains (or losses) are realised. However, the inconsistency between accruals accounting and realisation accounting might be exploited by taxpayers to lower their tax liabilities. Once taxpayers have discovered these opportunities, the tax authorities will have to counter them with special anti-abuse rules in order to protect their tax revenues (Bradford [2000]).

While taxation upon realisation attempts to bring accrual-basis accounting in accordance with practical feasibility, cash-basis accounting takes a totally different point of view. Cash-basis accounting recognizes income when cash is received and expenses when cash is actually paid. Under cash-flow accounting, the corporate tax base consists of income when cash is received net of expenses when costs of materials, inventories, equipment and structures are purchased. The cost of investment is then immediately deductible from the corporate tax base and should no longer be depreciated over the asset's life-time.

The corporate tax system in most OECD countries contains elements of cash-flow accounting. For instance, expenses for consultancy, marketing and advertising and research and development can often immediately be expensed. Even though these investments yield benefits in future years, they can immediately be deducted from the corporate tax base.

Immediate expensing provides a larger tax gain than economic depreciation allowances. In fact, the immediate corporate tax saved as a result of the deduction of the investment from taxable corporate profits entirely offsets the corporate tax rate on the investment's normal profits. Immediate expensing therefore implies that the normal return of the investment is not taxed at the corporate tax rate, as will be demonstrated in the next section.

3.2. Corporate income *versus* consumption type of tax reform

The main difference between consumption and income-based taxation is the tax treatment of savings. An ideal personal income tax – following the Schanz-Haig-Simons definition – is characterised by a tax base at the personal level that includes the market value of consumption plus changes in net wealth on an accruals basis ($I = C + dW$). The changes in the net wealth are the household's savings, which then implies that the tax base satisfies: $I = C + S$. The base of an ideal consumption tax is the same as the base of the ideal income tax except that the household savings are excluded. The tax base therefore satisfies: $C = I - S$.

Ideal income taxes require a system of accrual accounting, which takes into account the accruing gains and losses on assets and liabilities. However, to follow this income definition in practice would be very difficult, and would imply fairly high compliance and administrative costs. In practice, income tax systems are mainly based on realised income. This implies that capital gains, for instance, are taxed when they are realised and not when they accrue (if they are taxed at all). Also other types of (capital) income are taxed in a different way than under an accrual accounting system. The fact that actual income tax systems do not tax all types of income in an equal manner provides possibilities for arbitrage behaviour. This lack of neutrality, in turn, increases the compliance and administrative costs, reduces tax compliance and tax revenues and impairs the efficiency and equity of the tax system.

A tax system that is based on cash-flow accounting includes income in the (corporate and/or personal) tax base when cash is received net of expenses when costs are incurred. For instance at the personal level, cash receipts would be the sum of wages, interest, dividends and sale of assets, but accruing gains and losses on assets and liabilities would not enter the tax base. If savings are expenses that are immediately deductible from the (corporate and/or personal) tax base, the cash-flow accounting system implements a consumption type of tax.

Consumption type of taxes can be implemented in different ways. Consumption can be taxed directly, as for instance under a VAT. Consumption can also be taxed indirectly, either by using the "tax prepayment" method or by implementing the "tax expenditure" method. These methods can be implemented at the corporate level and/or at the personal level. Under the "tax prepayment" method, savings are not deductible from the tax base but consumption out of savings – which are the original savings augmented by the savings' return – is not taxed either. The tax on future consumption is then paid up front, through foregoing the savings deduction from the tax base (Bradford [2005]). Under the "tax expenditure" method, savings are deductible from the tax base but these savings augmented by their return are taxed when the funds are consumed. These methods are equivalent in that they yield the same tax revenue to the government in present value terms (under the assumption that the tax rates remain constant over time) if the investment earns a marginal return (equal to the discount rate/interest rate). Of course, the timing of the tax payments will be different. Both methods are consistent with cash-flow taxation.

However, the deduction of savings from the tax base under cash-flow accounting does not imply that all taxes on capital income are eliminated under a consumption tax (under the "tax expenditure" treatment). Hubbard (2005) decomposes the return on investment in four components: the risk-free interest rate which Hubbard refers to as the return to waiting, the expected risk premium for investing which is the return to risk taking, the

returns to monopoly profits/market power, entrepreneurial skill or ideas (the economic rents), and the remainder which reflects good or bad luck. Except for the first component which is taxed under the income tax but not under the consumption tax, all three other components – although one can discuss about the impact of the risk premium (see below) – are included in the consumption tax basis as well as in the income tax basis ("tax expenditure" treatment). In particular, above-normal returns or economic rents are taxed under both taxes, as we will demonstrate below (the exposition follows closely the exposition in Hubbard [2005]) for a corporate investment project.

If an investment project earns in every period a real return equal to the risk-free real interest rate, the unit cost of this marginal investment will equal the present value – discounted at the risk-free interest rate – of its stream of before-tax profits. If this investment can immediately be deducted from the corporate tax base, the corresponding tax gain will offset the taxes on the return of the investment in every period. The real/nominal risk-free interest rate is therefore not taxed under a consumption tax. The return that the firm receives to pay for the depreciation of the investment is not taxed either. However, if the investment's return exceeds the risk-free interest rate by the economic rents, the tax gain due to the immediate expensing of the investment offsets the taxes on the risk-free interest rate and the premium to pay for the depreciation of the asset but not the taxes on the investment's economic rents (under the "tax expenditure" method). This result is derived in Box 3.1. This result implies that economic rents are taxed under the consumption tax as well as under the income tax. Thus a consumption type of tax exempts the risk-free (normal) rate of return but fully taxes above-normal returns (the economic rents) under the "tax expenditure" method. On the contrary, the "tax prepayment" method does not tax the marginal return nor the economic rents. The method does not allow for the immediate deduction of savings, but savings (including the normal return and rents) are not taxed afterwards either.

Risky investments have a higher required rate of return than risk-free investments. An increase in the risk premium will increase the tax revenues for the government (under the "tax expenditure" method). In this sense, the risk premium is taxed under the consumption tax and under the income tax (Hubbard [2005]). However, in case of investment projects that cost the same, have the same expected return but have a different risk profile, the different risk premium will not affect the present value of the tax revenues if the taxes are discounted at the rate that includes the risk premium. The market value of the extra expected revenue is zero because it compensates government for the increased risk with respect to its tax revenue. (The government is a silent partner in the investment, who receives more if the investment turns out good and less if the investment turns out to be a failure.) Hubbard (2005) argues that in that sense neither the income nor the consumption tax system taxes the risk premium. Hubbard (2005) also points out that the realised return that exceeds this required (expected) rate of return – reflecting good luck – is also taxed under the income and consumption tax. In case of similar loss provisions under the income and consumption tax system, the realised return that is lower than the required rate of return – reflecting bad luck – will have the same tax consequences under both tax systems as well. Again, this argument is only valid for the "tax expenditure" method but not for the "tax prepayment" method. Under the "tax prepayment" method, the risk premium and the return that reflects good or bad luck are tax-exempt.

Box 3.1. **Immediate expensing**

This box derives the present value of the after-tax return on investment if the firm invests an additional euro and if the firm can immediately deduct the entire cost of that investment from its corporate tax base (immediate expensing).

It is assumed that, in every period, the firm earns a real return $r + er + \delta$, which is the sum of the real interest rate r, the economic rents er and a return to pay for the depreciation δ of the investment. The total return $r + er + \delta$ is taxed at the corporate tax rate τ. The value of the asset – and therefore the return the investment generates – increases at the rate of inflation π, drops in value at the rate of depreciation δ and is discounted at the rate ρ, which is equal to the nominal interest rate $r + \pi$. All variables are assumed to be constant over time. Time is represented by t. Under immediate expensing, the cost of the investment is fully deductible from the corporate tax base, which yields an immediate tax gain τ. The present value of the after-tax return of the firm's investment V amounts to:

$$V = \tau + \int_{t=0}^{\infty} (1-\tau)(r + er + \delta) \cdot e^{-(\rho+\delta-\pi)\cdot t} dt$$

where $\rho = r + \pi$, or:

$$V = \frac{(r+\delta) + (1-\tau)\cdot er}{\rho + \delta - \pi} = \frac{(r+\delta) + (1-\tau)\cdot er}{r+\delta}$$

Due to the immediate expensing of the investment, this result demonstrates that only the economic rents are taxed at the corporate tax rate. The real interest rate – the normal rate of return – and the return to pay for the depreciation of the investment are not taxed under the corporate tax.

Assume for instance that $r = 5\%$, $er = 7\%$, $\delta = 8\%$, $\pi = 4\%$ and $\tau = 30\%$. The present value of the corporate tax on the investment's normal return and return to pay for the depreciation of the asset then amounts to: $\frac{\tau \cdot (r+\delta)}{\rho + \delta - \pi} = \frac{30\% \cdot 13\%}{13\%} = 0.30$, which exactly equals the corporate tax rate. As a result, the tax gain in the first period due to the immediate expensing of the investment fully offsets the corporate taxes on the investment's normal return and return to pay for the depreciation of the asset over time.

A consumption type of tax might be preferred on efficiency grounds as it exempts the normal return on capital from taxation. However, the tax expenditure method continues to tax the economic rents, as opposed to the tax prepayment method, and might therefore continue to distort the agents' behaviour, for instance, in an open economy setting. Moreover, the analysis in Section 2.1 implies that it might in fact be more efficient to levy a rather low rate on the entire return on capital (although Abel [2007] challenges this conclusion by demonstrating that a cash-flow tax is efficient but a capital income tax is not) if the resulting tax revenues are used to alleviate the tax burden created by other distortionary taxes. Moreover, because the risk-free return (normal rate of return) is a small component of the total return to savings (Gentry and Hubbard [1996]) – the risk-free interest rate has historically been quite low (Zodrow [2005]) – the efficiency gains from consumption taxation are in fact rather small (Weisbach and Bankman [2005], McCaffery [2005]), especially in periods with high inflation.

The implementation of either a consumption tax or an income tax can be evaluated on equity grounds as well. As argued in Section 2.1, the taxation of the normal return on capital satisfies the horizontal and vertical equity tax principle if these principles are applied to the taxpayer's annual income. However, on the basis of the taxpayer's life-time income, horizontal and vertical equity will only be realised if the normal return on capital is exempt from capital income taxation and only the economic rents are taxed. In this case, the tax expenditure method, as opposed to the tax prepayment method, implements the horizontal as well as the vertical equity tax principle. Moreover, Gentry and Hubbard (1996) noted that high-income households obtain more capital income in the form of returns to risk-taking and economic rents than lower-income households. The move towards a consumption tax ("tax expenditure" method) would therefore be less regressive than it seems at first sight.

The implementation of the "tax expenditure" method would imply a strong immediate reduction in tax revenues as savings are tax-deductible as opposed to the "tax prepayment" method. However, in present value terms, the reduction in tax revenues will be larger under the "tax prepayment" method because it exempts the entire return from tax, as opposed to the "tax expenditure" method that exempts only the normal return.

PART II

Domestic and International Corporate Income Tax Issues

FUNDAMENTAL REFORM OF CORPORATE INCOME TAX – No. 16 – ISBN 978-92-64-03811-0 – © OECD 2007

ISBN 978-92-64-03811-0
Fundamental Reform of Corporate Income Tax – No. 16

PART II

Chapter 4

The Main Drivers of Corporate Income Tax Reform in OECD Countries

This chapter reviews the main drivers of corporate income tax reform from a domestic and international point of view. The domestic and international distortions that are caused by the corporate income tax are reviewed in Sections 4.1 and 4.2 respectively. Tax incidence issues, from a domestic and open-economy point of view, are discussed in Section 4.3. Section 4.4 focuses on the level of tax revenue that is actually raised by the corporate income tax. The implications of the complexity of the corporate income tax system are discussed in Section 4.5.

4.1. Domestic efficiency considerations

The corporate tax system distorts the corporate firm's finance and investment behaviour in a number of ways. This section reviews the domestic impact of the corporate tax system on the firm's total amount of investment and its investment projects, on the firm's preferred sources of finance, on the total tax burden of debt and equity-financed investment, on market dynamics and on mergers and acquisitions, and on the legal form that is chosen by the firm.

The efficiency implications of the corporate income tax in an open-economy framework may deviate from the impact of the corporate income tax in a closed-economy. The corporate income tax distortions in an international setting are determined by the corporate income tax systems in both the home and the host country. A detailed discussion is presented in Section 4.2.

Total investment and type of investment project

The corporate tax rate increases the cost of equity-financed investment and has therefore a negative impact on the corporate firm's total amount of equity-financed investment. Given a predetermined after-tax return required by the corporate firm's shareholders – for instance the interest rate augmented by a risk premium – the firm's investment will have to yield a higher return in order to pay for the shareholder's required return and the corporate tax. The increase in the investment's required return might then decrease the corporation's total amount of equity-financed investment.

Because often tax depreciation allowances do not exactly match the economic depreciation of the asset, the corporate tax system might also distort the type of investment projects that firms invest in. The difference between economic depreciation and tax depreciation might vary between type of investment projects and between industries. It would be administratively very costly to design an asset-specific tax depreciation system that corresponds to the economic depreciation of every particular asset. Depreciation rules therefore apply to broad asset groups and tax depreciation rules will only approximate the actual decline in value of the asset. This different tax treatment then distorts the corporation's choice for particular investment projects and might give some firms a tax-induced competitive advantage compared to other firms.

The corporate tax system approximates the asset's economic deprecation pattern over time by imposing particular tax depreciation methods. The most commonly used methods are the straight-line method – the historic cost of the asset is written down in equal amounts over the asset's estimated economic life – and the declining-balance method that provides larger depreciation allowances at the beginning of the asset's life and smaller allowances at the end. The declining-balance method allows tax depreciation at a fixed rate which is applied to the value of the asset net of the depreciation accumulated in previous years (Chua [1995]).

Even if the tax depreciation method approximates the asset's economic depreciation pattern over time very well, the actual tax depreciation rate might deviate from the economic rate of depreciation. Depending on the asset's characteristics, assets are often assigned to a particular asset class that allows for a specific tax depreciation rate, which is supposed to correspond to the asset's economic life. Within this particular class, longer-lived assets then obtain a corporate tax advantage compared to shorter-lived assets. This over- or under-taxation becomes more severe the lower is the amount of asset classes.[1]

Replacing the asset might become more expensive over time due to inflation, even though the price of some assets has decreased over time (personal computers, the use of communication technologies, etc.). Tax depreciation allowances that correspond to the actual economic depreciation of the asset are therefore based on the asset's replacement costs instead of its historical costs. Not indexing for inflation (and technological progress) might then lead to over-taxation, which will discourage corporate investment. However, most countries allow only for tax depreciation of the historical cost of the investment (see also Figure 1.6). On the other hand, as price stability has become the key objective of many central banks, the inflation concern is less serious than before.

The corporate tax systems in many OECD countries violate tax-neutrality because investment in intangibles (advertising and other marketing expenses, research and development, company training) can often be immediately expensed. Moreover, authorities might provide special tax credits to particular investments and/or industries or allow for accelerated tax depreciation allowances in order to stimulate investment. These special incentives might of course attempt to internalize positive external effects as, for instance, in case of research and development.

Debt* versus *equity-financed investment

Interest payments are deductible from the corporate income tax base but the return on equity is taxed at the corporate tax rate. This tax rule provides corporate firms with a tax-induced incentive to finance investment with debt rather than equity. This may make companies more prone to insolvency and discriminates against small companies and start-ups, which have reduced access to and less favourable terms on debt financing and thus often depend more on equity. Also corporate firms that own firm-specific assets against which it is difficult to borrow suffer a tax-induced competitive disadvantage (Cnossen [1996]).

However, the corporate advantage of debt might be lost if the interest payments are not entirely deductible from the corporate tax base. This might be the case if the firm's earnings are too low or because the firm possesses a large amount of other deductions, such as depreciation allowances and/or if (part of) the investment can be immediately expensed. These corporate tax shields are less likely to be lost when there are tax loss carry backs or carry forwards.

Because *nominal* interest payments are deductible, the debt-equity distortion increases with inflation. However, the concerns about the inflation rate on the debt-equity distortion have eased over time because of the rather low inflation rates in many OECD countries.

The preference of debt over equity as source of finance not only depends on the differences with respect to the corporate tax treatment. The debt-equity choice is also influenced by the taxes at the personal level on interest payments, dividends and capital gains.

Moreover, the debt-capital ratio will also depend on other non-tax costs. In addition to the different taxes at the personal level on debt and equity income, also bankruptcy costs and adverse selection problems in the credit market generally will make it optimal to have a debt-capital ratio that is less than 100 per cent. However, firms might attempt to circumvent the traditional restrictions on debt by using newly developed financial instruments as, for instance, debt-equity hybrid securities. These financial "innovations" then allow firms to increase their debt-equity ratio, and lead to higher (corporate) tax-induced (financing) distortions.

Efficiency under the "new" view and the "nucleus" theory of the firm

One approach to the efficiency implications of the corporate tax is the so-called "new" view of dividend taxation (King [1974, 1977], Auerbach [1979] and Bradford [1981]). The new view studies the firm's finance and investment decisions which depend not only on the corporate income tax but also on the taxes on interest payments, dividends and capital gains at the personal level. The new view considers dividends to be the "residual" use of profits. The firm will distribute dividends only if no profitable investment opportunities are available.

Instead of focusing on the King and Fullerton (1984) type of framework, the following analysis evaluates the impact of the corporate income tax under the "new" view applying Sinn's (1991) dynamic life-cycle model of the firm. This framework, which is also referred to as the "nucleus" theory of the firm, studies the finance and investment decisions of a newly founded firm that invests until it becomes mature and starts distributing dividends. The analysis assumes a "classical" type of income tax system. A similar type of analysis could of course be made for other type of tax systems. The analysis will briefly discuss Sinn's (1991) model and the extension by Brys and Bovenberg (2006); it will be argued that the cost of capital on investment financed with newly issued equity can either exceed or be lower than the value suggested by King and Fullerton (1984). Afterwards, the models will be used to evaluate the efficiency implications of a change in the corporate tax rate.

If retained earnings are a cheaper source of finance than newly issued equity and debt – the assumption throughout this analysis unless indicated otherwise – a young, newly founded firm will issue only a nucleus of new equity. The return on the initial investment will be retained and reinvested during the internal growth phase of the firm. The firm keeps on reinvesting its earnings for a while. Eventually, however, the firm stops investing because there are no additional profitable investment opportunities and the firm will start distributing dividends. In the steady state, the firm's marginal investment is therefore financed with retained earnings and the return on the investment is distributed as dividends. The cost of capital and the marginal increase in value of the firm's equity in the steady state are discussed in Box 4.1.

Sinn's internal growth path is driven by the difference in after-tax value of dividends and capital gains. If the firm would issue a lot of new equity, it could start distributing dividends in an early stage of its life-cycle. However, the after-tax value of the firm is

Box 4.1. **The corporate income tax under the "new" view**

This box presents the cost of capital, which is the minimum required return the investment must earn in order to be profitable, on a firm's marginal investment decision under the new view. It is assumed that capital gains are taxed at a lower (overall) rate than dividends. The analysis abstracts from depreciation and assumes that there is no inflation. τ_f represents the corporate income tax rate; τ_d is the dividend tax at the personal level; τ_p is the personal income tax on interest payments; the tax rate on realised capital gains is transformed into an equivalent tax rate τ_c on accrued capital gains, and r is the interest rate.

Under the "new" view, the firm will invest its retained earnings until the marginal product/revenue of an additional unit of capital (cost of capital) $f'(K)$ equals:

$$f'(K) = \frac{(1-\tau_p)}{(1-\tau_c)(1-\tau_f)} \cdot r$$

If the firm retains and reinvest 1 currency unit of before-tax profits, it actually invests $(1 - \tau_c)(1 - \tau_f)$ of after-tax profits. The return on this investment $f'(K)$ will be distributed as dividends. The after-tax return of an investment financed with retained earnings while the profits are distributed as dividends then is $(1 - \tau_c)(1 - \tau_f)f'(K)(1 - \tau_d)(1 - \tau_f)$. Instead of reinvesting its earnings, the firm might distribute its profits as dividends to shareholders who invest them in market debt, which would yield $(1 - \tau_d)(1 - \tau_f)r(1 - \tau_p)$. The firm will therefore invest as long as the after-tax return on investment financed with retained earnings exceeds the after-tax opportunity return of investment in market debt.

Similarly, the firm will invest its retained earnings, which yields capital gains, until the marginal increase in value of the firm's equity q equals the cost of the additional investment, which are the net dividends foregone:

$$q = \frac{(1-\tau_d)(1-\tau_f)}{(1-\tau_c)(1-\tau_f)} = \frac{(1-\tau_d)}{(1-\tau_c)} < 1$$

If the firm retains and reinvest an additional euro, the after-tax increase in value of the firm's equity equals $(1 - \tau_c)(1 - \tau_f)q$. If the firm distributes the additional euro, the household receives after-tax dividends $(1 - \tau_d)(1 - \tau_f)$. The firm invests until the household is indifferent between retaining and distributing the firm's earnings. Because it is assumed that capital gains are taxed at lower rates than distributed dividends, the increase in value of the equity is lower than 1.

maximised only if the corporation issues less new equity so that investment can be financed with retained earnings which yield capital gains that are taxed, by assumption, at a lower rate than dividends. If the firm issues a lot of new equity, it foregoes the opportunity to finance investment with the cheaper retained earnings. Sinn (1991) demonstrates that this opportunity cost increases the cost of capital of investment financed with newly issued equity above the usual King and Fullerton (1984) value. This opportunity cost depends on the difference in corporate and shareholder level taxes on dividends and capital gains.[2]

However, this does not imply that the firm issues only an infinitesimal amount of new equity, which would postpone the moment that the firm becomes mature and starts distributing dividends. In fact, the value of the firm's equity, which equals the present value of the after-tax dividends, declines if the firm initially issues too little new equity. This second effect (Brys and Bovenberg [2006]), which originates in the time value of

money, explains not only why the firm does not issue an infinitesimally small amount of new equity, but also why the firm might actually issue a substantial amount of initial equity such that the marginal return on the investment is lower than the King and Fullerton (1984) value. The gain of paying dividends earlier is an opportunity return of newly issued equity, which might reduce the cost of capital below the conventional King and Fullerton (1984) value (Brys and Bovenberg [2006]).

Of course, if dividends are taxed in the same way or at a lower rate than capital gains, the firm will immediately issue the optimal amount of new equity in order to finance the steady-state capital stock and the firm will immediately start distributing dividends. In that case, the firm's internal growth phase collapses into a single period.

The favourable tax treatment of retained earnings implies an advantage for mature firms that generate sufficient retained earnings to finance investment. Young (newly founded) firms, which have not yet generated retained earnings, will have to issue new equity as a source of finance. Investment financed by young firms must therefore yield a higher return than investment by mature firms. Consequently, the tax code offers mature firms a tax-induced competitive advantage compared to young firms. Shareholders will thus finance projects that earn a lower return with retained earnings instead of distributing the profits and financing projects that earn a higher return with newly issued equity. The favourable tax treatment of retained earnings makes it more difficult for young firms to attract new capital. This hampers the dynamics of the equity market, misallocates resources and inhibits the entry of new firms.

Sinn (1991) analyses the effect of the corporate tax rate on *distributed* earnings on the firm's life-cycle. The corporate tax on distributed earnings affects the life-cycle of the firm but does not impact the final capital stock, which is determined by the personal income taxes on interest payments and the taxes on capital gains. An increase in the corporate tax on distributed earnings will increase the cost of capital of investment financed with newly issued equity and therefore induces newly created firms to issue less new equity. Because the increase in the corporate tax on distributed profits lowers the gain of receiving dividends, the shareholders prefer to receive capital gains even more than before the tax increase. As a result, the firm finds it optimal to issue less new equity and to finance more investment with retained earnings. The decrease in the initial capital stock increases the amount of capital that the firm will accumulate over time – financed by retained earnings – and increases the time required by the firm to become mature. Consequently, an increase in the corporate tax on distributed earnings strengthens the mature firms' tax-induced competitive advantage compared to young firms.

The slowing down of capital accumulation due to an increase in the corporate tax rate on distributed earnings, however, becomes less prominent if debt finance is available in Sinn's model. In the extreme case, where the firm can finance the investment entirely with debt – it is assumed that the capital gains are taxed at lower rates than interest payments, which implies that retained earnings are a cheaper source of finance than debt, and that dividends are taxed at the highest rates – the firm will immediately attract debt-financed capital so that the cost of capital equals the interest rate. Since this initial capital stock is not affected by the corporate tax rate on distributed earnings, the corporate tax does not impact the time path for the accumulation of capital at all and the length of the firm's internal growth phase will be entirely driven by the difference between the taxes (corporate level and personal level) on capital gains and the personal income taxes on interest payments (Brys and Bovenberg [2006]).

Although the corporate tax on distributed earnings (dividends) does not affect the steady-state cost of capital, it does however affect the value of the firm's shares (as demonstrated in Box 4.1). Under the "new" view of dividend taxation, a reduction in the corporate tax rate on dividends will increase the value of the firm's shares without inducing any effects on steady-state investment.

The corporate tax on *retained* earnings has three effects on the corporation's life-cycle. First, the tax does increase the steady-state cost of capital of investment financed with retained earnings. The corporate tax then reduces the firm's steady-state investment level and capital stock. Second, the corporate tax on retained earnings reduces the corporation's funds that can be reinvested in every period. The tax therefore increases the length of the firm's internal growth phase; it will take longer before the firm reaches the stage of maturity. On the other hand, the tax reduces the difference between the after-tax value of capital gains and dividends, which implies that the firm will find it optimal to issue more new equity in the initial phase. The corporate tax on retained earnings therefore reduces the cost of capital of initial investment financed with newly issued equity. This then shortens the length of the firm's internal growth phase. Consequently, an increase in the corporate tax on retained earnings makes the mature firms' tax-induced competitive advantage compared to young firms less severe due to the lower cost of capital of investment financed with newly issued equity, on the one hand, but makes it more severe due to the increase in the length of the internal growth phase since the tax reduces the amount of funds that can be reinvested in every period, on the other hand. No general statement can be made with respect to the overall effect of the increase in the corporate tax on retained earnings on the length of the firm's internal growth phase, as it will depend on the firm's specific revenue and production function.

In the extreme case that the firm can finance the investment entirely with debt, under the assumption that dividends are taxed at higher rates than interest payments, the firm will immediately attract debt-financed capital such that the cost of capital equals the interest rate. Because capital gains are assumed to be taxed at lower rates than interest payments, the firm will continue to invest and finance this additional investment with retained earnings. The corporate tax on retained earnings then lowers the capital that will be accumulated – through its effect on the steady-state cost of capital – but it increases the length of the internal growth path as the tax lowers the amount of after-tax earnings that can be invested in every period.

The corporate tax will also affect the value of the firm's equity. In steady-state, the firm will invest until the after-tax value of the increase in value of the equity equals the after-tax dividends foregone. Because in Sinn's model, the capital gains depend on the corporate tax rate on retained earnings and the dividends depend on the corporate tax rate on distributed profits, the marginal increase in value of the firm's equity will be independent of the corporate tax rate only if both corporate tax rates are equal.

Efficiency under the "traditional" view

The "new" view of dividend taxation considered dividends to be the residual use of profits. On the other hand, the "traditional" view of dividend taxation (see Poterba and Summers [1983]) asserts that shareholders value dividends higher than capital gains – this is the first assumption underlying the "traditional" view – despite the tax disadvantage of dividends. Under this view, the firm will distribute dividends on a regular basis. Because of the firm's high dividend payout rate, the firm's retained earnings are assumed to be insufficient to finance

investment. Consequently, the "traditional" view assumes that newly issued equity is the firm's marginal source of funds. This is the second assumption underlying the "traditional" view (Brys [2004]). Due to the "intrinsic" value of the distributed dividends, the "traditional" view implies that firms with a high payout rate have to pay a lower rate of return to shareholders (Zodrow [1991]) because the distribution of dividends reduces the adverse selection and moral hazard problems in the stock market. Sorensen (1995), for instance, assumes that the risk premium on equity is a convex function in the dividend payout rate.

Under the "traditional" view, the firm will distribute dividends until the benefit of a reduction in the risk premium equals the tax cost of additional dividends, which is assumed to be higher than the tax cost of capital gains. The cost of capital and the marginal increase in value of the firm's equity in the steady state under the "traditional" view are discussed in Box 4.2. At the margin, the firm will be indifferent between distributing dividends and financing investment with newly issued equity and retaining and reinvesting the firm's earnings. At the firm's optimal payout rate, the shareholder is

Box 4.2. **The corporate income tax under the "traditional" view**

This box presents the cost of capital on a firm's marginal investment under the "traditional" view. As in Sorensen (2005), it is assumed that the risk premium on equity p is a convex function in the dividend payout rate ξ. The risk premium decreases with ξ at a decreasing rate: $p = p(\xi)$, $p' < 0$, $p'' > 0$. Given the assumptions of the "traditional" view and using the notation of Box 4.1, the cost of capital $f'(K)$ of a marginal investment financed with newly issued equity equals:

$$f'(K) = \frac{(1-\tau_p)r + p(\xi|_{opt})}{\xi|_{opt}\cdot(1-\tau_d)(1-\tau_f) + (1-\xi|_{opt})\cdot(1-\tau_c)(1-\tau_f)}$$

The return $f'(K)$ on the marginal investment financed with newly issued equity is partly (ξ%) distributed as dividends (the after-tax dividend equals$[1 - \tau_c][1 - \tau_f]$) and partly ($[1 - \xi]$%) retained, which yields after-tax capital gains equal to $(1 - \tau_c)(1 - \tau_f)$. The investment has to earn the shareholder's opportunity return, which equals the after-tax return on a risk-free investment in debt $(1 - \tau_p)r$, augmented with the risk premium on equity $p(\xi)$. The cost of capital then follows. The firm determines ξ such that the cost of capital is minimised. The optimal payout rate $\xi|_{opt}$ satisfies:

$$\frac{-p'(\xi|_{opt})}{f'(K)} = (1-\tau_c)(1-\tau_f) - (1-\tau_d)(1-\tau_f)$$

This condition states that the firm will distribute dividends until the benefit of a reduction in the risk premium, which is measured on the left hand side of this condition, equals the tax cost of additional dividends. This tax cost is measured on the right hand side; it equals the difference between the after-tax capital gains and after-tax dividend and simplifies to $(1 - \tau_f)(\tau_d - \tau_c)$, which is positive by assumption (otherwise, the firm would distribute all its earnings and finance all investment projects in every period with newly issued equity). Moreover, because the firm's earnings are replaced with external equity, the firm will invest funds until the marginal increase in value of the firm's equity q amounts to:

$$q = 1$$

This condition states that the firm will stop issuing new equity if the increase in value of the firm's equity as a result of the additional investment is equal to the price of these new shares.

indifferent between newly issued equity and retained earnings as the source of funds. Moreover, because the firm's earnings are replaced with external equity, the firm will invest funds until the marginal increase in the value of the firm's equity equals the unit cost of newly issued equity.

Under the "traditional" view, the firm will finance investment with debt if the cost of capital on debt-financed investment, which equals the real interest rate (in the absence of depreciation and inflation), is lower than the cost of capital of equity-financed investment as derived in Box 4.2.

An increase in the corporate tax rate on *distributed* earnings increases the tax cost of distributing dividends. The firm will therefore reduce its optimal dividend payout rate. An increase in the corporate tax rate on *retained* earnings has just the opposite effect. Moreover, an increase in corporate tax on *distributed* earnings and/or *retained* earnings will increase the cost of capital of equity-financed investment. Under the traditional view, the double taxation of the return on equity-financed investment – whether it is distributed as dividends or received as capital gains – increases the cost of capital and therefore discourages corporate investment. This result contrasts with the new view where the double taxation of dividends does not affect the steady-state cost of capital and capital stock but only reduces share prices.

Hence, an increase in the corporate tax on retained earnings increases the cost of capital both under the "traditional" view and the "new" view. However, an increase in the corporate tax on distributed earnings does increase the cost of capital of marginal investment opportunities – and therefore reduces the firm's optimal capital stock – under the "traditional" view but not under the "new" view. The following paragraphs will point out that this difference is not only the result of the assumption that, under the "traditional" view, the firm prefers to distribute dividends in order to signal its quality to outside investors in the presence of adverse selection problems or to solve shareholder-management or shareholder-shareholder conflicts in case of moral hazard problems (see Brealy and Myers [2003]). This difference also depends on the "traditional" view's assumption that newly issued equity is the firm's marginal source of finance.

Under the "traditional" view, the firm determines the optimal payout rule, distributes dividends and reinvests the remaining earnings. In order to replace the distributed dividends, the firm issues new equity as a marginal source of finance. The "traditional" view therefore implicitly assumes that the firm's profitable investment opportunities are larger than the firm's retained earnings. In fact, the assumption that newly issued equity is the firm's marginal source of finance implies that the firm's available investment opportunities are assumed to be sufficiently large (Brys [2004]).

However, the assumption with respect to newly issued equity as the firm's marginal source of finance or, similarly, with respect to the available profitable investment opportunities, is not as straightforward as it might seem at first sight. Given the firm's optimal payout decision, which depends on the risk premium and the tax differential between dividends and capital gains but not on the available investment opportunities, the firm's earnings might be too high with respect to the available investment opportunities. Moreover, the firm might face a limited number of investment opportunities over time. For instance, if the firm distributes dividends according to the optimal dividend payout rule, and if the firm's remaining retained earnings are high enough to finance the additional

investment opportunities, the firm will reinvest the earnings and will not issue new equity. And even if it has too few retained earnings, the firm might find it profitable to postpone the investment until the next period.

In fact, the firm under the "traditional" view converges to a different steady state from the firm under the "new" view. The steady state under the "traditional" view is driven by the assumption that newly issued equity is the firm's marginal source of finance. Similarly to the assumption of a concave production and revenue function under the "new" view and nucleus theory of the firm, this assumption imposes a condition on the firm's cash flow and investment opportunities. The "traditional" view implies that the firm, in every period, faces a number of profitable investment opportunities that demand resources beyond the available retained earnings. The firm must consequently issue new equity to finance the additional investment opportunities. In contrast, the concave production function of the "new" view and nucleus theory of the firm implies a limited amount of profitable investment opportunities. This analysis therefore implicitly validates the predictions of both the "traditional" view and the "new" view about the effects of a reduction in the corporate tax. The impact of a change in the corporate tax depends therefore on the firm's profitable investment opportunities over time, the influence of which is typically not recognised (Brys [2004]).

Efficiency under financial market imperfections

Adverse selection problems in the debt and equity markets might increase the cost of external sources of finance (debt and newly issued equity). The implicit tax disadvantage of external sources of finance might force particular firms to finance investment only with internal sources of finance. In case of limited amounts of available retained earnings, firms might even forego profitable investment opportunities. The corporate tax rate reduces the corporate firm's earnings that can be invested. Under these financial market imperfections, the corporate income tax rate will distort the firm's investment behaviour even more.

Choice of legal form

Different types of businesses are taxed in different ways. Profits of publicly-held and closely-held corporations are usually taxed under the corporate tax and corporate income might again be taxed at the shareholder level with a dividend tax or capital gains tax. Unincorporated firms are characterised by the absence of a legal entity that is taxed separately. The proprietor's business earnings are not taxed at the corporate tax rate, but are taxed once at the proprietor's income tax rate.

The different tax treatment of business income might influence the decision of firms to either incorporate or not and might provide corporate firms with an incentive to either shift out of the corporate sector or not. Of course, the choice of a particular legal form is not only determined by the separate tax on capital income at the corporation's level, but also by the capital income taxes at the personal level and the extent to which these taxes are (partially or fully) integrated.

In addition to capital income tax rates, other tax factors might have an impact on the organisational form as well. Mackie-Mason and Gordon (1997) mention, for instance, the differences in the opportunities for tax-deferred savings and fringe benefit deductibility, the ability to offset business losses against other sources of (personal) income, and different capital gains provisions. Other important tax factors that might have an impact

on the choice of a particular organisational form in many OECD countries are the possibility to shift highly-taxed labour income into lower-taxed capital income, and the differences in (tax) accounting rules. Incorporations may also be influenced by the level of social security contributions and benefits.

The choice of legal form is influenced by non-tax factors as well. Some important factors are, for instance, the limited liability of corporate shareholders *versus* the unlimited liability of sole proprietors and partnerships, the desire to exploit economies of scale in operation, the benefits connected to the public trading of shares of corporate firms, which reduces the cost of debt and equity financing and ameliorates the principal-agent problems between managers and owners (Mackie-Mason and Gordon [1997]).

The choice to use other legal forms, as for instance partnerships, might be influenced by the corporate tax system as well. Tax planning opportunities often arise because of the existence of different legal forms that can undertake the same economic activities but with different tax outcomes. In the case of partnerships, income is not taxed at the partnership but is passed through to the different partners on the basis of a prior agreement. Edwards (2003) points out that corporations use partnerships with tax-exempt entities to shelter corporate tax, by allocating most of the income to the partner and by allocating most of the losses to the corporation, which uses these losses to offset its other taxable corporate income. Edwards (2003) also points out that partnerships are used to engineer increases in the asset basis, which allows reduced capital gains tax on sales or generates higher tax depreciation allowances.

Mergers and acquisitions

The corporate tax system is not neutral with respect to mergers and acquisitions. Through the interaction of the tax rules for capital gains, tax depreciation allowances, interest deductions, operating and capital losses and other items, the corporate tax system might provide a tax-induced incentive to merge or acquire other companies.

Mergers might increase the present value of particular tax deductions such as, for instance, interest deductions, depreciation allowances, investment tax credits and operating and capital losses (Scholes and Wolfson [1990]). A firm might for instance have profits that are not large enough to deduct all tax deductions at once. These tax-attributes then become an asset for that particular firm – and might distort a possible merger or acquisition decision – because their value is larger for more profitable corporations that can immediately use them to reduce their corporate tax base.

The corporate tax system might provide profitable firms with a tax-induced incentive to buy assets that have built-in losses that can be used to offset other income, which then reduces the firm's corporate tax base (Edwards [2003]).

Mergers and acquisitions might allow corporations to step up the tax bases of their assets if these assets have a higher market value than their current tax basis. The target firm's assets will then be worth more to the take-over company, which will be able to obtain larger tax depreciation allowances than the target firm. Of course, mergers and acquisitions might be driven by the opposite. Assets that have declined in value below their market value might be of particular interest to a take-over firm, which will obtain an immediate tax deduction equal to the unrealised loss in the value of the target firm's assets (Scholes and Wolfson [1990]).

Finally, the corporate tax system might induce firms to pursue heavily debt-financed acquisitions as a result of the deductibility of interest payments. Profitable corporations that are primarily financed with equity might even become a target for take-over as a result of the tax gains that could be obtained if that take-over would be financed with debt. Of course, these unused tax deductions can lead to windfall gains for the current shareholders of the target-firm if they are capitalised in share prices when the (possible) merger is announced or when shareholders speculate that the target-firm will merge or be sold.

Other distortions

Another distortion of the firm's dynamic finance and investment behaviour is due to the fact that corporate capital gains are taxed upon realisation instead of upon accrual. Because corporate capital gains are only taxed when the shares that the firm holds of another business are sold, these funds are locked in the corporate firm. The corporation might hold on to its shares instead of realizing the gains (or losses) and investing the funds in more productive investment opportunities. The corporate tax system provides the firm with an incentive to realize its gains only when it has losses available that can offset the capital gains. This hampers the dynamics on the market, provides a tax-induced incentive to misallocate resources – the corporation's funds are not necessarily invested in projects that yield the highest return – and prevents business reorganisations.

4.2. International efficiency considerations

This section discusses the distortions created by the corporate income tax in an international context. The corporate tax system distorts the decision of businesses with respect to the location of their investment. Corporations might invest in their country of residence (their home country) or invest in a foreign country (the host country). The corporate income tax system also distorts the international location of the business headquarters and the international location of the corporate tax base. Distortions are caused not only by the level of the corporate tax rate but also by the rules that determine how foreign earnings are taxed in the source and residence country.

The corporate tax system's efficiency might depend on whether countries apply the residence or source tax principle (or a combination of both). Residence-based taxation, in case of a legal entity, means that corporate taxes are levied in the location where the business activities are registered and/or its management and control are effectively exercised. Source-based corporate taxation means that corporate profits are taxed in the location where they arise (Faria [1995]).

Countries might operate a dividend exemption tax system, which implies that foreign dividends are exempt from the residence country's corporate tax. Dividends are then (possibly) taxed only in the source country under the source country's corporate tax and, possibly, under the source country's withholding tax. Foreign interest payments are subject to home country tax and possibly source country's withholding tax. Or, countries might operate a worldwide (residence-based) system, which implies that the residence country will tax interest and dividend income from foreign investment but provide tax credits for foreign taxes paid.

Statutory corporate tax rates and rules are not necessarily reflected in the actual tax burden imposed by the corporate income tax. Corporations often adjust their finance and investment behaviour in response to the corporate income tax system. The impact of a

country's corporate tax system therefore depends on the amount of international tax-planning that corporations are engaged in and depends on the extent by which corporations are legally restricted in undertaking these tax-planning activities, as will be discussed in the following sections. Moreover, the impact of a country's corporate tax system depends not only on the own tax rules but also on the corporate tax system in other countries. In fact, countries that decide to fundamentally reform their corporate income tax system might want to evaluate all of these (domestic and international) tax considerations.

Efficiency under the "new new" view

In an open-economy where investors can invest in domestic and international securities and multinationals are owned by many shareholders who reside in different countries, the corporation's cost of finance is determined on the international capital market. In the case of debt, the cost of finance then equals the world-market interest rate; the cost of equity finance may depend on the world-market interest rate plus an appropriate risk premium. Because the "new new" view assumes that capital is internationally perfectly mobile, a corporation's finance and investment decisions will then depend on the internationally determined cost of finance and the source-based capital income taxes (corporate income tax and possibly additional withholding taxes).

In contrast to the "new" view and the "traditional" view, capital income taxes that are levied on the personal level (residence-based taxes) will not affect the corporation's finance and investment decisions under the "new new" view. Personal level taxes on capital will then only affect the amount of domestic saving but not domestic investment. The difference between domestic savings and investment then equals net capital imports/exports (Sorensen [2006]).

The "new new" view may well present the finance and investment decisions of multinational corporations. However, as pointed out by Sorensen (2006), small domestic unquoted corporations might not be able to attract finance from the international capital market. Instead, these corporations largely obtain their finance from domestic investors and the domestic capital market. The finance and investment decisions of smaller corporations that are not quoted on the stock exchange are therefore more accurately modelled under the "new" view. This implies that the domestic personal level (residence-based) taxes on dividends and capital gains only affect the finance and investment behaviour of a country's smaller domestic firms.

The corporate tax will increase the cost of capital of equity-financed investment under the "new new" view, as demonstrated in Box 4.3. Countries that want to increase domestic investment then have an incentive to lower their corporate income tax rate. A reduction of the capital income taxes at the personal level will have no impact on the amount of domestic investment.

International investment's sources of finance: debt versus *equity*

The corporate income tax system distorts the choice of the foreign investment's source of finance. The parent company (in the residence country) might either use its own funds (newly issued equity or retained earnings) or borrow (debt) to finance its foreign direct investment. The foreign subsidiary might issue bonds or newly issued equity – which might be bought by the parent company or by another company – or might use its own retained earnings to finance its investment.

Box 4.3. **The corporate income tax under the "new new" view**

This box presents the cost of capital of a firm's equity-financed marginal investment under the "new new" view, using the notation of Box 4.1.

Shareholders require the world market interest rate on their investment r (we abstract from the required risk premium). Under the "new new" view, the firm will invest its earnings until the after-tax marginal revenue of an additional unit of equity-financed capital $(1 - \tau_f)f'(K)$ equals the world market interest rate r. The cost of capital $f'(K)$ then amounts to:

$$f'(K) = \frac{r}{(1-\tau_f)}$$

Similarly, the firm will invest its retained earnings, which increases the value of its shares, until the marginal increase in value of the firm's equity q equals the cost of the additional investment, which are the net dividends foregone:

$$q = \frac{(1-\tau_f)}{(1-\tau_f)} = 1$$

If the firm retains and reinvest an additional euro, the after-tax increase in value of the firm's equity amounts to $(1 - \tau_f)q$. If the firm distributes this additional euro instead, the household receives $(1 - \tau_f)$ after-tax dividends. Under the "new new" view, the firm continues to invest as long as the increase in value of the firm's shares exceeds (or is equal to) the funds that are reinvested.

In order to minimize the tax burden on foreign source income, corporations might obtain a tax gain if their foreign-owned subsidiary borrows and reduces its corporate tax liabilities in the host country by deducting the interest payments (the host country might possibly levy a non-resident interest withholding tax). If the foreign-owned subsidiary would finance the investment with equity, the investment's profits might be taxed at the host country's corporate tax rate. Consequently, by using an excessive debt-financing strategy, parent firms and their subsidiaries might use inter-company borrowing as a means to shift profits from high-tax to low-tax countries ("earnings stripping").

The host country might protect its tax base and constrain the degree of "earnings stripping" on inbound investment by imposing thin capitalisation rules. These rules limit the fraction of the investment that may be financed by debt. In general, thin capitalisation rules place an upper limit on the total amount of debt capital, relative to assets or equity, borrowed by a firm in the host country from related non-resident investors.

Even if the host country has defined thin capitalisation rules, "earnings stripping" would remain possible if the interest rate that is charged on the loan by the parent corporation to its subsidiary in the host country can be set excessively high ("non-arm's length" interest rate). Host countries might therefore set transfer pricing rules that require the use of an "arm's-length" interest rate on the intra-group loan, which implies that the interest rate may not exceed the market interest rate by more than a predetermined margin.

Not only the corporation in the host country may finance its investment with debt, but also the parent corporation in the residence (home) country may borrow funds and lend them afterwards (fully or partly) to its foreign subsidiary (which might use these funds to finance its investment). The corporation in the home country can then deduct the interest

payments from its taxable income. Also the subsidiary can deduct the interest payments from its taxable earnings in the host country. The foreign subsidiary will then have to pay interest to the parent corporation. However, this double interest deduction, which is also referred to as a "double dip" situation, becomes especially distorting if foreign subsidiaries can defer their paying of interest or if parent companies borrow funds that are used to capitalize a subsidiary located in a tax haven which then lends the funds to a subsidiary located in a third country.

The resident country may try to restrict the double dip corporate tax gains by enforcing interest allocation rules. Under a worldwide tax system, the interest allocation rules will put a limit on the foreign tax credits (see below) that a resident corporation can claim for the foreign taxes paid on the return of its investment in the subsidiary, by assuming that part of the interest expenses at the resident country are incurred to earn foreign dividend and interest income. Countries that exempt foreign-source dividend income might (fully) limit the deductibility of interest expenses incurred by a resident corporation to earn exempt foreign-source income. Countries that allow the interest expenses to be deductible provide a tax-induced incentive to earn exempt foreign-source income rather than taxable domestic-source income (Arnold and McIntyre [2002]).

International taxation of corporate earnings

The corporation's choice for a particular source of finance might be distorted by the taxation of the investment's earnings (interest payments, dividends, capital gains, royalty payments). Earnings might be taxed at source, either at the host country's corporate tax rate and/or at a withholding tax rate on foreign earnings and they might be taxed in the residence country. However, many countries provide tax relief against double taxation by (partially) exempting taxed foreign source income (under the dividend-exemption tax system) or by providing tax credits for (part of the) taxes paid abroad (under the residence-based system).[3] Not only the source-based corporate taxes (and possibly withholding taxes in the host country), but also the residence-based taxes on corporate income and the mechanisms for tax relief will determine whether a business finds it more attractive to invest abroad – and in which particular country – or at home.

Because it is difficult to tax international earnings on accrual, countries may allow businesses to defer residence-based corporate taxes until the moment when profits are repatriated. Tax deferral, which reduces the corporate tax burden, provides a tax-induced incentive for foreign investment to be financed with retained earnings. Incentives for tax deferral distort the allocation of the corporation's funds, which are therefore not necessarily invested in corporation's projects that would yield the highest return. This reduces the dynamics of the market, and might provide an advantage to countries that historically have attracted a lot of foreign investment compared to countries that have not.

On the other hand, firms often do have an incentive to immediately deduct losses from the corporate tax base. Corporations will want to deduct losses in the jurisdiction where they face the highest corporate tax rate and where they can use the losses to offset other taxable income. Corporate tax rules might therefore not only result in (international) profit shifting but also in the reallocation of the group's losses.

Corporations can shift profits between locations by setting transfer prices such that profits are allocated in jurisdictions where corporate taxes are low. Differences in corporate tax systems will therefore drive a difference between the actual profits that are made in a

jurisdiction and the corporate tax base in that particular jurisdiction. In practice, governments attempt to reduce the international profit shifting by setting transfer pricing rules.

As already pointed out, transfer pricing rules might also require that the ("arm's length") interest rate charged on the intra-group loan does not deviate too strongly from the market interest rate. A tax-induced incentive to overcharge might occur if the host country's corporate tax rate exceeds the home country's corporate tax rate. On the other hand, transfer pricing rules might also prevent corporations from undercharging on their loans to a foreign sub, which might arise if the host country's corporate tax rate is less than the home country's corporate income tax rate.

Firms might use tax havens or low-tax jurisdictions in a wide variety of ways to reduce corporate tax liabilities in their country of residence. Firms might for instance sell their products to foreign markets through the use of a corporation located in a tax haven. Firms might also reduce their corporate tax liabilities by channelling the repatriation of their profits through a tax haven or a low-tax jurisdiction.

Another type of international tax planning in order to reduce corporate tax involves the use of tax treaties. Corporations might for instance establish a "conduit" company in another country in order to take advantage of that country's tax treaty network (Arnold and McIntyre [2002]).

Choice of legal form

Corporate tax systems might distort the legal form that is chosen by the parent company for its foreign business activities. The parent company will create a foreign *branch* if it does not want to incorporate in the host country. *Subsidiaries*, on the other hand, are incorporated foreign-based enterprises.

The branch type of legal form offers a number of tax advantages to the parent company (McCarten [1995]): losses from the foreign branch are often immediately deductible from the parent company's corporate tax base in the home country, profits will be taxed under the host country's corporate tax if the branch forms a Permanent Establishment in the host country but profits might not be submitted to the host country's dividend withholding tax (although some countries do levy a similar branch profits (withholding) tax) and assets can more easily be transferred from the parent company to the branch without the parent company having to pay a (corporate) capital gains tax on the (possible) appreciated assets. Subsidiaries, on the other hand, offer the opportunity to defer home country taxes and often have more generous loss carryforward and carryback provisions.

4.3. Tax incidence considerations

Whether the burden of the corporate income tax falls on capital, labour or consumption is an unsettled issue in the tax literature. Just because the corporate tax is formally levied on corporate profits, it is not inevitable that capital owners will earn a lower return on their investment. Investors might require a higher before-tax return on their investment in order to offset the impact of the corporate tax. As a result, capital does not necessarily bear the (entire) burden of the corporate tax. The corporate tax might also (partly) be shifted to consumers through higher prices and/or to labour through lower wages.

The incidence of the corporate tax has distributional consequences. The corporate tax contributes to the progressivity of the tax system if its burden falls on capital as income from capital is concentrated among middle-income and high-income taxpayers. This is not

necessarily the case if the burden of the corporate tax falls on labour or consumption. Moreover, if the burden falls on labour, it would be more efficient to directly tax labour instead of taxing labour indirectly. And even if the burden falls on capital, it might not necessarily be the rich but the middle-income households that pay the tax.

In fact, the corporate tax burden is not shared by all shareholders in an equal way as some firms engage in tax sheltering activities and other firms do not. The shareholders of the second type of firm, *ceteris paribus*, will receive a lower return and bear a larger part of the total corporate tax burden than the shareholders of the firm that extensively makes use of the available tax avoidance strategies. This raises a problem of horizontal equity.

In the short run, the burden of the corporate tax probably falls on shareholders – and perhaps on consumption in the form of higher prices – as it is unlikely that corporations can immediately change their capital stock. The corporate tax rate then reduces the after-tax return that shareholders receive on their equity-financed investment at the corporate level. In the long run, however, the firm can adjust its capital stock. The burden may therefore not necessarily fall on capital in the long run (Gravelle [1995]), but may also fall on labour.

The long-run implications of the corporate tax rate were first studied by Harberger (1962) in a model with two perfectly competitive industries (the corporate sector and the unincorporated sector) under conditions of constant returns to scale and under the assumption that the overall supply of capital and labour in the economy is fixed.[4] The production factors are perfectly mobile between the two sectors and are fully employed. Moreover, individuals have the same tastes (there is a single utility function) but not necessarily the same capital and labour endowments. Demands are homothetic, which means that the ratio of demands for the two products is independent of the individual's income (*i.e.*, income elasticities are unity) and is therefore the same for all individuals. The corporation tax, which is introduced at an infinitesimal level, is the only tax that is levied. Government distributes the tax revenue to consumers as a lump-sum subsidy.

A tax on the profits of the corporate sector increases the cost of capital in the corporate sector. Corporations therefore obtain a tax-induced incentive to substitute labour for capital. This is the *factor substitution effect*. Moreover, as a result of the higher cost of capital, the corporate tax will increase the price of the goods that are produced in the corporate sector. This will increase the demand for goods produced in the unincorporated sector and will decrease the demand for goods produced in the corporate sector. This second effect is referred to as the *output effect*.

As a result of the factor substitution effect and the output effect, the total demand for capital will fall and the demand for labour will increase if the corporate sector is relatively capital-intensive compared to the unincorporated sector. The corporate tax will then reduce the net rate of profit on capital relative to wages. Hence, the after-tax return on capital will be lower than the return on capital before the introduction of the tax. Capital then (partly) bears the burden of the corporate tax. Moreover, the after-tax return on capital in the two sectors will be equalised. Therefore, if capital bears (part of) the cost of the corporate income tax, it is borne equally by capital in all sectors (even the sectors which are not directly affected by the tax). The outcome that the corporate tax reduces the net rate of profit on capital relative to wages then also implies that wages will either increase – in that case, labour does not bear any burden of the corporate tax – or will decrease less than the decrease in the after-tax return to capital. In this last case, labour will bear part of the

burden of the corporate income tax. Overall, if the corporate sector is relatively capital-intensive, the change in the cost of capital and the price of labour might then either increase or decrease the relative demands for the products of the corporate and unincorporated sector (because the price of the good produced in the corporate sector relative to the price of the good produced in the unincorporated sector might either increase or decrease).

However, if the corporate sector is relatively labour-intensive compared to the unincorporated sector and the corporate sector cannot change its production process (fixed coefficients of production, which implies that there is no factor substitution effect but only an output effect), the net rate of profits will rise relative to wages as a result of the reduced overall demand for labour and the increased overall demand for capital. In this case, labour (partly) bears the burden of the corporate tax. Less clear conclusions can be drawn when the corporation's technology is flexible.

Whether capital, consumption or labour bears (part of) the burden of the corporate tax then depends on the demand elasticities, the substitution elasticities and on the labour intensities in the corporate and unincorporated sector. For reasonable parameter values, Gravelle (1995) concludes that the main insight of the Harberger model is that the burden of the corporate tax falls mostly on capital.

The model excludes a number of other channels through which the general equilibrium outcome might be affected in reality. For instance, the model excludes that individuals adjust their supply of labour and capital in response to a change in wages and the return on capital. In the Harberger model, changes in wages and the return on capital will adjust such that the total (fixed) amount of capital and labour will continue to be employed in the economy. (Of course, the demand for goods produced in both sectors might change as a result of the introduction of a corporate tax and the changes in wages and the after-tax return on capital.) Moreover, differences in labour and capital endowments imply that some individuals might lose while others might win as a result of the changes in wages and the return on capital. However, the strong assumptions on the utility and demand functions exclude the impact of income effects on the overall relative demand for goods produced in the corporate and unincorporated sector.

The general equilibrium impact of the introduction of an infinitesimal corporate tax might also depend on whether the government levies other taxes. In the case of multiple taxes, the real income loss could exceed the tax revenue returned to the individuals (Atkinson and Stiglitz (1984). In the presence of a non-homothetic utility function, this will have an impact on the relative demand for goods through the income effect of a change in the individual's wage and capital income. The results of the model are also strongly determined by the assumption of perfect competition and by the assumption of perfect mobility of the production factors in and between the sectors.

The Harberger (1962) model can also be challenged on other grounds. The model does not allow the corporate and unincorporated sector to produce the same good. All corporate firms would otherwise shift out of the corporate sector in response to the corporate sector's profits tax (Gravelle [1995]). Neither does the model allow for debt financing. However, the strongest challenge to the model comes from the extension that considers a small open economy.

Gravelle (1995) points out that under the assumption of a small open economy – the country's demand for capital does not have any influence on the world market interest rate – and under the assumption of perfectly mobile capital and of goods that are perfect

substitutes in international trade, the corporate tax burden will fall entirely on the country's immovable factors such as labour. The fact that goods produced in the different countries are perfect substitutes implies that the price of these goods has to remain equal. The (increase in) the corporate tax can therefore not be shifted to consumption (through higher prices). Moreover, the assumptions imply that perfectly mobile capital can earn the world market interest rate in every country. The (increase in the) corporate tax by one country can therefore not be shifted to capital, as investors will not accept a decrease in the investment's after-tax return. The investment's before-tax return will have to increase, such that the after-tax return equals the world market interest rate. The corporate tax rate then results in a migration of capital to other countries, which reduces the demand for labour. The burden of the tax therefore falls on labour as wages will fall because of the reduced demand for labour. In fact, labour may bear significantly more than the full burden of the corporate income tax (Harberger [2006]).

Using a similar open-economy example, Stiglitz (2000) argues that the corporate tax rate is not borne by capital in the presence of a perfect elastic supply of capital at the exogenous world-market interest rate. The increase in the cost of corporate production means that consumers of the corporate good pay (part of) the burden of the tax. The corporate tax rate however will cause production to shift to the unincorporated sector. Whether labour bears (part of) the tax then depends on whether labour demand will increase or decrease (whether either the corporate or unincorporated sector is relatively more labour intensive).

Gravelle and Smetters (2001) discuss the results of a two-country (large) open-economy model, where each country has four sectors: the traded corporate sector, the traded non-corporate sector, the non-traded corporate sector and the non-traded non-corporate sector. The model allows for imperfect substitution between domestic and foreign products and for imperfect substitution between domestic and foreign capital. The authors demonstrate that the incidence of the corporate tax does not fall on labour in the long run but falls on capital employed in the domestic country as in the Harberger model. Moreover, if the tax does not fall on domestic capital, it is not borne by labour but is exported to foreign factors of production.

In summary, whether the burden of the corporate income tax falls rather on capital than on labour depends on the underlying model assumptions. The easier it is to substitute foreign production for the home-country's production and the more mobile is capital, the lower is the burden of the corporate income tax on capital and the higher is the burden on the more immobile production factors such as labour. If capital is perfectly mobile, labour might even bear more than the full burden of the corporate income tax. But if capital is less internationally mobile, then the burden will fall partly on capital. Moreover, if goods produced in different countries are imperfect substitutes, their prices might differ which might imply that the before-tax price of capital is not necessarily the same across countries. Again, even in a small-open economy, capital might then partly bear the tax burden of the corporate income tax (Gravelle [1999]).

4.4. Tax revenue considerations

The analysis in Chapter 1 concluded that corporate tax revenues have kept pace with – or even exceeded – the growth in GDP and the growth in revenues from other taxes in many OECD countries. However, many policy makers are concerned about the tax revenues that are raised by the corporate income tax for three main reasons.

First, governments are worried that further rate reductions will diminish the revenue from corporate income taxes. Until recently, the implementation of corporate base-broadening measures partly explain why corporate tax revenues have been fairly constant even if corporate tax rates have been reduced in many OECD countries. However, it is unlikely that considerable further rate reductions can be compensated by additional base-broadening measures.

Second, many fundamental reforms of corporate income tax imply a substantial loss in corporate tax revenue. Fundamental corporate tax reforms might, for instance, exempt the normal return on equity from corporate tax or might tax corporate earnings only at the corporate level. In order to compensate for this loss in revenue, governments might consider increasing the corporate tax rate. However, this rate increase might have a negative impact on the domestic amount of corporate investment, on the international location decision of firms, on the amount of foreign direct investment and might induce corporations to shift the profits out of the country. Instead, governments might finance the loss in corporate tax revenues by increasing other taxes or by decreasing expenditures.

Third, firms engage more and more in (abusive and aggressive) tax-planning and tax-sheltering activities which put corporate tax revenues further under pressure. Corporate tax planning refers to the changes in the corporation's finance and investment behaviour in order to minimize its corporate tax liability. Corporate tax sheltering (Shaviro [2004]) refers to the corporate activities that are undertaken in order to exploit various tax rules – often in unintended ways – in order to minimize corporate tax liabilities without significantly affecting the corporation's economic position.

Corporations engage in tax-planning and tax-sheltering activities by exploiting structural rules within the corporate income tax system. Three main sources can be identified. First, many opportunities to minimize corporate tax liabilities arise as a result of the different tax treatment of debt and equity. Moreover, dividends and capital gains are often taxed differently as well; dividends are taxed upon accrual while capital gains might be taxed only when they are realised. A third main source of tax-planning and tax-sheltering activities, and therefore of lower corporate tax revenues, is the mismatch between countries in their tax laws. This, for instance, allows firms to realize their capital gains in the country where they are taxed at the lowest rate. It also explains the existence of hybrid instruments – instruments that are considered to be debt in one country and equity in the other country – and hybrid entities, which refers to legal forms that are taxed differently across countries.

In order to limit corporate tax planning and tax sheltering, tax authorities might implement schedular rules, which limit the types of income that a particular tax deduction or tax credit is allowed to offset. Moreover, tax authorities might provide tax advantages to corporations only if their transactions satisfy the economic substance requirement and/or tax authorities might increase tax enforcement. Corporate tax planning and sheltering might be tackled by fundamentally reforming the corporate income tax. The implementation of simple base broadening measures might be part of the strategy to change the substantive corporate income tax rules (Shaviro [2004]). However, because corporations are able to reduce their corporate tax liabilities by exploiting structural rules within the corporate income tax system, tax authorities would have to change the corporate income tax system in a rather fundamental way.

Grubert (2001) has found that tax-planning has increased over time. Shaviro (2004) reports that the gap between reported book income for accounting purposes and reported taxable income by corporations in the US has increased in recent years as a result of increased tax sheltering activities (see also Desai [2003] and Plesko [2003]). Because firms engage more actively in corporate tax-planning and sheltering activities, the following paragraphs will provide a number of strategies that are followed in practice.

An example of a tax-sheltering activity is provided by Gentry and Hubbard (1998) who point out that, in order to take full advantage of the deductibility of interest payments, the firm can use derivative securities, which offer a mechanism for trading the risk characteristics of the assets without giving up their tax characteristics. Because of the tax advantages of debt, the tax code provides companies with an incentive to design complex financial structures that have many features of equity but are treated as debt by the corporate tax system (Edwards [2003]), as for instance debt-equity hybrid securities (Engel, Erickson and Maydew [1999]).

Corporations also use the international corporate tax rules to set up complicated systems that allow them to pay less tax. Shaviro (2004) discusses several of these international corporate tax sheltering strategies. Corporations that are resident in a country that provides tax credits for taxes paid on foreign earned income can realize a gain – if the host country levies a withholding tax on distributed dividends – if the corporation buys equity of a foreign firm just before that firm distributes dividends and sells that equity immediately after the dividends have been distributed. The grossed-up dividends (net dividends plus the withholding tax) net of the capital loss (the value of the foreign firm will decline after having distributed dividends) yields taxable income in the home country. The corporate tax on this income however will be lower than the tax credits that can be claimed in the corporation's residence country. This tax sheltering activity is referred to as "cross-border dividend stripping". Shaviro (2004) points out that this strategy demonstrates the need for additional rules to protect the corporate tax revenues in the home country. For instance, in the US, cross-border dividend stripping is tackled because corporations are required to hold the foreign shares for at least 15 days if they want to take advantage of the foreign tax credit. Moreover, foreign tax credits can only offset other foreign income (schedular approach).

Corporate tax sheltering also occurs when corporations create an economic loss and an exactly offsetting economic gain overseas, for instance by betting on the increase as well as on the decrease of one particular currency against another currency. The loss will then be imported to the home country and realised at the most appropriate moment in order to reduce the corporate tax liabilities in the home country, while the gain will remain in the host country (Shaviro [2004]).

Also sale-leaseback operations are considered to be corporate tax sheltering activities. Corporations that reside in a country with favourable tax depreciation allowances might buy the tax ownership of assets from corporations that cannot use the corresponding depreciation allowances, either because they are foreign or tax-exempt entities or because they do not possess profits that are large enough to claim the full tax advantage of the depreciation allowances (for instance, because they have substantial net operating losses).

Gravelle (2003) discussed a tax-sheltering strategy that Enron has used to increase its debt-capital ratio. Enron used monthly income preferred securities (MIPS). It created an offshore limited liability corporation, which issued preferred shares to the public.

Afterwards, these funds were lent to Enron, which could deduct the interest payments from the corporate income tax base. Because of consolidation rules, these funds did not show up as debt but as equity in the financial accounts. Consequently, Enron was able to reduce its corporate taxes while it avoided an increase in its financial statement debt, which might had hurt its credit rating (Edwards [2003]).

This example demonstrates that the advantages of debt-financing can be obtained by inserting a non-corporate financial intermediary between the issuer of the corporate equity and the buyer of the equity (Gentry and Hubbard [1998]). A Limited Liability Company (LLC), which is used in the case of MIPS, is a legal entity that combines the most advantageous characteristics of corporations and partnerships. It provides, for instance, the limited liability of the corporation and the pass-through tax treatment of the partnership. Gentry and Hubbard (1998) point out that the same tax-advantages could be obtained when trusts are used as financial intermediary.

4.5. Tax complexity considerations

Another important driver for corporate tax reform in OECD member countries is the enormous complexity of their corporate income tax systems. Some examples of this complexity were already presented in Section 4.4. This complexity results in high tax compliance costs for corporations and creates difficult tax administrative problems and high enforcement costs for tax authorities. This section reviews the findings of the empirical literature that attempts measuring the corporate tax compliance costs first and summarizes the main sources of corporate income tax complexity afterwards.

Corporate income tax compliance costs

Corporate tax compliance costs are those costs incurred by corporations in meeting the requirements of the corporate income tax system. Corporate tax compliance costs include the costs of record keeping and return filing and the salaries of the employees who perform these tasks. It also includes the educational expenses to train these employees and the costs to obtain the advice of external accountants and tax lawyers. Tax compliance costs also include the costs that corporations incur while dealing with the tax administration or tax courts as a result of tax audits and litigation. The costs linked to the corporation's tax-planning activities are also part of their corporate tax compliance costs. However, the corporate opportunity costs are often not included. These costs reflect the value of the productive activities that were not undertaken because the corporation had to deal with the corporate tax system. Not only corporations but also the government incurs costs because it levies taxes. These administrative costs include the costs that are linked to the working of the tax administration but also the tax enforcement costs and the legal costs in tax disputes.

Slemrod and Blumenthal (1993) report the results of a survey taken to determine the tax compliance costs to large businesses of the corporate income tax in the US, both at the federal and the state and local level. Companies were asked how much money they could save if the corporate income tax would be eliminated, other than the tax liability itself. The survey was based on questionnaires and had a response rate of 27.5 per cent. The low response rate raises concerns about respondent bias, but the direction of the bias – overstating or understating corporate tax compliance costs – is not clear (Slemrod and Venkatesh [2002]).

For the Fortune 500 companies, the annual corporate income tax compliance cost in 1992 amounted to USD 1.055 billion. About 70 per cent of these costs result from the federal US corporate income tax, the remainder from the state and local taxes. An estimated 45.5 per cent of the federal corporate income tax compliance costs result from foreign-source income alone. These results were more or less confirmed by Slemrod and Venkatesh (2002). Slemrod and Blumenthal (1993) calculate that the costs of complying with the federal corporate income tax alone amount to 3.6 per cent of total federal corporate taxes paid by the 1329 – mostly large – corporations that are part of the Co-ordinated Examination Program (CEP) of the Internal Revenue Service. Including also state and local tax compliance costs, the total compliance costs are 3.2 per cent of total corporate taxes paid. Also Pope, Fayle and Chen (1991) report a rate of 3.2 per cent for large corporations in Australia. For the United Kingdom, Sandford, Godwin and Hardwick (1989) found that the corporate compliance costs were about 2.2 per cent of the tax revenue collected in 1986-87. For the Netherlands, Allers (1994) found corporate compliance costs equal to 4 per cent of corporate tax revenue. According to Slemrod and Blumenthal (1993), about 55 per cent of the total compliance costs are linked to within-firm personnel, 30 per cent reflects the within-firm non-personnel costs and around 15 per cent of the costs are due to outside tax assistance.

The Slemrod and Blumenthal (1993) survey also found that there are economies of scale in tax compliance. Larger companies have larger tax compliance costs, but the costs increase at a rate less than proportional to the increase in company size. These results were also found in corporate tax compliance costs studies for Australia (Pope [1995]), New Zealand (Sandford and Hasseldine [1992]) and Canada (Erard [1997]). Also Allers (1995) concluded that relative compliance costs are regressive with firm size. This result is also confirmed by Slemrod and Venkatesh (2002).

The Slemrod and Blumenthal (1993) survey also asked about the aspects of the corporate income tax code that are most responsible for the tax compliance costs. The two aspects most often cited were tax depreciation and the alternative minimum tax.[5] Also international tax issues such as the foreign tax credit, CFC-reporting, transfer pricing and expense allocation rules, were widely cited as contributing largely to the corporate tax compliance costs. Slemrod and Venkatesh (2002) confirmed these results and found that being a publicly-held corporation also increases corporate tax compliance costs. Other issues that were mentioned by Slemrod and Blumenthal (1993) were the frequency of tax law changes and the lack of conformity between book and taxable income. In fact, many respondents suggested moving toward more conformity between taxable income and the measure of income used for financial accounting purposes as a means to reduce the corporate tax compliance costs (see also Seltzer [1997]). Costs would also be strongly reduced if there would be uniformity among states' corporate tax systems and between the states and the federal corporate income tax system in the US.

Brian Erard (1997) discusses the results of a survey of large Canadian corporations on their compliance costs with federal and provincial corporate income taxes and capital taxes. For the top 500 Canadian non-financial corporations, the total compliance costs amount to 4.6 to 4.9 per cent of federal and provincial corporate income and capital taxes paid. Similarly to the results found by Slemrod and Blumenthal (1993), Erard concludes that about 57 per cent of the total compliance costs are linked to within-firm personnel expenditures. About 46 per cent of these costs are spent on keeping records and filing, 29 per cent on research and planning and 25 per cent is spent on tax audits, appeals and

litigation. Within-firm non-personnel expenditures and external tax assistance account for about 21 per cent and 22 per cent of compliance costs respectively. About 9 per cent of the external tax assistance costs are spent on keeping records and filing, 53 per cent on research and tax planning and about 38 per cent on tax audits, appeals and litigation. Erard (1997) also concluded that larger corporations spend a much greater share of compliance costs on in-house personnel than smaller firms and that corporations with a large number of foreign subsidiaries tend to engage more in tax planning activities.

Erard (1997) also reports on the aspects of the tax code that are most responsible for the corporate tax compliance costs of large corporations in Canada. Not only the complexity of the legislation and the reporting of foreign-source income (as in Slemrod and Blumenthal [1993]) but also the fact that tax audits and appeals are considered to be too detailed and are not handled in a timely manner, are perceived to be a major source of compliance costs. Also the deviations from generally accepted accounting practices and the multi-jurisdictional nature of the corporate income tax strongly influence the compliance costs.

Slemrod and Venkatesh (2002) report the results of a survey for the medium-sized businesses in the US and of the tax professionals to which US medium-sized corporations might have outsourced their corporate tax activities. They found that corporate compliance costs vary widely across industries and that larger firms have, in absolute amounts, larger corporate tax compliance costs than smaller firms because they are engaged more in tax planning. On the other hand, smaller firms devote relatively more time on the maintenance of tax-related records than did larger firms. For the medium-sized businesses in the US, Slemrod and Venkatesh calculate that the total corporate income tax compliance costs are between 28 per cent and 29.6 per cent of total corporate taxes paid. Even if they are overestimated, as argued by the authors, these rates strongly exceed the rates for large companies in the US (Slemrod and Blumenthal [1993]).

In order to simplify the tax system, the medium-sized corporations, in addition to the proposals that were made in Slemrod and Blumenthal (1993), suggested eliminating the tax depreciation rules and replacing them with immediate expensing of the investment cost. Another proposal that would strongly reduce the corporate tax compliance costs is the abolition of the Alternative Minimum Tax. Finally, international firms suggested permitting excess foreign tax credits to be carried forward indefinitely and the simplification of the allocation rules for interest, research and development and other expenses. Corporate tax compliance costs would not be strongly reduced if the definition of foreign-source earnings and profits in the US would conform to foreign income definitions, but they would be strongly reduced if they would conform to domestic income definitions. Finally, simplified transfer pricing guidelines would also reduce corporate tax compliance costs.

Brian Erard (1997a) reports the results of a survey for small and medium-sized businesses in Canada. The cost of outside tax assistance is the most commonly reported source of corporate tax compliance costs. Other important sources are record-keeping requirements, the complexity of the information requested by the tax administration and the lack of co-ordination among different levels of governments

Sources of corporate tax complexity

In addition to complexity of the international corporate tax rules, the empirical analysis showed that the accrual accounting rules are considered to be one of the main

sources of corporate compliance costs by many corporations. Accrual accounting rules attempt to accurately measure corporate income on a yearly basis. Taxable profits will then be closer to the true level of (economic) profits. For instance, instead of deducting business costs that generate future revenues at the time of purchase, accrual tax accounting requires that these business costs are deducted in the future. Accrual accounting then might provide more accurate information about the corporation. However, the accrual tax accounting principle then in itself becomes an important source of complexity as it, for instance, requires a complex set of tax depreciation rules. Complicated rules for inventory accounting are required as well. On the other hand, this tax complexity might be reduced by the use of accounting standards.

However, it often is not feasible to tax corporate income when it accrues. There are a lot of deviations from the general rule. These deviations contribute considerably to the complexity of the tax code. The taxation of realised capital gains is a straightforward example that gives rise to an enormous amount of tax planning opportunities. Shapiro (1997) points out that tax preferences for certain business activities creates incentives for firms to re-characterise their own activities such that they can benefit from these tax preferences. Tax authorities will then have to design additional rules to minimize such tax shifting, which then further increases the tax code's complexity. Another characteristic of capital gains taxation that creates a lot of complexity is, according to Edwards (2003), the difficulty to decide whether assets that are sold are part of regular sales, which is then taxed as ordinary income, or are sold by investors as a result of speculation, which are then taxed as capital gains.

In fact, many tax sheltering activities make use of the corporate income tax system's sensitivity to timing (Edwards [2003]). Corporations can obtain a corporate tax advantage by carefully planning when to include income and when to deduct expenses from the corporate tax base. However, this sensitivity to timing would also be present under cash-flow tax accounting, as postponing the inclusion of income in the taxable base (to the following tax year) on the one hand, but immediately deducting costs from that base on the other hand, will reduce the corporation's corporate cash-flow tax liabilities.

Moreover, the elimination of accrual accounting for tax purposes would not necessarily reduce the overall compliance burden and costs, as accrual accounting is also used for financial statement reporting purposes. The differences between tax and financial statement reporting accrual rules might therefore be a source of additional complexity. The alignment of tax accounting with financial statement accounting might therefore be another avenue for reducing complexity. In addition, this might reduce excessive tax avoidance and planning, as corporations would have to weight the tax saving from reporting lower income for tax purposes against the cost of presenting lower income for shareholder/creditor purposes.

One of the other fundamental sources of complexity and instability in the corporate income tax is the different tax treatment between debt and equity (Kleinbard [2005]). Not only are interest payments deductible from the corporate tax base, while payments for the use of equity are not, but the holder of the debt capital is also immediately taxed on the investment's return while the return on equity is taxed on a realisation basis – but has been taxed on accrual in the company – but possibly at different rates (as ordinary income or capital gains). These differences are a consequence of the "classical" point of view that

assumes that only the holders of the equity are the owners of the corporation. Interest paid as reward for debt is then considered to be a tax-deductible cost in the same way as, for instance, wages.

This complexity is also due to the fact that in reality it is not simple to determine what debt is and what equity is. The distinction depends on a number of characteristics (*e.g.*, maturity, remedies on default, seniority in the capital structure) but the conceptual line between debt and equity is not easy to draw. As a result, modern financial capital instruments have become complex and many new instruments are launched every year; they often take the form of debt-like equity (term preferred stock) or equity-like debt (MIPs, contingent convertible debt, etc.). This ambiguity between debt and equity, which implies that investors can no longer be easily divided in "owners" and "lenders", puts the "classical" distinction between debt and equity and its different tax implications therefore severely under pressure (Kleinbard [2005]).

Moreover, debt and equity are not the only available financial capital instruments. Corporations may also use a broad set of financial derivatives (options, forwards, swaps, etc.). These financial derivatives are not necessarily taxed in accordance with the income created by the underlying "physicals" to which they relate (Kleinbard [2005]) and different derivates might be taxed differently. This then further increases the corporate tax code's complexity.

Boadway and Keen (2003) point out that financial innovation, which refers to the creation of new assets by repackaging the cash flows generated by other assets, not only takes advantage of the tax differences between debt and equity. Financial innovation also exploits the differences in the taxation of "income", which is taxed on accrual at the normal corporate income tax rate and of "capital", which often benefits from the advantage of taxation on realisation and is often taxed at a lower rate.

Additional sources of complexity are the existence of different types of legal forms that are taxed differently and the tax rules with respect to business restructurings and the transfers of business assets or the entire business (Kleinbard [2005]). Some examples of the impact of the tax treatment of different legal business forms on tax revenues have already been presented in last section. However, these tax rules are often country-specific; they will therefore not be discussed further.

Due to the corporate tax code's complexity, corporations have to spend a lot of resources (financial costs, time that has to be spent, etc.) in order to pay their corporate taxes in a correct way. Moreover, some corporations spend a lot of resources in order to minimize their tax liabilities as much as they can. Shapiro (1997) notes that the economy could definitively grow faster if the tax-management services of accountants, lawyers and financial managers were used more productively. Moreover, tax administrations have to spend more and more funds to cope with the corporate tax system's complexities and to provide an answer to the growing tax-sheltering activities of corporations. In fact, in order for tax authorities to meet these challenges, it can be necessary to introduce new legislation that increases the complexity of the corporate tax system even further. Of course, it is not easy to have a simple corporate tax system in a complex economic environment. Moreover, the complexities have probably increased significantly over the last decades as a result of globalisation. Fundamental corporate income tax reform might help reduce the corporate tax compliance costs of businesses.

However, when reforming corporate tax systems, governments not only have to consider tax compliance costs but are also faced with the efficiency, redistributional, tax revenue and transitional implications of different type of tax reforms. A tax system that minimizes the corporate tax-compliance costs is therefore probably not the best tax system. In fact, certain types of complexities are probably unavoidable. For instance, as pointed out by Slemrod (1996) for the US corporate tax system, the foreign tax credits in the US are a source of considerable compliance costs but these complicated tax rules are required in order to protect the tax revenue levied on *domestic*-source income. Moreover, reducing corporate tax compliance costs does not necessarily imply that governments have to engage in *fundamental* corporate tax reform. In many countries, corporate tax compliance costs might be reduced by increasing the conformity between taxable income and income used for financial accounting purposes without the need to fundamentally change the corporate tax system. Corporate tax compliance costs might also be reduced by changing the tax rules less frequently and by keeping the tax rules as simple as possible. In any case, governments face difficult trade-offs when evaluating and reforming their corporate tax system. The corporate tax compliance costs for businesses and the administration costs are important factors that have to be considered in this evaluation process. The different options for fundamental corporate tax reform that do attempt to reconcile all objectives – less distortions, raising sufficient amount of tax revenues, and reducing the complexity – will be discussed in the following chapter and in Parts III and IV of this Report.

Notes

1. Tax authorities in OECD countries often allow for deviations from the tax code's general tax depreciation rules if corporate firms demonstrate that there are good reasons to do so (if the asset depreciates over its life-cycle according to a different scheme or at a different rate than the method and the rate that is suggested by the tax authorities).
2. The model assumes a separate corporate tax rate on distributed profits and on retained profits, but they might of course have the same value. This assumption facilitates the analysis of the impact of the corporate tax rate on the finance and investment decisions during the firm's life-cycle.
3. Different types of foreign tax credits can be distinguished. Under gross-up and foreign tax credit provisions, the home country taxes foreign income gross of foreign tax when it is repatriated, but provides a tax credit for the taxes paid abroad (OECD [2001]). A home country that operates a worldwide tax system might provide a credit to its resident corporations for the taxes paid abroad with separate foreign tax credit treatment of dividend income and interest income. This implies that the foreign tax attributable to the underlying host country corporate income tax on foreign dividend income may not be applied to reduce the residence country's tax on foreign interest income. This also implies that the foreign withholding tax on foreign interest income may not be applied to reduce the residence country's tax on foreign dividend income. Alternatively, the home country that operates a worldwide tax system might provide a foreign tax credit with pooling of dividend and interest income. In this case, the foreign tax credit for the taxes paid abroad can offset residence corporate income taxes on both dividend and interest income.
4. This discussion follows closely the analysis in Atkinson and Stiglitz (1984).
5. In the US, corporations are required to calculate their corporate tax liability under two sets of rules. They then have to pay the maximum of their regular corporate income tax liability and of the corporate alternative minimum tax (AMT) liability. The purpose of the AMT is to prevent companies from eliminating their regular corporate tax liability from over use of particular corporate tax preferences (Carlson [1995]).

ISBN 978-92-64-03811-0
Fundamental Reform of Corporate Income Tax – No. 16

PART II

Chapter 5

Integration of Corporate Income and Personal Income Taxation

At the corporate level, debt is tax-preferred over equity as a source of finance. Because interest payments are deductible from the corporate income tax base, the corporate income tax is in fact a tax on the return on equity. However, the corporate income tax interacts with the personal income tax as the return on equity may be taxed again at the shareholder level. In fact, this interaction may be denied – as is the case under classical systems, which regard the corporation as an entity entirely separate from its shareholders and therefore do not integrate the corporate and personal income taxes at all – or explicitly recognised by tax law (Cnossen [1993]).

If interest payments are taxed at the personal level at high rates and dividends and/or capital gains are taxed at the shareholder level at rather low rates, the total tax burden on newly issued equity and/or retained earnings as source of finance might be lower than or equal to the tax burden on debt, even though interest payments are not taxed under the corporate income tax. In that case, the different tax treatment of debt and equity at the corporate level might not result in an excessive use of debt as source of finance. Hence, the distortionary impact of the corporate tax might depend on the taxes at the personal level as well.

The integration of the corporate income tax and the taxes on the return on debt and equity at the household level might alleviate the corporate tax differences between debt and equity. This chapter presents the main methods for integration of the corporate income tax and personal income taxes. It focuses especially on whether these integration systems might realize tax-neutrality between debt and equity and between external and internal equity under a corporate income tax system.* These different types of corporate tax systems will be discussed in more detail in Part IV of this report.

5.1. Full integration

Under full integration (full imputation), all corporate earnings – distributed dividends, retained profits and interest payments – are allocated to shareholders and bondholders and are taxed at the personal level at the personal income tax rate. In a closed-economy, all company earnings might therefore be taxed in the same way. This removes the tax difference between debt and equity, between profit distribution and profit retention, and between external equity (newly issued equity) and internal equity (retained earnings) in a closed-economy.

These full integration systems treat the corporation as a pass-through, providing full integration of the corporate tax on distributed and retained profits with the personal income tax on the return to equity at the shareholder level. In that case, the corporate tax is used merely as a prepayment of the tax on equity at the shareholder level.

* The integration of corporate cash-flow taxes and capital taxes at the personal level will be discussed in Part III; the different corporate cash-flow tax systems will be discussed in more detail in Part IV.

Shareholders would receive a tax credit for the corporate tax already paid on the distributed profits. Double taxation of retained profits might be prevented by permitting shareholders to write up the basis of their shares by retained profits net of corporate tax. As a result, the capital income tax is levied only on capital gains in excess of retained profits that already have borne corporate tax. Similarly, the taxable basis is written down if the business incurs losses or if the business distributes dividends out of previously accumulated earnings.

In a closed-economy setting, if all earnings are taxed at the personal level at the same personal income tax rate, full neutrality between all sources of finance can be achieved if capital gains are taxed when they accrue instead of when they are realised. If, however, capital gains are only taxed when they are realised, equity might become a more preferred source of finance than debt even under a full integration system.

The closed-economy impact of the full integration system might be achieved in an international context, for instance if the country of residence of the foreign investor implements a full integration system as well. A full integration system would then maintain its favourable neutrality effects if the foreign investor would receive a tax credit for the foreign corporate taxes already paid. This tax credit could be provided either by the source country where the foreign income is earned, by the residence country where the foreign income is taxed at the personal level or it could be shared between the home and host country. However, if the host country would not provide a tax credit to non-residents, foreign equity-financed investment in the host country would be discouraged if the home country would not give a tax credit for the foreign corporate taxes already paid either. Foreign shareholders might then prefer to finance investment with debt. Moreover, because resident shareholders might receive a tax credit only for domestic corporate tax paid, the full imputation system will provide shareholders with a tax-induced incentive to invest in domestic instead of foreign shares.

Moreover, if corporations are driven only by their own taxation and not by the capital income taxes at the personal level, corporations will face a tax-induced incentive to finance investment with debt instead of equity even under full imputation systems.

5.2. Dual income tax DIT system

The dual income tax (DIT) system in its purest form is characterised by a proportional personal income tax on net income, which includes wage, pension and capital income less tax deductions. The same tax rate is used for corporate income. In addition to the flat rate, wage and pension income are taxed progressively by means of surtax on gross income from wage and pensions above a certain threshold level (OECD [2006]).

The DIT system consists of a standard corporate income tax system, as implemented in many OECD member countries. Because the return on equity is already taxed at the corporate income tax rate, as opposed to interest payments that are deductible from taxable corporate profits and are therefore taxed only at the personal level, double taxation of distributed profits is prevented through a full imputation system. Shareholders are permitted a tax credit against the personal income tax on dividends for the corporate tax that can be imputed to the dividends which they receive. Under the DIT in its purest form, double taxation of retained profits is prevented as well. Shareholders might be permitted to write up the basis of their shares by an amount equal to the taxable corporate income which is retained in the corporate firm. The capital income tax will then be levied only on capital gains in excess of retained profits that already have borne corporate tax (Sorensen [2005]).

In a closed-economy setting, full neutrality under the dual income tax between all sources of finance can be achieved if capital gains are taxed when they accrue. However, equity might again become a more preferred source of finance than debt if capital gains are only taxed when they are realised (or when they are not taxed at all).

The DIT system suffers from the same corporate tax problems as the full integration/imputation system in an open-economy setting. For instance, depending on the tax system in their country of residence, foreign investors might face a tax-induced incentive to excessively finance investment with debt. Moreover, the imputation credits under the DIT might be available only for resident taxpayers on domestic investment. As a result, the tax burden on foreign shares (dividends and capital gains) might exceed the tax burden on domestic shares.

Both full imputation systems and dual income tax systems might be combined with an allowance for corporate equity tax system in order to reduce the tax burden on investment at the corporate level. The allowance for corporate equity tax system is discussed next.

5.3. Allowance for corporate equity ACE tax system

The allowance for corporate equity (ACE) tax system corrects for the differential tax treatment of debt and equity by providing a deductible allowance for corporate equity in computing the corporation's taxable profits. Similarly to the deductibility of interest payments from the corporate income tax base, the allowance for corporate equity equals the product of shareholders' funds and an appropriate nominal interest rate. The allowance therefore approximates the corporation's normal profits. The corporate tax rate is then confined to economic rents, because corporate equity in excess of the ACE remains subject to corporate tax.

If the nominal interest rate that is applied to calculate the ACE equals the nominal interest rate that is paid as a reward for the debt, and all returns (interest payments, dividends and capital gains) are taxed at the personal level at the same rate, the corporation will be indifferent between debt and equity as source of finance. Interest payments and the normal return on equity will be taxed only at the personal level. The economic rents will be taxed at both the corporate and personal levels.

However, capital gains are usually taxed when they are realised and not when they accrue. In this case, interest payments and the return on equity that is distributed as dividends continue to be taxed at the personal income tax rate. However, the return on equity that is retained by the corporation – yielding capital gains – will be taxed at a lower rate because the household can postpone the realisation of these capital gains. The ACE tax system resolves the debt-equity distortion at the corporate level. However, if the tax rates at the personal level are considered as well, equity might become a more preferred source of finance than debt in a closed-economy setting because of the deferral of capital gains tax.

In an international context, corporations that make their finance and investment decisions considering only the corporate level taxes will be indifferent between debt and equity as source of finance under the ACE tax system. However, foreign interest payments will be taxed on accrual in the home country, but taxes on equity might be deferred until profits are repatriated back home. Even in an international context, equity might then become a more preferred source of finance than debt under the ACE tax system, even though the debt-equity distortion is resolved (only) at the corporate level.

5.4. Allowance for shareholder equity ASE tax system

The allowance for shareholder equity tax system also exempts the normal return on equity from double taxation. However, it provides tax relief for the normal return on equity not at the corporate level as under the ACE system, but at the personal level instead.

The ASE tax system continues to exempt interest payments at the corporate level, as opposed to the return on equity that is taxed at the corporate tax rate. The corporation's normal profits – equal to the value of corporate equity multiplied by an imputed interest rate – are not taxed again at the shareholder level. If the nominal interest rate that is applied to calculate the ASE equals the nominal interest rate that is paid as a reward for the debt, and the corporate tax rate equals the personal income tax rate on interest payments, the corporation will be indifferent between debt and equity as source of finance in a closed-economy. Under the ASE tax system, the corporate tax continues to act as a "backstop" to the personal income tax (on normal profits).

Rents might be taxed at the shareholder level under the personal income tax either as dividends or realised capital gains. Capital gains might then effectively be taxed at a lower rate because the tax can be postponed until the capital gains are realised, as opposed to dividends that are immediately taxed. The ASE therefore does not necessarily resolve the difference in tax treatment between retained earnings and newly issued equity. However, the ASE tax system does resolve the debt-equity distortion if taxes at the personal level are considered in a closed-economy framework.

The allowance for shareholder equity does not have a fundamental impact on the preferred sources of finance and uses of profits of corporations that are owned by foreign investors. The debt-equity distortion continues to exist at the corporate level. Under the ASE tax system, the debt-equity distortion is resolved only for domestic investors.

5.5. Comprehensive business income tax CBIT

A totally different method for alleviating the tax difference between debt and equity focuses on the corporate tax deductibility of interest payments. The comprehensive business income tax (CBIT) system resolves the need for integration of corporate and shareholder level taxes on equity, as interest payments and the entire return on equity (normal return and economic rent) are taxed at the corporate level at the corporate income tax rate – interest payments are therefore no longer deductible from corporate earnings – but are no longer taxed at the personal level. The corporation is therefore indifferent between debt, newly issued equity and retained earnings as source of finance of its investment under the CBIT.

The taxation of interest income at source has a strong impact on foreign investors, who will not only have to pay corporate taxes on the return on equity-financed investment but also on the return on debt-financed investment. The CBIT system will resolve the debt-equity distortion in an international context only if the home country exempts all foreign returns from tax or if it levies the same rates on the return on equity (dividends and capital gains) as on the return on debt (interest payments). However, in this last case, neutrality might not be achieved if capital gains are taxed only upon realisation in the home country. Hence, in the absence of changes in the tax treatment of foreign source income in many OECD member countries, it would be unlikely that neutrality between debt-equity will be achieved under the CBIT system for foreign (either personal or corporate) investors.

5.6. Methods for integration of distributed profits alone

The integration of the corporate income tax and the taxes at the shareholder level might be limited to distributed profits (Cnossen [1993]). The integration can be organised either at the corporate level or at the shareholder level.

Dividend relief at the corporate level can take different forms. The dividend deduction system, for instance, permits the (partial or full) deduction of dividends from taxable corporate profits, as is the case with interest payments. The split-rate system levies a lower corporate tax rate on distributed profits than on retained profits.

Dividend relief at the shareholder level can be obtained through the implementation of an imputation system or various schedular methods. The imputation system requires that dividends are grossed up with (part of) the corporate tax already paid, after which the grossed-up dividends are taxed at the shareholder level. The dividend tax is then reduced with (part of) the corporate tax with which the net dividends were grossed up in the first place. Different types of schedular methods for dividend relief exist. One example is the method that taxes dividends at the personal level at a lower rate than interest payments. Another method taxes all types of capital income at the personal level at similar rates but provides a tax credit, specified as some fraction of dividends received. Finally, under the partial inclusion method, only part of the received dividends is included in the taxable income at the shareholder level.

From a domestic point of view, a reduced tax burden on dividends might (partly) restore neutrality between debt, newly issued equity and retained earnings as source of finance. Dividend relief at the corporate level or shareholder level might (partly) compensate for the gain as a result of the deductibility of interest payments from the corporate tax base and for the reduced tax burden on capital gains because shareholders can often defer the capital gains tax until the capital gains are realised.

As argued, governments can provide dividend relief at the shareholder level in a number of ways. The alternative approaches differ in their administrative costs. An important advantage of imputation types of tax relief is, however, that no relief at the shareholder level would be provided if no corporate income tax would actually have been paid. This might occur if the firm's corporate tax base is reduced because of, for instance, generous depreciation allowances or losses that were carried forward.

Whether governments allow for dividend relief either at the corporate or shareholder level will especially have a strong impact on the tax burden of foreign investors who benefit only from dividend relief at the corporate level. Dividend relief at the corporate level implies that foreign investors (partly) escape from taxation in the source country. On the other hand, it might induce foreign investors to invest in equity in the host country. Only dividend relief at the corporate level will have an impact on investment if the corporation's cost of finance is determined on the international capital market (the "new new" view). Dividend relief at the shareholder level will reduce the tax burden on equity-financed investment only for resident shareholders. In fact, resident shareholders would obtain an incentive to invest at home and not abroad if foreign-source dividends would not obtain the same reduced tax treatment at the shareholder level.

PART III

Domestic and International Corporate Cash-Flow Tax Issues

FUNDAMENTAL REFORM OF CORPORATE INCOME TAX – No. 16 – ISBN 978-92-64-03811-0 – © OECD 2007

ISBN 978-92-64-03811-0
Fundamental Reform of Corporate Income Tax – No. 16

PART III

Chapter 6

Corporate Cash-flow Taxation

The current corporate income tax bases in many OECD countries – because they are (partly) based on accrual accounting rules – are complex, increase the burden on tax administrations and lead to tax avoidance and evasion. Under these circumstances, a corporate cash-flow tax – based on cash-flow accounting rules – might be an alternative to a corporate income tax. The corporate cash-flow tax has been subject to extensive discussion in the economic literature in recent decades, especially in the United States. The cash-flow approach seems especially promising at the corporate level, where equity concerns are not relevant and where its implementation seems practically feasible. In fact, almost all OECD countries already have a cash-flow tax at the corporate level in the form of a Value Added Tax (VAT).

The design and content of the corporate cash-flow tax depends on whether only real transactions or both real and financial transactions are included in the tax base. The different tax bases are described in Section 6.1. Section 6.2 discusses the efficiency of the cash-flow tax at the corporate level. The efficiency of the corporate cash-flow tax when personal level taxes are also considered is studied in Section 6.3. Tax revenue consequences of a change to a cash-flow tax are discussed in Section 6.4. The issues of tax complexity and tax avoidance/evasion are discussed in Section 6.5 and Section 6.6 focuses on the tax treatment of financial services under the corporate cash-flow tax. Transitional issues are discussed in Section 6.7.

6.1. The cash-flow corporate tax base

A cash-flow corporate tax can be levied on different tax bases. This section discusses the different cash-flow corporate tax bases: the R-base, the R+F-base and the S-base.

R-base

The R-base corporate cash-flow tax includes only real (R) transactions in the tax base. Real transactions are measured as the difference between the receipts from sales of real goods and services and the expenses from purchases of real goods and services required in the production process, including purchases of capital goods: R-base = sales – purchases. Under the R-base, financial transactions, as opposed to real transactions, are not included in the tax base. The R-base disallows any deduction with respect to the financing of the investment, which implies that interest payments are not tax-deductible. The R-base corporate cash-flow tax then treats debt and equity in the same way and, therefore, does not distort the corporation's choice between different sources of finance, as will be demonstrated in the following paragraphs.

The bonds that the firm issues to finance real investment do not appear in the tax base. The investment that is financed with these funds is however deductible from the tax base. The return of the debt-financed investment – as the investment will increase sales – will be taxed afterwards. However, the up-front deduction of the investment will offset the taxes on the interest payments that will be paid to the bondholders (tax expenditure tax

treatment), which implies that debt-financed investment – assuming it earns a normal return (the interest rate) – is not taxed under the R-base corporate cash-flow tax (see also Box 3.1 in Chapter 3).

In fact, equity-financed real investment is taxed in a similar way. The up-front deduction of the investment outlays offsets the taxes on the normal return of the investment. The economic rents however will be taxed under the corporate cash-flow tax. Debt and equity-financed investment are therefore taxed in the same way.

The corporate cash-flow tax is levied on the investment's equity-financed return, independently of whether the return is distributed as dividends or is retained and reinvested. Consequently, the cash-flow tax cannot be deferred at the corporate level, which implies that the corporation will be indifferent between newly issued equity and retained earnings as source of finance as well. Hence, the corporate cash-flow tax does not create a bias in favour of retaining profits instead of distributing them.

However, as long as the firm reinvests its profits, it will effectively not have to pay any corporate cash-flow tax as the immediate tax gain due to the deductibility of the investment from the tax base cancels out the tax on the profits that are retained and reinvested. The corporate cash-flow tax can then effectively be postponed (on the normal return and the rents) until the profits are distributed to the shareholder and are used by the shareholder to finance consumption.

R+F-base

The R+F-base corporate cash-flow tax, in addition to real transactions, includes non-equity financial (F) transactions in the tax base. Non-equity financial transactions refer to borrowing and lending of funds. Borrowers include the loan principal in the tax base and deduct interest payments and the principal when it is redeemed. Lenders deduct the principal when they make a loan and include loan repayments (both principal and interest) in the tax base. The R+F-base then amounts to: R+F-base = (sales + borrowed funds + interest received + loan repayments) – (purchases + interest paid + debt repaid + lent funds).[1]

Under the R+F-base, the bonds that the firm issues to finance real investment do appear in the tax base. The investment that is financed with these funds is however deductible. The return of the debt-financed investment – as the investment will increase sales – will be taxed afterwards, but the interest payments that the corporation pays to the bondholders are deductible. Consequently, debt-financed investment – assuming it earns a normal return (the interest rate) – is not taxed under the R+F-base corporate cash-flow tax.

Debt under the R+F-base is taxed according to the "tax-prepayment" method: the savings are effectively not deductible from the tax base (the borrowed principal is included but the investment is excluded) but the interest payments are effectively not taxed either (the return of the investment is taxed but the interest payments are excluded). Under the R-base, debt is taxed under the "tax-expenditure" method: investment is deductible and the corresponding tax gain offset the taxes on the return of the debt-financed investment paid as interest to bondholders.

In case of equity-financed real investment, the up-front deduction of the investment outlays offsets the taxes on the normal return of the investment as the investment will increase the corporation's sales. The economic rents however will be taxed under the R+F-base corporate cash-flow tax.[2] Again, the actual payment of a tax can be postponed until the shareholder uses the investment's return to finance consumption.

However, the corporate cash-flow tax is not a dividend tax. It is levied on the entire investment's return through the increase in sales. But because of the corporate tax gain that arises if the return is reinvested, no tax will actually have to be paid until the return is used for consumption purposes. And, indeed, shareholders can use the funds for consumption only if they are distributed as dividends. Of course, shareholders can sell their shares and use these funds to finance consumption. The firm's accumulated earnings then remain inside of the corporation but are just owned by a different shareholder. This tax treatment does not imply that distributing dividends is discouraged by the tax code because the shareholder might reinvest the dividends in shares of the same or another corporation. Moreover, because of the deduction of investment outlays from the tax base, the normal return on equity (and the interest payments) will effectively not be taxed, as opposed to the economic rents (as described in Chapter 3).

S-base

The S-base corporate cash-flow tax taxes the net flow from the corporation to its shareholders: S-base = (dividends paid + purchases of shares – issues of new shares). The aggregated corporate sector S tax represents the net flow from the corporate sector to shareholders since share transactions between corporations cancels out.

For corporations total cash inflows must equal total cash outflows. When comparing the R+F-base with the S-base, the cash-flow identity of the corporation can be written as: R + F = S + T, where T represents the net taxes paid under the corporate cash-flow tax. This cash-flow identity says that any difference between total business inflows and outflows has to be paid out either to shareholders or as tax. The S-base is then conceptually equivalent to the R+F base minus the corporate cash-flow tax: S = R + F – T. What is left after tax from the corporation's net real and financial transactions is paid to its shareholders.

The cash-flow tax treatment then implies a "silent partnership" for the government in the corporation's investment. The identity R + F = S + T implies that an increase in net cash-flow (increase in R+F), under the assumption of a constant S, increases the cash-flow taxes that are paid (increase in T). Similarly, a reduction in net cash flow (reduction in R+F), given a constant S, reduces the cash-flow taxes paid (reduction in T). Under this partnership, the government collects a share of the above-normal returns on the corporation's investments, but contributes to the costs of that part of the investment that yields only a normal return.

6.2. Efficiency considerations at the corporate level

The corporate cash-flow tax eliminates some of the distortions inherent in a corporate income tax system (see Section 4.1). As opposed to the corporate income tax that favours debt over equity financing, the corporate cash-flow tax treats debt and equity in the same way. The immediate expensing of the investment implies that the investment's normal return is tax-exempt, while interest payments will no longer be tax-deductible. Consequently, the corporate cash-flow tax does not discriminate between debt and equity (newly issued equity and retained earnings) as sources of finance and does not distort marginal investment decisions at the corporate level.

Neutrality of the corporate cash-flow tax requires that the corporate tax rate is kept constant over time. If governments would announce that the corporate cash-flow tax would fall, firms would have an incentive to bring foreword investment in order to obtain a corporate

tax deduction in excess of the corporate taxes levied on the investment's later normal and above-normal returns. On the other hand, firms obtain a tax-induced incentive to postpone investment if governments would announce that the corporate tax rate will increase.

However, the corporate cash-flow tax does tax the investment's economic rents. The corporate cash-flow tax system therefore continues to distort the corporation's decisions that depend on the average corporate tax burden such as location decisions.

The corporate income tax distorts not only how much investment will be undertaken but distorts also the type of investment project that will be invested in. The difference between economic depreciation and tax depreciation might vary between types of investment projects and industries. The cash-flow tax would eliminate these distortions because of the investment's immediate expensing.

Since inflation makes the replacement of assets more expensive over time, there is an argument for inflation adjustment of the value of the asset under a corporate income tax. A corporate cash-flow tax is based on current transactions and therefore avoids the timing related problems of a corporate income tax. The required adjustment for inflation of the value of the asset is not necessary because of the investment's immediate expensing.

The corporate income tax distortions due to its lock-in effects (because capital gains are taxed upon realisation instead of on an accrual basis) are no longer present because the shares of corporations do not appear in the corporate cash-flow tax bases. The dividends that a firm receives from, for instance, its subsidiaries and the capital gains that the firm realizes when it sells the shares it holds, are therefore not taxed under that firm's corporate cash-flow tax.

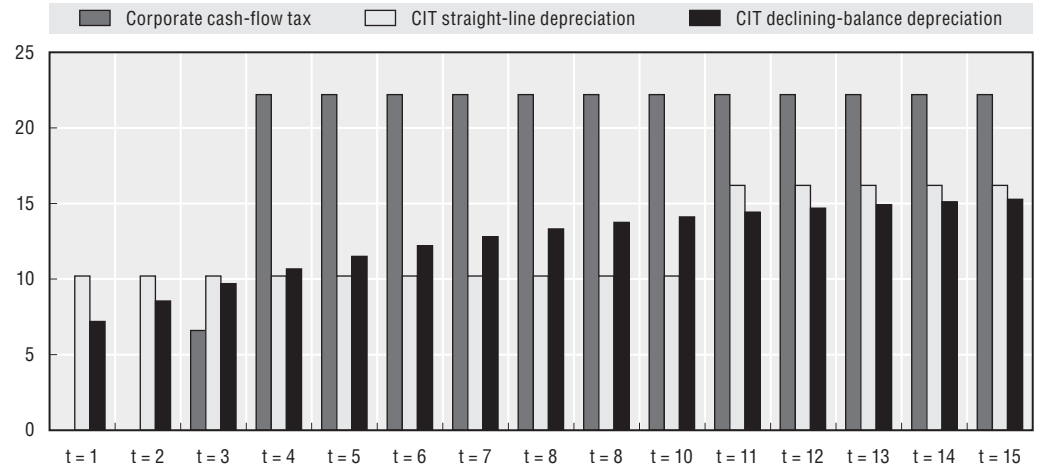
The corporate income tax treats corporations differently than businesses that have another legal form (proprietorships, partnerships, etc.) and might influence the decision to either (un-) incorporate or not. The introduction of a cash-flow tax that would include all business activity would not influence the organisational form of businesses. Equal tax treatment of different organisational forms would increase efficiency as the after-tax return on investment would be independent of the business's legal form. However, if the cash-flow system is confined to corporations only, the corporate tax system would continue to influence the organisational form that is chosen.

Firms might encounter difficulties in financing their investment projects due to financial market imperfections. As a result, financing-constraint firms might forego profitable investment opportunities. This will not only have an impact on the profitability of the firm, but it will also imply that the government will raise less tax revenues. However, such financial market imperfections can partly be alleviated under immediate expensing, because it provides firms with an immediate tax gain that can be reinvested in the corporation; the corporate cash-flow tax is actually not levied as long as the firm continues to invest its earnings. These reinvestments will also benefit from the immediate expensing provision. The immediate expensing then implies that the normal return of the investment will not be taxed. However, if the project creates economic rents that exceed the investment's normal return, the government might in fact, in present value terms, raise more revenues than the cost of the foregone tax revenues due to the immediate expensing provision. In the presence of financing-constraint firms, the introduction of a corporate cash-flow tax might therefore create a win-win situation.

However, due to the inclusion of non-equity financial transactions in the R+F-corporate cash-flow tax base, some firms might find it attractive not to distribute their profits as dividends but to reinvest their profits in financial capital (bank accounts, government bonds, bonds of other corporations, etc.). This strategy enables the firm to defer the corporate cash-flow tax until these funds are distributed. The R+F-base corporate cash-flow tax therefore provides firms with a tax-induced incentive to save in financial capital (debt) on behalf of their shareholders. This strategy might especially be used by closely-held corporations because it allows the manager-owner to defer the corporate cash-flow tax, in addition to the capital gains tax, until the corporation is sold.

Figure 6.1 simulates the corporate taxes paid by a firm, which undertakes an additional investment project, under alternative corporate tax systems. Under the corporate cash-flow tax, the entire investment is fully expensed in the first period. In the example, this results in a negative corporate tax liability which can be carried forward to the next period(s). From period 4 onwards, the corporate cash-flow taxes that have to be paid are constant. They exceed the corporate income tax liabilities because of the different tax treatment of interest payments; interest payments are not deductible under the corporate cash-flow tax but they are under the corporate income tax.

Figure 6.1. **Corporate cash-flow tax *versus* corporate income tax under straight-line or declining balance tax depreciation over time**[1]



1. The numbers simulate the corporate taxes paid by a firm that undertakes an additional investment project. The firm sells in every period 12 products; the price/unit is 12, the cost/unit is 5 and fixed costs are 10. The firm has issued debt of 500 and the value of its equity is 500. The interest rate is 4 per cent. The corporate tax rate is 30 per cent. In period t = 0, the firm invests 200; investment prior to t = 0 are assumed to be fully depreciated. In case of straight-line depreciation, the firm can depreciate the investment over a period of 10 years (1/10 of the investment in every period). The tax depreciation rate under declining-balance depreciation is assumed to be 15 per cent, such that the largest part of the investment is depreciated after 10 periods.

The differences in the corporate income tax liabilities are explained by the effects of straight-line depreciation *versus* declining-balance tax depreciation. Under the assumptions of the simulation, the firm will pay lower corporate income taxes in the first periods under declining-balance tax depreciation as a result of the high tax depreciation rate but it will pay more from period 3 until 10. After 10 periods, the firm will continue to depreciate the asset only under the declining-balance depreciation method. This results in lower corporate income taxes that have to be paid, but the difference converges to zero in the longer run.

If the corporate income tax is replaced with a corporate cash-flow tax, corporations will initially have to pay lower corporate taxes when they undertake new investment projects as a result of the immediate expensing. Under the cash-flow tax, the normal return on the equity-financed and debt-financed investment will not be taxed, while under the corporate income tax, only the normal return on debt-financed investment (the interest rate) is tax-exempt under the assumption that the tax depreciation allowances follow the actual economic depreciation of the asset. The economic rents are taxed under both corporate tax systems. In present value terms, the corporation will therefore pay less tax under the corporate cash-flow tax than under the corporate income tax.

However, this result does not show up in Figure 6.1. In this example, firms will have to pay more tax when the corporate income tax is replaced with the corporate cash-flow tax. In this example, the introduction of immediate expensing is less beneficial to the firm because under the corporate income tax, the firm can already benefit from accelerated tax depreciation allowances. In fact, the example is based on the extreme assumption that that there is no economic depreciation of the asset; this explains why the firm's corporate taxes under the corporate cash-flow tax remain constant from period 4 onwards. In this example, the *net* gains of immediate expensing – net of the accelerated tax depreciation allowances under the corporate income tax – are lower than the costs because the firm can no longer deduct the interest payments from its tax base under the corporate cash-flow tax.

The example also shows that the immediate expensing of the investment might give rise to a negative corporate tax liability. Tax losses will have to be refundable or governments will have to implement loss carryforward provisions in order to avoid tax-induced distortions of the firm's investment decisions. However, the gain of immediate expensing in present value terms will be reduced if these losses are not carried forward at an appropriate rate of interest.

6.3. Efficiency considerations with corporate and personal level taxation

Even under a corporate cash-flow tax, savings at the personal level might continue to be taxed under a capital income tax. When capital income taxes at the personal level are considered as well, the corporation's marginal debt-equity decision will not be distorted as long as interest payments and the normal return on equity are taxed at the personal level in the same way. However, the profits can be distributed as dividends or retained and reinvested, which then yields capital gains. If capital gains are taxed upon realisation while dividends and interest payments are taxed on accrual and/or capital gains are taxed at a lower rate than dividends and interest payments at the personal level, the debt-equity choice will be distorted even under a corporate cash-flow tax.

This is demonstrated in Box 6.1, which discusses the cost of capital and the marginal increase in value of the firm's equity in the steady state under the "new" view. The analysis assumes that capital gains are taxed at lower rates than interest payments and dividends. In that case, the firm will prefer to retain and reinvest its earnings instead of financing investment with newly issued equity or debt. In order to show the impact of the taxes at the personal level, the cost of capital under the "new new" view is derived in Box 6.1 as well. The cost of capital under the "traditional" view is derived in Box 6.2.

However, the debt – equity choice would not be distorted if capital would be taxed at the personal level on a cash-flow basis as well. A cash-flow tax treatment at the personal level might imply that household savings are deductible from the personal income tax base. The

Box 6.1. **The corporate cash-flow tax under the "new" view and the "new new" view**

Given a corporate cash-flow tax, this box presents the cost of capital on a firm's marginal investment decision under the "new" view and the "new new" view. It is assumed that capital gains are taxed at a lower rate than dividends. τ_{cf} is the corporate cash-flow tax rate; the other variables are defined in Box 4.1. Under the "new" view, the firm will invest its retained earnings until the marginal product of an additional unit of capital (cost of capital) $f'(K)$ equals:

$$f'(K) = \frac{(1-\tau_p)}{(1-\tau_c)} \cdot r$$

If the firm retains and reinvest 1 currency unit of before-tax profits, it actually invests $(1 - \tau_c)$ of after-tax profits (the profits are not taxed under the corporate cash-flow tax as result of the immediate expensing). The return on this investment $f'(K)$ will be distributed as dividends, which yields an (overall) after-tax return equal to $(1 - \tau_c)f'(K)(1 - \tau_d)(1 - \tau_{cf})$. Instead of reinvesting its earnings, the firm might distribute its profits as dividends and invest them in market debt, which would yield $(1 - \tau_d)(1 - \tau_{cf})r(1 - \tau_p)$. The firm will therefore invest as long as the after-tax return on investment financed with retained earnings exceeds the after-tax opportunity return on the opportunity investment in market debt.

Similarly, the firm will invest its retained earnings, which yields capital gains, until the marginal increase in value of the firm's equity q equals the cost of the additional investment, which are the net dividends foregone:

$$q = \frac{(1-\tau_d)(1-\tau_{cf})}{(1-\tau_c)} < 1$$

If the firm retains and reinvest an additional euro, the after-tax increase in value of the firm's equity equals $(1 - \tau_c)q$. If the firm distributes the additional euro, the household receives after-tax dividends $(1 - \tau_d)(1 - \tau_{cf})$. The firm invests until the household is indifferent between retaining and distributing the firm's earnings. Because it is assumed that capital gains are taxed at lower rates than distributed dividends, the increase in value of the equity is lower than 1.

Under the "new new" view, shareholders require the world market interest rate on their investment r. As a result of the immediate expensing, the firm will invest its earnings until the cost of capital equals the interest rate:

$$f'(K) = r$$

The marginal increase in the value of the firm's equity then amounts to:

$$q = (1 - \tau_{cf})$$

As opposed to impact of the corporate income tax, the corporate cash-flow tax does not affect the firm's marginal investment decision under the "new" view and the "new new" view. A reduction in the corporate cash-flow tax rate does not imply that firms will invest more. However, a reduction in the corporate cash-flow tax will only lead to windfall capital gains for existing shareholders, as the reduction in τ_{cf} will increase the marginal increase in value of the firm's equity.

Box 6.2. **The corporate cash-flow tax under the "traditional" view**

This box presents the cost of capital on a firm's marginal investment under the "traditional" view. Given the assumptions of the "traditional" view (see also Box 4.2) and using the notation of Box 4.1, the cost of capital $f'(K)$ of a marginal investment financed with newly issued equity equals:

$$f'(K) = \frac{(1-\tau_p)r + p(\xi|_{opt})}{\xi|_{opt}\cdot(1-\tau_d)(1-\tau_{cf}) + (1-\xi|_{opt})\cdot(1-\tau_c)}$$

The return $f'(K)$ on the marginal investment financed with newly issued equity is partly (ξ%) distributed as dividends (the after-tax dividend equals $[1-\tau_d][1-\tau_{cf}]$) and partly ($[1-\xi]$%) retained, which yields $(1-\tau_c)$ after-tax capital gains. The investment has to earn the shareholder's opportunity return, which equals the after-tax return on a risk-free investment in debt $(1-\tau_p)r$, augmented with the risk premium on equity $p(\xi)$. The cost of capital then follows. The firm determines ξ such that the cost of capital is minimised. The optimal payout rate $\xi|_{opt}$ satisfies:

$$\frac{-p'(\xi|_{opt})}{f'(K)} = (1-\tau_c) - (1-\tau_d)(1-\tau_{cf})$$

This condition states that the firm will distribute dividends until the benefit of a reduction in the risk premium, which is measured on the left hand side of this condition, equals the tax cost of additional dividends. This tax cost is measured on the right hand side; it equals the difference between the after-tax capital gains and after-tax dividends and simplifies to $\tau_{cf} + \tau_d(1-\tau_{cf}) - \tau_c$. Moreover, because the firm's earnings are replaced with external equity, the firm will invest funds until the marginal increase in the value of the firm's equity q amounts to:

$$q = 1$$

Compared to the outcome under the corporate income tax (Box 4.2), firms will distribute less dividends because the reinvestment of earnings is taxed more favourably under the corporate cash-flow tax. This King-Fullerton type of framework does not consider that also the distributed dividends could be invested back in the corporation. This extension would require a dynamic framework.

investment's return will then have to be included in the personal tax base ("tax expenditure" treatment). Cash-flow tax treatment at the corporate and at the personal level would then imply double taxation of economic rents. However, interest payments and the normal return on equity would remain tax-exempt. If at the personal level, capital gains would be taxed on realisation and dividends would be taxed immediately and/or capital gains are taxed at the personal level at a lower rate than dividends, households would prefer to receive the economic rents in the form of capital gains instead of dividends.

The debt-equity neutrality under the corporate cash-flow tax will also be maintained if savings at the personal level are taxed under the "tax prepayment" method. As explained in Chapter 3 savings are not deductible from the personal tax base but the original savings augmented by the savings' return are not taxed at the personal level either. In this case, only the economic rents are taxed under the corporate cash-flow tax.

6.4. Tax revenue considerations

Because the corporate income tax raises a substantial amount of tax revenue in many OECD countries, it is important to study the revenue impacts of the replacement of the corporate income tax with a corporate cash-flow tax. This replacement might have several implications.

First, the corporate cash-flow tax provides more generous investment incentives than the corporate income tax. The corporate tax gain due to the investment's immediate expensing exceeds the tax gain due to the depreciation allowances under the corporate income tax. Put differently, only above-normal returns are taxed under the corporate cash-flow tax as opposed to the taxation of the normal return on equity and the economic rents under the corporate income tax. It might then be argued that, in order to raise the same revenue, governments would have to levy a higher cash-flow tax rate than their current corporate income tax rate.

Neutrality also requires that tax losses, which might more frequently occur because the cost of the investment is immediately expensed – will have to be paid out or carried forward at an appropriate interest rate. This will put tax revenues further under pressure. Moreover, governments might not allow this, given the potential danger of firms disappearing once they have claimed tax rebates on losses (Boadway and Keen [2003]). The "modified cash-flow tax" (Boadway and Bruce [1984]) mitigates the negative tax revenue implications of full immediate expensing combined with provisions that allow tax losses to be refunded or carry-forward. The modified corporate cash-flow tax allows only part of the investment to be immediately expensed. Firms would be allowed to draw down the undepreciated capital stock at some rate each year – the rate might be such that the firm will never have negative taxable corporate income – and would obtain an additional corporate tax deduction for the financial costs associated with holding that undepreciated capital stock (Boadway and Keen [2003]).

On the other hand, existing corporate income tax systems might not generate much income either. Gordon and Slemrod (1988) and Shoven (1991) have found that in the 1980's, on average, capital income in the United States was taxed at an effective rate close to zero. The low rate is due to the favourable tax treatment of some types of investments, accelerated depreciation allowances – their impact has been demonstrated in Section 6.2 – and the deductibility of nominal interest rates. Based on US data, Gordon *et al.* (2004a) have found that capital income taxes did raise revenue in 1995. However, in a recent analysis for 2004, Gordon *et al.* (2004b) have found that the US tax system has returned to the mid-1980's situation when the income tax raised little revenue from the taxation of capital income.

Avi-Yonah (2004) has demonstrated that the risk-free (normal) return to capital has historically been quite low in the US, with average rates ranging from 0.5 to 3 per cent. This result then implies that the loss in tax revenue that might arise if the normal return to capital would be exempted from tax might be rather low, especially because interest payments are already deductible from the corporate income tax base.

Second, the immediate expensing under the cash-flow tax would imply a temporary revenue reduction because new investments would become fully deductible when the tax is introduced. Under the corporate income tax, depreciation allowances are spread over the lifetime of the asset. This transitional problem would require transition rules that soften the adverse revenue effects.

Third, tax revenue under a corporate cash-flow tax might be more sensitive to investment decisions (Shome and Schutte [1995]). Under a corporate income tax, the return on investment and the depreciation allowances follow a similar pattern. Under the cash-flow tax, however, the taxable inflows from past investments are partly offset by the immediate expensing of the new investments. Current tax revenue will then depend on the difference between the average return and the rate of growth of the capital stock. In periods of high growth of the capital stock relative to the increase in the average rate of return, the tax revenue could temporarily decrease.

By requiring depreciation rather than immediate expensing under the corporate income tax, government pays a smaller share of the cost of the investment. The government's "silent partnership" in investment is increased under a corporate cash-flow tax. This increased partnership will not cause substantial variations over time in total tax revenue if the good luck in one project offsets the bad luck in another project (Shome and Schutte [1995]). However, if risks between individual projects are correlated, variability of revenue might become an additional policy concern.

6.5. Tax complexity and tax avoidance/evasion considerations

A corporate cash-flow tax reduces tax complexity for a number of reasons. Corporations no longer obtain a tax-induced incentive to finance investment with debt instead of equity, which simplifies the corporate finance decisions. Income is taxed when cash is received and costs can be deducted when purchases are made; the corporation's assets no longer have to be capitalised and the economic deprecation of the assets no longer have to be measured. No inflation accounting is required and the tax code no longer influences the realisation of the corporation's capital gains.

However, Shome and Schutte (1995) have discussed some new loopholes that might arise under a corporate cash-flow tax. For instance, under the R-base corporate cash-flow tax, several types of tax avoidance schemes attempt to exploit the difference between taxable real flows and tax-free financial transactions. The corporation might attempt to convert real sales into untaxed financial income. Bradford (2004) provides the example of a car, which is sold together with a credit sale contract. The corporation might reduce its tax liabilities by reducing the price of the car but by specifying a high interest rate on the loan. As such, the buyer does not have to pay more but the dealer converts part of its tax base into a non-taxable financial gain. This type of corporate tax-avoidance behaviour can be avoided if governments do not allow conditional sales that consist of the sale of real goods and financial services.

Due to the difference between taxable real flows and tax-exempt financial transactions the R-base creates larger tax avoidance and evasion opportunities than the R+F-base. The administrative advantages of the R-base – financial transactions can be ignored under the R-base – should then be traded-off with the reduced opportunities for base shifting and tax avoidance under the R+F-base.

The immediate expensing component of the corporate cash-flow tax increases the incentives for tax avoidance and evasion compared to the corresponding incentives under a corporate income tax. Under immediate expensing, the full value of the asset is deducted when purchased while the asset will have to be depreciated over its lifetime under a corporate income tax. The corporate income tax system requires that the corporation possesses the asset in order to benefit from the available depreciation allowances over the

asset's lifetime. Under the corporate cash-flow tax, however, the entire deduction is made up-front. No additional deductions are afterwards obtained through the ownership of the asset. Corporations might then purchase assets, take advantage of the immediate expensing, and resell the assets immediately afterwards (at their correct or understated prices). This tax-avoidance behaviour could be avoided by introducing a minimum holding period for expensed capital assets.

Because of the immediate expensing under a corporate cash-flow tax, the corporation's taxable inflows might not be large enough to offset all available deductions. Excess allowances will probably be more frequent under a corporate cash-flow tax than under a corporate income tax. Symmetric treatment of profitable and loss making corporations would result in refunds to loss making corporations. Other types of loss-offset provisions might provide tax-induced incentives for arbitrage behaviour and mergers.

6.6. Financial services/sector in the corporate cash-flow tax

Financial services can take many forms as, for instance, the service of intermediating between borrowers and lenders, the service of providing insurance and the service of providing financial advice (Boadway and Keen [2003]). These financial services are a source of income for the corporation that provides them; for the purchaser they are a commodity like any other service that can be bought.

There is a vast literature that discusses whether financial services purchased by consumers should be taxed or not (see Boadway and Keen [2003] for an overview). This literature also discusses how financial services could be taxed under a value-added tax. These topics will not be discussed, even though there is a clear link between the VAT paid by customers of the financial sector and the profits earned by the financial sector.

Although there are opposite views with respect to the taxation of consumer financial services, there is a general agreement that businesses should not be taxed on their use of financial services. Financial services are a business cost and they should therefore not be included in a consumption tax base (Grubert and Mackie [2000]). Under a corporate cash-flow tax, corporations would be allowed to fully expense the costs of the purchased financial services because these services are a component of the price of the investment. The immediate expensing applies to bank services but also to other types of financial services as, for instance, property and casualty insurance services.

However, governments might tax the financial sector that generates (pure) profits by supplying financial services. Moreover, Honohan (2003) discusses a number of reasons why the taxation of the financial sector may be part of a set of measures that attempts to correct for information deficiencies, monopoly power and other factors that push most financial markets away from the perfect competitive market with fully informed participants.

If financial services are priced separately, for instance through the use of *explicit* fees, banks and insurance companies might be taxed in a straightforward way. However, financial services are often not priced separately but these services are reflected in a lower return received by the lender and a higher interest rate paid by a borrower (Grubert and Mackie [2000]). Also Merrill and Edwards (1996) point out that the largest part of the revenues from financial institutions are *implicit* financial intermediation fees that are hidden in interest spreads and other financial margins. In order to tax the profits of financial institutions, governments might consider a number of options.

First, governments might implement an R-base corporate cash-flow tax which excludes financial flows. As a result, most revenues and outlays of financial institutions are financial flows which would not be included in the corporate cash-flow tax base. Financial corporations would then be excluded from taxation under the corporate cash-flow tax. Exclusion of financial corporations, however, would distort tax neutrality with respect to investment in different sectors of the economy. The R-base corporate cash-flow tax would then provide a tax-induced incentive to invest in financial institutions; the economic rents of all corporations would be taxed except for the rents realised by the economy's financial sector.

Second, the financial stock of assets (denoted by A) of financial corporations – the securities held by financial corporations of other resident and non-resident firms, governments and households – could receive a similar treatment as real capital in non-financial corporations. The corporate cash-flow tax base would then consist of the revenues generated by these financial assets (dividends received, received interest payments, selling price of the assets) net of the costs of holding them (including their purchase price in the year when the assets are bought) net of the real costs of intermediation (office equipment, etc.) (Boadway and Keen [2003]). In fact, the tax base is then an R-base tax applied to financial corporations. It is also referred to as the R+A-base corporate cash-flow tax (Boadway, Bruce and Mintz [1983]). As in the R-base, transactions arising out of the financing of the firm's activities are excluded. Only (real and financial) transactions involving the use of the firm's sources of finance to acquire real and financial assets are included in the R+A-base (Boadway, Bruce and Mintz [1983]). The R+A-base would therefore tax the pure profits arising out of financial intermediation with respect to equity and debt.

Under the R+A-base corporate cash-flow tax, financial institutions that invest in equity on behalf of their clients would be taxed on the economic profits that these financial investments yield. However, it is likely that these economic profits already have been taxed in the firm whose assets are held by the financial institution. The R+A-base might therefore result in double taxation of economic profits. In order to prevent double taxation, government might have to provide, for instance, tax credits for corporate taxes already paid.

Third, financial corporations could be taxed under an R+F-base corporate cash-flow tax. The R+F-base then amounts to (sales + borrowed funds + interest received + loan repayments) – (purchases + interest paid + debt repaid + lent funds) plus the revenues generated by shares of non-resident corporations net of their cost (including their purchase price in the year when they are bought) net of any other real costs of intermediation. The tax will be levied on the net real and financial transactions of financial corporations other than those involving shares with resident corporations (Boadway, Bruce and Mintz [1983]). The R+F-base would therefore tax the pure profits arising out of financial intermediation with respect to debt and non-resident's equity.

Under the R+F-base corporate cash-flow tax, no separation has to be made between the interest spread and the services provided by the financial corporation (either to the borrower or the lender). The total interest spread – all interest payments received and interest payments paid by the financial corporation – will be included in the tax base. Also the receipts of insurance premiums and insurance claims would be included in the R+F-base; the payment of insurance claims and insurance premiums would be deductible (Merrill and Edwards [1996]). As opposed to the R+A-base, the financial transactions arising out of the debt-financing of the corporation's activities are included in the R+F-base. The financial institution's return on

debt-financed investment in other firms, governments and households are also included. The R+F-base might result in double taxation of economic profits only with respect to investment in foreign shares. Double taxation might be prevented in case the firm receives a tax credit for foreign taxes already paid. In contrast to the R+A-base, there will be no double taxation with respect to shares of resident corporations.

Finally, financial corporations could be taxed under an S-base tax as is the case for non-financial corporations. The tax base would then consist of the dividends paid by a financial corporation to the shareholders of that financial corporation plus the purchased shares of the financial corporation net of the issued shares.

The case for implementing a corporate cash-flow tax on financial corporations and the choice whether economic rents created through debt and equity transactions are taxed might depend on the size and the composition of the economic rents of the financial sector. Governments might require that the additional revenues from taxing the financial sector at least balance the administrative and enforcement costs of imposing the tax. The choice for a tax base might also be influenced by the tax burden on non-financial corporations and by international tax considerations, as will be discussed in the following paragraphs.

Efficiency losses might arise if financial and non-financial corporations would be taxed under a different corporate cash-flow tax base. For instance, if the financial sector would be taxed under an R+F-base corporate cash-flow tax, it might be difficult to tax other types of corporations under an R-base corporate cash-flow tax. For instance, non-financial corporations would be allowed to deduct the explicit and the implicit financial intermediation fees from their R-base. Merrill and Edwards (1996) suggest that borrowers would calculate the implicit fees using tables provided by the government and/or that the financial corporation would allocate and report implicit financial intermediation fees to customers. In order to avoid the co-ordination and enforcement problems that would rise if one part of the economy is taxed under an R-base tax while the financial sector faces and R+F-base tax, it might then be more efficient to tax all corporations under an R+F-base corporate cash-flow tax.

From an international perspective (see Chapter 7 for more details on the international tax implications), if only the home country would levy a corporate cash-flow tax on the financial services (economic rents) produced by the domestic financial sector, domestic financial corporations will face a competitive disadvantage compared to foreign financial corporations that provide services to domestic clients.

Honohan (2003) points at the financial sector's capacity for arbitrage. Governments that want to tax the financial sector may therefore opt for a broad base that taxes the different sources of the financial sector's economic rents in a neutral way. In order to avoid distortions, governments might attempt to tax all different financial sectors (bank sector, insurance companies, investment funds, etc.) in a similar way.

6.7. Transitional issues when replacing the corporate income tax with a corporate cash-flow tax

The replacement of the corporate income tax with a corporate cash-flow tax raises several issues. The most important issue relates to the depreciation allowances of existing assets. Several transition methods might be followed. This section discusses the "free entry" transition method, the "cold turkey" transition method and discusses the implications of the expensing of new capital while the tax depreciation of old capital is not altered.

"Free entry" transition method

The first approach is referred to as the "free entry" transition method. It allows the firm to immediately deduct that part of the asset that has not yet been depreciated under the current corporate income tax. The amount that can be immediately expensed then equals the depreciated value of the existing capital stock. This method would cause a strong temporarily reduction in tax revenue because not only the new investments but also the depreciated value of the old capital stock would be immediately deductible from the corporate cash-flow tax base.

In order to reduce the costs of this method, Bradford (1998) has suggested spreading the expensing over time. Instead of allowing an immediate deduction, Bradford's transition method involves an asset specific path of tax deductions over time with the same discounted value as the amount that would otherwise be immediately expensed. The transfers that can take the form of either tax credits or tax allowances would match the depreciation allowances under the current corporate income tax system augmented with interest to compensate for the time delay. For instance, for assets that before the tax reform could still be depreciated over the next three years on a linear basis, Bradford suggested that the firm would be able to deduct one third of that amount in every year for the next three years, but that the amounts would be increased with interest.

"Cold turkey" transition method

The second approach is the "cold turkey" transition method, which implies that any additional deduction for existing assets is denied. This approach would imply a windfall tax revenue gain for the government at the expense of corporations that would lose the value of their remaining depreciation allowances.

Moreover, firms would lose the tax gains due to the deductibility of their interest payments. This will strongly increase the corporate tax liabilities of highly indebted firms and may therefore create severe financial difficulties for many firms. Moreover, the increased corporate tax liabilities will create a strong (temporary) competitive disadvantage compared to foreign firms that can continue to benefit from the interest deductibility in their home country.

In order to benefit from the immediate expensing and in order to reduce the impact of the lost interest deductibility, firms before the introduction of the corporate cash-flow tax will face a strong tax-induced incentive to postpone all their investment projects until after the introduction of the new corporate tax rules. As a result, the "cold turkey" transition method will strongly distort the firm's investment behaviour.

Different tax depreciation methods for new and old capital

A third approach would leave the current treatment for existing assets unaffected. Even if existing assets are sold and purchased, they would be depreciated according to the old rules. This approach avoids that the new owners of the asset would be able to immediately expense their investment and realize a tax gain which the old owners were not able to claim.

This system would therefore apply different systems for new and old assets during a rather long period. In fact, governments would have to apply the different systems until the existing assets are fully depreciated. In many countries, this might imply that both

depreciation systems will have to be supported for at least 20 years as, for instance, buildings can be depreciated only at a low rate. This transition method would therefore be administratively costly.

Moreover, firms will obtain a tax-induced incentive to sell its assets and to buy new assets in order to benefit from the immediate expensing. In fact, the value of a firm's assets is higher for the new owner than for the old owner. Under this transition method, firms therefore obtain a tax-induced incentive to create a new firm and to sell all the firm's assets to that new firm.

Notes

1. The R+F-base may also include the changes in holding of shares in non-resident corporations; the shares of resident corporations are not included (Boadway, Bruce and Mintz (1983)].
2. This consumption type of tax treatment cannot be obtained if the tax base would be extended for equity in the same way as it is extended for debt under the R+F-base (inclusion of borrowing and interest received, net of debt repaid and interest paid). If the tax base would satisfy: (sales + borrowed funds + interest received + loan repayments + *newly issued equity + dividends received + realised capital gains + shares sold*) – (purchases + interest paid + debt repaid + lent funds + *dividends paid + (own) repurchase of shares + (other firm's) purchased shares*), issuing new equity to finance investment – this amount is then included and excluded from the tax base – and distributing the return as dividends, would imply that the normal as well as the above-normal return that is distributed as dividends are not taxed (as the return of the investment is taxed but the distributed dividends are deductible). Not allowing a deduction for the dividends that are distributed would imply that both normal return and economic rents are taxed. This implies that, in both cases, the outcome is different from the general tax expenditure result. However, the normal return is tax-exempt but the economic rents on equity-financed investment are taxed if equity is not explicitly included in the tax base. Equity should therefore not be included in the definition of the R+F tax base.

ISBN 978-92-64-03811-0
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PART III

Chapter 7

Corporate Cash-flow Tax Issues in an International Context

The cash-flow type of tax on corporations is a new and virtually untested tax in the real world. In addition to the lack of practical experience with a corporate cash-flow tax at the domestic level, important issues have to be discussed with respect to its consequences on the international level as well. For instance, a corporate cash-flow tax probably will not qualify as an income tax. Its introduction could therefore require the renegotiation of tax treaties.

One important question for a country introducing a corporate cash-flow tax is whether international corporations would be credited in their home country for cash-flow tax paid in the host country. Otherwise, this may discourage foreign investment into a host country that introduces a corporate cash-flow tax.*

Foreign corporate investors who hold residence in a country that has a dividend-exemption tax system might not be taxed in their residence country on the dividends they receive as return on their investment in the country that implements a corporate cash-flow tax system. In that case, the normal return on equity is neither taxed in the source country nor in the residence country. The economic rents that are distributed as dividends would then be taxed only at the corporate cash-flow tax rate of the source country. Interest payments, on the other hand, would be taxed in the residence country. Interest payments might be taxed in the source country under the R-base corporate cash-flow tax – but the debt-financed investment would be deductible (tax-expenditure method) – or they might be tax-exempt under the R+F-base corporate cash-flow tax in the source country – the debt-financed investment in that case would not be deductible (tax-prepayment method). If interest payments are taxed in the residence country, investors might have the impression that these interest payments are taxed twice (in case the host country has an R-base corporate cash-flow tax). A correct evaluation however requires that the deduction of the debt-financed investment is considered as well, which implies that the interest payments are effectively not taxed in the host country. But because interest payments are taxed in the residence country, equity might become a more preferred source of finance than debt.

Foreign corporate investors who hold residence in a country that operates under a worldwide tax system are taxed in their residence country on interest and dividend income from foreign investment, while they might claim a tax credit for the foreign taxes paid. The introduction of a corporate cash-flow tax system in the host country might not necessarily have a lowering effect on the cost of capital of foreign direct investment. Two cases might be distinguished (Shome and Schutte [1995]). A distinction has to be made between corporations whose available tax credits are less than their domestic tax liabilities of foreign earnings and those whose credits exceed the liabilities. For corporations whose credits are below tax liabilities, the source (host) country might just transfer tax revenues to the foreign investor's country of residence (home country). Host country tax policy does

* According to Mc Lure and Zodrow (1996) a cash-flow tax on corporations that was considered in Bolivia was not implemented because of concerns that the United States Internal Revenue Service would not allow foreign tax credits for such a tax. They argue that such taxes should be creditable (Mc Lure and Zodrow [1998]).

not matter. For corporations whose tax credit exceeds tax liabilities, the corporation actually faces the tax rate in the host country (source-based taxation). The home country receives no tax. Only in this case, the introduction of a corporate cash-flow tax will lower the cost of capital of foreign direct investment.

Foreign corporate investors who hold residence in a country that operates under a worldwide tax system might not obtain tax credits for the corporate cash-flow taxes paid abroad. In that case, the economic rents will be taxed twice, at the host country's corporate cash-flow tax rate and at the corporate income tax rate of the home country, which will discourage investment in the host country. Interest payments and the normal return on equity will be taxed only at the home country's corporate income tax rate. Thus, in a situation where the home country does not allow foreign tax credits for a corporate cash-flow tax in the host country, a corporate cash-flow tax will discourage mobile investment (in the host country) generating above normal returns (Mc Lure and Zodrow [1998]).

Governments that implement a worldwide tax system might be reluctant to provide tax credits for foreign cash-flow taxes paid because, even though the normal return of the investment is taxed, the immediate expensing of the investment implies that the normal return in the host country is effectively not taxed. In fact, if the home country would provide a tax credit for foreign cash-flow taxes paid, the home country would extend the host country's cash-flow tax treatment to the home country. In that case, the home country would effectively implement a cash-flow tax as well.

7.1. Origin *versus* destination-based corporate cash-flow taxes

The corporate cash-flow tax is a tax on the value added created by capital as factor of production. In a closed-economy setting, the corporate cash-flow tax base is measured as the value of the corporation's output minus the costs of production (including investment costs that are immediately deductible) minus wages. The tax is therefore similar to a Value Added Tax (VAT), with the main exception that the VAT also includes wages in its tax base.

The corporate cash-flow tax is a tax on the reward for capital as factor of production employed in the production process, but not on the "income" – following the Schanz-Haig-Simons concept (see Chapter 3) – generated by capital in that particular period. In fact, it is a tax on the "cash" generated by capital in that particular period. The corporate cash-flow tax is therefore interpreted in terms of the value of the firm's output, which consists of sales of goods and services net of costs of the inputs, and not in terms of the income earned by the production factor capital. The cash-flow tax treatment also implies that the corporate cash-flow tax might be considered to be an indirect tax.

Internationally traded goods and serviced can be taxed either in the jurisdiction where they are consumed – taxation according to the destination principle – or where they are produced – taxation according to the origin principle. As a result, the tax literature distinguishes between the "destination-based" corporate cash-flow tax and the "origin-based" corporate cash-flow tax (see also Box 7.1).

7.2. Destination-based corporate cash-flow tax

This section discusses the destination-based corporate cash-flow tax (for more details, see Section 9.6). Under the destination principle, goods and services are taxed in the jurisdiction where they are consumed (their "destination") regardless of where they are produced. Imports are taxed and exports are exempted from tax when products cross the

Box 7.1. **Origin *versus* source principle, destination *versus* residence principle**

As the concepts of destinations *versus* origin are used for international trade of commodities (goods and services), other somewhat parallel concepts are used in taxation of international factor income. International factor flows can be taxed either in the jurisdiction/country where the income originates (it's "source") or in the country where the factor owner resides (his "residence"). This distinction applies to both labour and capital income.

The residence principle under factor income taxation is parallel to the destination principle under consumption taxation. The concept of residence normally implies that taxes are levied on factor income in the country where the taxpayer resides and the destination principle implies that taxes are levied on commodities in the country where consumption takes place. This is not necessarily the same place. In practice, however, it often is. Like the residence principle, the destination principle results in taxation where the taxpayer resides even if domestic residents consume abroad. This is illustrated in the example from a destination-based VAT where a tourist who buys a taxable good abroad can get a refund for the VAT paid when he takes the good out of the country where he bought it. The good is not considered to be consumed where it is bought but where the consumer resides. With respect to goods, the destination-based tax principle then results in residence-based taxation.

The same conclusion holds for the trade in cross-border intangible services and goods supplied over the internet (e-commerce) that follow the destination principle under the VAT. The place of consumption of services provided over the internet is not necessary the place where the consumer receives the service or where he actually consumes it. The current recommendation is that the place of consumption should be in the country where the recipient has his business presence or, for individual consumers, their "usual jurisdiction of residence". This recommendation thus results in the residence principle.

The source principle under factor income taxation is parallel to the origin principle under consumption taxation. Both concepts refer to the place where income (source) or commodities (origin) are generated. However, the concept of source is normally associated with the place where income is earned and the concept of origin is normally associated with the place where goods and services are produced.

border. The destination-based corporate cash-flow tax base then consists of the sales to domestic customers less purchases from domestic suppliers minus labour costs. The export sales would not have to be included in the corporate tax base. Imports would not be deductible from the corporate cash-flow tax base.

The exclusion of exports from the tax base implies that exports are tax-exempt. Imports are not taxed directly when the goods cross the border as is the case under the VAT, but are taxed indirectly by not allowing corporations to deduct their imports from their corporate cash-flow tax base. The tax on imports is then levied upon sales in the domestic market.

Because the tax base amounts to the current VAT base minus labour costs, the tax might get the status of an indirect tax. This status is required under current international law in order to be legally allowed to tax imports and exempt exports, as would be the case under the destination-based corporate cash-flow tax.

Because the destination principle taxes commodities that are consumed within the borders but exempts exports, governments will have to decide whether a particular commodity is consumed inside or outside its borders. The exemption of exports requires control mechanisms that check whether products have actually been exported and that the payments in question come from abroad and not from a domestic customer. Since imports are taxed, the destination principle also requires control mechanisms that assure that inputs that are deducted from the corporate cash-flow tax base are actually bought on the domestic market instead of being imported.

The destination tax-principle is challenged when governments levy VAT on services and intangibles that escape normal border controls as is for instance the case for trade over the internet. Consumption taxes as the VAT are normally calculated and collected by the seller rather than the buyer. When a foreign seller sells services and intangibles over the internet, these sales are not picked up by normal border controls. It will therefore be difficult for the local authorities to collect tax from the seller. For sales between businesses under the VAT, this problem is generally solved by applying a reverse charge mechanism that implies that the tax is collected from the buyer instead of the seller. The destination-based corporate cash-flow tax follows a similar approach. Because imports are not deductible from the corporate cash-flow tax base, the tax is collected from the buyer of the imported goods as it is levied on the buyer's sales in the domestic market.

7.3. Origin-based corporate cash-flow tax

International agreements might limit the possibilities for introducing a destination-based corporate cash-flow tax. Under the provisions of the General Agreement on Tariffs and Trade (GATT), which governs international rules on border tax adjustments, the principle of destination applies to general and selective consumption taxes, but not to other kinds of taxes. The GATT allows border tax adjustments – the taxation of imports and the tax-exemption of exports – only for indirect taxes.

These legal difficulties might be avoided if the corporate cash-flow tax would follow the origin principle. In fact, the corporate cash-flow taxes that are usually discussed in the literature, like the Hall and Rabushka flat tax and Bradford's X-tax, are origin-based corporate cash-flow taxes (see Section 9.7 for a more detailed discussion). These taxes require no border tax adjustments because they do not tax imports and do not exempt exports.

Under the origin principle goods and services are taxed in the jurisdiction where they are produced (their "origin") regardless of where they are consumed. For cross-border transactions, there is no need for tax adjustment at the border since no tax is charged on imports and a company's sales to foreign customers (exports) are taxed within the domestic jurisdiction. The tax base is domestic production. This can also be expressed as domestic consumption plus net exports in order to compare it more easily to the base under the destination principle.

7.4. Transfer pricing issues

The existing corporate income tax requires the proper valuation of purchases and sales among related domestic and foreign companies for tax purposes. Transfer pricing problems continue to exist under an origin-based corporate cash-flow tax. Both under the R-base as well as under the R+F-base, corporations may try to shift the tax base to an affiliated low-tax corporation as, for instance, a foreign subsidiary. Transfer pricing issues

might involve the purchase of inputs produced by a low-tax affiliated corporation at overstated prices in order to increase the high-tax corporation's deductible expenses as much as possible. It might also involve the sale of the high-tax corporation's goods, which are bought by the low-tax corporation, at understated prices. In this way, deductible expenses are allocated to the high-tax corporation and cash inflows are directed towards the low-tax corporation.

However, under a destination-based corporate cash-flow tax, transfer pricing issues are resolved. The proceeds to a foreign customer are not included in the corporate cash-flow tax base. The price that related corporations within a multinational group therefore charge on an intra-group export transaction has no impact on the amount of taxes 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 from the tax base.

There are differences with respect to international tax avoidance possibilities under the origin and the destination principle as well. Corporations might obtain a tax-induced incentive to reclassify part of the sales price of an instalment sale as non-taxable interest (see Section 6.5) in cross-border sales as well. As pointed out by Grubert and Newlon (1995) for the origin principle, a firm in the home country that operates under a corporate cash-flow tax system might have an incentive to understate the sales price of an instalment sale and overstate the interest component, when selling to a firm in a country that has a corporate income tax system. Since the firm abroad can deduct both the sales price and the interest components from its tax base – and therefore might be indifferent between different payment schemes – the firm in the home country might reduce its tax liabilities by reclassifying part of the sales price (taxable in the home country) as interest payments that are tax-free at home. Similarly, corporations face a tax-induced incentive under the origin principle to overstate the purchase component of imports and understate the interest component (under the R-base). This is a variant of the usual transfer pricing problem, but these transactions do not have to be between related parties. This kind of avoidance is not relevant under the destination principle because exports are not taxed.

ISBN 978-92-64-03811-0
Fundamental Reform of Corporate Income Tax – No. 16

PART III

Chapter 8

Corporate Cash-flow Tax Experiences

The UK and Norway levy a (kind of) corporate cash-flow tax on the earnings of the oil industry. In Italy, the regional tax on business activities is a kind of cash-flow tax. Moreover, Estonia levies a corporate tax on distributed profits that resembles a source-based corporate cash-flow tax. These different cash-flow taxes will be briefly discussed.

8.1. The UK North Sea Fiscal Regime

The North Sea fiscal regime in the UK has three tiers: the Petroleum Revenue Tax, the ring fence corporation tax and the supplementary charge. All three components of the fiscal regime act effectively as corporate cash-flow taxes.

The Petroleum Revenue Tax is a special tax on oil and gas production, which seeks to tax a high proportion of the economic rents from the UK continental shelf. It is an R-based corporate cash-flow tax levied on the profits arising from individual oil fields at a rate of 50 per cent. Almost all expenditure incurred on an oil field can be set for 100 per cent against the income from that field; interest and loan costs are not deductible. The tax was abolished on 16 March 1993 for all fields given development consent on or after that date.

The ring fence corporation tax is the standard UK corporate income tax that applies to all companies, but with a "ring fence" which prevents taxable profits from oil and gas extraction in the UK and the UK continental shelf from being reduced by losses from other activities or by excessive interest payments. In 2006, the rate was 30 per cent. The tax allows for a 100 per cent capital allowance on most capital expenditure (since 2002). The tax code also allows for an annual uplift of 6 per cent in the value of unused capital allowances due to qualifying exploration and appraisal expenditure that are carried forward each year for a maximum of 6 years.

In addition, a 10 per cent supplementary charge is levied on oil and gas companies' profits as computed for the ring fence corporation tax, but without allowing a deduction for financing costs. The Petroleum Revenue Tax is deductible against the ring fence corporation tax and the supplementary charge. This implies a marginal (overall) corporate tax rate of 40 per cent on profits of fields which received development consent after 16 March 1993 and 70 per cent of profits of fields that were developed before that date.

8.2. The petroleum tax system in Norway

Norway does not levy a genuine corporate cash-flow tax on profits from the petroleum sector. However, the generous tax depreciation allowances and the deductibility of interest payments imply that the normal return on investment in the petroleum sector is effectively tax-exempt.

In Norway, profits from the petroleum sector are taxed at the ordinary corporate income tax rate of 28 per cent. In addition, a special tax rate of 50 per cent is levied. Thus, the maximum marginal corporate tax rate is 78 per cent. Several costs can be expensed immediately including, for instance, exploration, research and development and operating expenses. Investments can be deducted from the corporate tax base on a linear basis over

six years from the date the investments were made. Interest expenses are deductible, but only for debt up to 50 per cent of the company's depreciable assets in the petroleum sector. To avoid taxation of the normal return, an additional deduction, the uplift, reduces the tax base of the 50 per cent special tax. It amounts to an additional 7.5 per cent of the investment cost that can be deducted during the first four years. Consolidation between fields is permitted. Both tax losses and the uplift can be carried forward with interest.

8.3. The regional tax on business activities in Italy

In Italy, the regional tax on business activities (IRAP) is an R-based corporate cash-flow tax/value added tax. It is a regional tax that is levied on the value of production in each taxable period. The tax base includes all income except for certain capital gains, extraordinary items of income and financial proceeds. All costs and expenses incurred by firms can immediately be deducted, except for some labour costs, interest payments, capital losses and extraordinary negative items.

The value added is apportioned to the regions where the business activity has taken place – if the corporation has disposed of a fixed place of production in that region for at least three months – on the basis of labour costs allocated to each region. For industrial and commercial corporations, the IRAP is levied at a rate of 4.25 per cent. The regions, however, may increase the tax rate by up to 1 per cent.

8.4. Estonian corporate cash-flow tax

Since 2000, Estonia levies a corporate tax only on distributed profits. This distribution tax is levied on dividends and on certain other corporate expenses which could be seen as hidden dividends as, for instance, fringe benefits not subject to personal income tax and interest payments that are excessively high compared to the market conditions on similar debt obligations. The distribution tax is payable by all Estonian resident corporations and by Estonian permanent establishments of foreign corporations. 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 corporate tax rate is 22 per cent in 2007, but will be further reduced to 21 per cent in 2008 and 20 per cent from 2009.

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 corporate 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 or to create a subsidiary in another location, this tax is neutral towards the firm's (marginal) investment and financing decisions. 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 – similarly to the effect of the deduction of investment expenses under an R-base or R+F-base corporate cash-flow tax – the government effectively contributes a share of the firm's equity base corresponding to the share of the dividends that it subsequently taxes away (similarly to the analysis in Box 3.1).

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 (see the discussion on the impact of the corporate tax rate on distributed earnings under the "nucleus" theory of the firm in Section 4.1). As mentioned, this non-neutrality of the Estonian distribution tax could be eliminated by allowing a deduction for new share issues. Full neutrality would also require the implementation of a loss carry-forward provision that allows the non-claimed deductions to be increased with the interest rate.

For unincorporated businesses, Estonia has also moved towards cash-flow taxation. 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 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 an immediate expensing of investment in real assets, it tends to be overly generous compared to a consistent R-based cash-flow tax.

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. On the other hand, realised capital gains on shares are subject to the flat tax rate on personal income, which equals the tax rate on corporate distributions. The Estonian corporate tax system therefore attempts to tax realised 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 realisation, the effective tax rate on accrued gains is lower than the statutory rate.

PART IV

Fundamental Corporate Tax Reform in Detail

FUNDAMENTAL REFORM OF CORPORATE INCOME TAX – No. 16 – ISBN 978-92-64-03811-0 – © OECD 2007

ISBN 978-92-64-03811-0
Fundamental Reform of Corporate Income Tax – No. 16

PART IV

Chapter 9

Alternative Corporate Tax Systems in More Detail

This chapter discusses different types of fundamental corporate tax reforms. Fundamental *corporate income* type of tax reforms will be discussed first. We focus respectively on the full integration/imputation system (Section 9.1), the (corporate) allowance for corporate equity tax system (Section 9.2), the allowance for shareholder equity tax system (Section 9.3), the shareholder allowance for corporate equity tax system (Section 9.4) and the comprehensive business income tax system (Section 9.5).

Second, we focus on *corporate cash-flow* type of tax reforms. These reforms replace the corporate income tax with a so-called corporate tax of the consumption-type. We focus respectively on the destination-based corporate cash-flow tax (Section 9.6) and the origin-based corporate cash-flow tax (Section 9.7).

However, other types of fundamental corporate tax reforms might have been included. The residence-based shareholder tax and the residence-based corporation tax are examples of other types of corporate tax reforms that have been discussed in the literature.

Under the residence-based shareholder tax, all corporate income would be fully imputed to the shareholder, who would be taxed on all types of capital income in his or her country of residence.

Under the residence-based corporation tax, the home country would levy a corporate tax only on the worldwide profits of the corporations that have their headquarters in the home country. Because no corporate tax would be levied on the profits of corporations that have their headquarters in another country, this tax would have a positive effect on the amount of foreign direct investment in the home country. In fact, one of the main effects of residence/destination-based taxation is that it would limit the type of tax competition that is present under source/origin-based taxation. However, this tax would not implement neutrality between debt and equity and between newly issued equity and retained earnings as corporations would face a tax-induced incentive to defer the repatriation of their profits from the host country to their country of residence. Moreover, the headquarters of the corporation might be moved to another country; a strategy that might be profitable if the home country levies a relatively high corporate tax rate. Under a residence-based corporate tax, countries would face an incentive to lower their corporate tax rate, and therefore engage in corporate tax competition, in order to attract corporate headquarters instead of mobile profits as under current corporate income tax systems.

9.1. Full integration tax system

Under a full integration/imputation tax system, all corporate earnings – distributed dividends, retained profits and interest payments – are taxed at the personal level at the same personal income tax rate. A full integration tax system treats the corporation as a pass-through, providing full integration of the corporate tax on distributed and retained profits with the personal (capital) income tax on the return to equity at the shareholder level. In that case, the corporate tax is used merely as a prepayment of the tax on equity at the shareholder level.

Under full imputation, shareholders are taxed on the "grossed up" value of the dividends but they receive a tax credit for the corporate tax already paid on the distributed profits. Imputation tax credits are not available if the firm distributes dividends but has not paid corporate taxes because the firm's corporate income tax base was reduced to zero because of, for instance, generous depreciation allowances or losses that have been carried forward. Double taxation of retained profits might be prevented by permitting shareholders to write up the basis of their shares by retained profits net of corporate tax. As a result, the capital income tax is levied only on capital gains in excess of retained profits that already have borne corporate tax. Similarly, the basis is written down if the business incurs losses or if the business distributes dividends out of previously accumulated earnings.

Corporate finance decisions in a closed-economy

In a closed-economy setting, if all corporate earnings (distributed dividends, retained profits and interest payments) are taxed at the personal level at the same personal income tax rate, full neutrality between all sources of finance can be achieved if capital gains are taxed when they accrue. In that case, there would no longer be a tax-difference between debt and equity, between profit distribution and profit retention, and between external equity (newly issued equity) and internal equity (retained earnings).

The full imputation system is not only efficient but also has nice equity properties. Capital income is taxed at the same effective rate irrespective of how it is received (as interest payments, dividends or capital gains). Moreover, the full imputation tax system allows governments to tax capital income at progressive (personal income tax) rates.

If, however, capital gains are only taxed when they are realised or if countries do not levy a capital gains tax at all, equity might become a more preferred source of finance than debt under a full integration tax system. The larger is the difference between the tax rate on investment income at the personal level and the corporate tax rate – in case this difference is positive – the more preferred will be capital gains. In the absence of a capital gains tax that is levied on an accrual basis, the distortions with respect to the sources of finance will be minimised if governments levy a rather high corporate tax rate.

Corporate finance decisions in an open-economy

The neutrality characteristics of the full integration tax system in a closed-economy setting may also be achieved in an international context if, for instance, the country of residence of the foreign investor implements a full integration system as well. A full integration system would then maintain its favourable neutrality effects only if the foreign investor would receive a tax credit for the foreign corporate taxes already paid. This tax credit could be provided either by the source country where the foreign income is earned, by the residence country where the foreign income is taxed at the personal level or it could be shared between the home and host country.

If the host country would provide a tax credit for the corporate taxes already paid, no tax revenue would be levied on foreign investment at source. Foreign income would be taxed only in the home country. In that case, host countries would not receive any tax revenue but they would face the costs of public expenditures, for instance on infrastructure, without which there might be no profits at all. Host countries might then of course benefit indirectly if they are able to attract more FDI.

If the host country would not provide a tax credit to non-residents, foreign investment in the host country would be discouraged if the home country would not give a tax credit for the foreign corporate taxes already paid either. This non-neutral tax treatment of resident and non-resident shareholders would then distort investment decisions (the amount of foreign direct investment, the investors' preferred sources of finance, etc.). In fact, globalisation has meant that large corporations can raise their capital internationally and do not have to rely on domestic shareholders for equity finance. If non-residents do not obtain a tax credit in the host country (and not in the home country either), the host country's imputation system does not reduce the cost of capital for firms that raise their funds on the international equity market. Foreign-owned firms then might face a tax-induced incentive to excessively finance investment with debt. A government that wishes to promote the competitiveness of its resident corporations and wants to attract foreign direct investment can then achieve this by eliminating imputation credits and using the money saved to reduce the rate of corporate tax, as has been done by Germany and Finland.

In the absence of a capital gains tax that is levied on an accrual basis, a high corporate income tax rate – with respect to the overall tax burden on capital income on domestic investment – reduces the incentives to defer the realisation of capital gains at the personal level. However, a high corporate tax rate also reduces the country's attractiveness for foreign investors. Countries will therefore have to strike a balance between these effects when choosing the level of their corporate income tax rate under a full imputation system.

In the European Union, tax credits provided to resident shareholders of an EU member country, but not to non-resident shareholders, are considered as discriminatory by European Union legislation. Since granting tax credits to non-resident shareholders will imply a reduction in corporate tax revenues, full integration systems have become difficult to maintain in the European Union.

The removal of imputation systems increases the overall taxation of equity capital and so increases the bias towards debt financing. However, countries might take alternative steps to reduce the taxation of dividends in the hands of shareholders, using alternative methods as discussed in Chapter 5.

As already pointed out, full imputation systems might result in a higher cost of capital for foreign investors because the imputation credit might be available only to resident investors. However, this effect might be mitigated if the full imputation system would be combined with an allowance for corporate equity tax system. The ACE tax system will be discussed in Section 9.2.

Country experiences: the imputation system in Australia

Many countries have replaced their imputation systems as, for instance, Germany, Finland and Norway. Both Australia and New Zealand, however, have retained their imputation systems and have shown no wish to remove them.

Australia's imputation system applies to dividends paid by Australian resident corporate entities to Australian resident shareholders. The imputation system provides credit relief at the shareholder level. Australian corporations receive franking credits for Australian corporate tax paid. These corporate taxes paid – 30 per cent in 2006 – are then allocated to shareholders by attaching the franking credits to the distributed dividends. Resident shareholders are then taxed on the "grossed up" value of their dividends (net

dividends plus franking credits), but they are entitled to a tax offset equal to the franking credits. The imputation credits are fully refundable, which means that taxes will actually be paid back if the imputation credits exceed the shareholder taxes due.

In a domestic setting, the Australian imputation system eliminates the double taxation of corporate income that is distributed as dividends to resident shareholders, which reduces the bias towards debt financing. This increases the tax code's efficiency from a closed-economy point of view. In Australia, dividends are taxed at the shareholder level at progressive personal income tax rates. This also strengthens the equity of the tax system, as the progressivity of the personal income tax system works through the capital income taxes as well. Shareholders that face a low personal income tax rate even prefer to receive dividends than (higher taxed) capital gains.[1] Whether shareholders that face a higher personal income tax rate prefer dividends over capital gains depends on the difference between the personal and corporate income tax rate and how long they hold the shares.

However, non-resident shareholders cannot use, for Australian tax purposes, the franking credits for Australian tax paid. Franked dividends are then taxed at the Australian corporate tax rate, and they might be taxed again in the shareholder's country of residence. Dividends that are distributed to non-resident shareholders out of corporate income that has not been taxed at the Australian corporate tax rate will be taxed at a withholding tax rate (15 per cent in 2006). This non-neutral tax treatment of resident and non-resident shareholders distorts investment decisions (the amount of foreign direct investment, the investors' preferred sources of finance, etc.).

9.2. The allowance for corporate equity tax system

Under the corporate income tax, interest payments are deductible from taxable corporate earnings but the return on equity-financed investment is fully taxed. The ACE tax system (IFS Capital Tax Group [1991]) corrects for this differential tax treatment by providing a deductible allowance for corporate equity in computing taxable profits. This allowance equals the product of shareholders' funds, which generally equals the company's total equity capital including taxable profits net of corporate tax – the return of prior investments not yet invested in capital but kept as financial reserves – and an appropriate interest rate as, for instance, the interest rate on medium term government bonds (Cnossen [1996]). The allowance therefore approximates the corporation's normal profits. The corporate tax is thus confined to economic rents because corporate profits in excess of the ACE remain subject to corporate tax.

Tax depreciation

An increase in the tax depreciation allowances implies a decrease in the company's total equity capital that is used to calculate the allowance for corporate equity. Neutrality requires that the same depreciation rate is used to calculate taxable corporate profits and the company's equity capital. The current tax savings from accelerated depreciation are, in present value terms, then equal to the reduction in the allowance for corporate equity in future years. The corporation is then indifferent between accelerated depreciation allowances (or immediate expensing), which yields an immediate tax gain but reduces the tax gain over time due to the lower allowance for corporate equity, and decelerated deprecation allowances, which yields a lower immediate tax gain but a higher tax gain over time due to the higher allowance for corporate equity.

This mechanism can be demonstrated with a simple example. If the corporation had 200 additional units of capital that might be depreciated in the current period (we assume that the corporate tax rate is 25%), the corporation would receive an immediate tax gain of 50 (200 times 25%). If these additional depreciation allowances would be deductible only in the next period, the corporation would receive no additional tax gain in the current period, but it would obtain that tax gain of 50 in the next period. In the second period, the corporation would obtain an additional corporate tax gain, due to the allowance for corporate equity, because the capital has not been depreciated with these 200 additional units. The ACE equals the value of the capital that has not been depreciated yet times the imputed interest rate r. In present value terms (discounting occurs at the same interest rate r), the corporation obtains a total tax gain of: $0+\frac{200\cdot 25\%+r\cdot 200\cdot 25\%}{1+r}=\frac{200\cdot(1+r)\cdot 25\%}{1+r}=50$. The firm will therefore obtain in present value terms the same total tax gain.

Regardless of the depreciation scheme (straight-line method, declining-balance method, etc.) and tax depreciation rate, the present value of the sum of the depreciation allowances and the ACE allowances will always equal the initial investment outlay, as long as the same depreciation rate and method – which might differ from the asset's economic depreciation scheme and rate – is used to calculate taxable corporate profits and the company's equity capital. The tax base of the ACE tax system is identical, in present value terms, to the base of the corporate cash-flow tax, which allows for immediate expensing.[2] The ACE then offsets the distortions due to the possible differences between tax depreciation and the actual economic depreciation of the asset (Boadway and Bruce [1984]), as is the case under a corporate cash-flow tax.

In fact, the ACE allowance preserves neutrality under inflation if the imputed return equals the nominal interest rate. In that case, tax depreciation allowances and the company's equity capital do not have to be indexed for inflation. In the presence of inflation, the ACE tax system's nice efficiency properties may also be achieved if the imputed return equals the real interest rate. In that case, however, the tax depreciation allowances and the firm's equity capital will have to be indexed for inflation. In both cases, the present value of the tax depreciation allowances and of the corporate tax gain as a result of the ACE is equal to the immediate corporate tax reduction as a result of the immediate expensing under a corporate cash-flow tax.

Imputed return on equity

The neutrality properties of the ACE system also depend on the choice of the imputed return on equity. In order to tax the return on equity and debt-financed investment in a similar way, the imputed return should equal the interest rate that the corporation pays on its debt-financed investment. More precisely, the imputed return should equal the interest rate that corporations would have to pay if they would finance marginal (new) investment with debt instead of equity – the interest rate that the firm has paid on its debt in the past is in fact irrelevant. In fact, this symmetrical tax treatment would also resolve the problem caused by new hybrid capital instruments, which are not easily classified as debt or equity (Klemm [2006] and Kleinbard [2005]).

In order to choose the "correct" imputed return, governments might require firm-specific information as corporations might differ in the interest rate that they have to pay on newly issued debt, for instance because the interest rate includes a company-specific risk premium. It might administratively be too costly to determine an imputed

return for every single corporation. However, governments might consider giving corporations the opportunity to demonstrate that the interest rate on their newly issued debt differs from the imputed return set by government. In any case, neutrality between debt and equity requires that the imputed return is adjusted regularly such that it follows the market interest rate as closely as possible.

Bond and Devereux (1995) have argued that the imputed return should not include a risk premium if the corporation considers the ACE to be a "safe" cash flow such that its gain is not lost or reduced in present value terms. This requires that the government offers a full loss carry-forward, which increases with the interest rate for the time delay, if profits are too low to claim the entire tax deduction. The expected value of the ACE would decrease if such a loss carry-forward would not be provided, which might reduce the neutrality characteristics of the ACE tax system.

The necessity to allow for a firm-specific imputed return is reduced if no risk premium is added to the imputed return for the ACE. Corporations differ in the risk premium required by financial markets, but they do not necessarily face a different (nominal) interest rate if they issue debt. However, if firms do face a different interest rate as a result of different risk profiles, neutrality between debt and equity as source of finance will only be obtained if only the risk-free interest rate is deductible on newly issued debt as well.

Corporate finance decisions in a closed-economy

The ACE tax system is neutral to investment. The cost of capital on equity-financed investment will equal the real interest rate; no corporate tax is levied on the firm's marginal investment decision. This result is achieved either if the ACE is calculated using a nominal interest rate but the tax depreciation allowances and the firm's equity stock are not indexed for inflation, or if the ACE is calculated using only a real interest rate but the tax depreciation allowances and the firm's equity stock are indexed for inflation. This result is achieved irrespective of accelerated, neutral or decelerated tax depreciation allowances.

In order for the cost of capital on debt-financed investment to be equal to the real interest rate, nominal interest payments will have to be deductible if the tax depreciation allowances and the firm's equity stock are not indexed for inflation. However, if tax depreciation allowances are based on replacement costs and the firm's equity stock is indexed for inflation, only the real interest payments will have to be deductible (similarly to the way the ACE is calculated).

Under these conditions, the firm will be indifferent between debt, newly issued equity and retained earnings as marginal source of finance at the corporate level; the cost of capital on marginal debt and equity-financed investment will amount to the real interest rate. The corporate income tax rate will then be levied only on economic rents.

Full neutrality requires that taxes at the personal level are considered as well. If neutrality is achieved at the corporate level and if all returns (interest payments, dividends and capital gains) are taxed at the personal level at the same rate, the corporation in a closed-economy setting will be indifferent between debt and equity and between external and internal equity as a source of finance under the ACE tax system. Interest payments and the normal return on equity will be taxed only at the personal income tax rate and the economic rents will be taxed at the corporate income tax rate and the personal income tax rate. In fact, the same neutrality result will be achieved when the corporation's shares are owned by tax-exempt investors as, for instance, pension funds. (In fact, this outcome is modelled in Box 9.1 under the "new new" view).

Box 9.1. **The ACE tax system under the "new" view and the "new new" view**

Given an allowance for corporate equity tax system, this box presents the cost of capital on a firm's marginal investment decision under the "new" view and the "new new" view. It is assumed that capital gains are taxed at a lower rate than dividends at the personal level. τ_f is the corporate income tax rate; the imputed return on equity is assumed to be equal to the interest rate r; the other variables are defined in Box 4.1. The analysis abstracts from depreciation and assumes that there is no inflation. Under the "new" view, the firm will invest its retained earnings until the marginal product of an additional unit of capital (cost of capital) $f'(K)$ equals:

$$f'(K) = \frac{\left((1-\tau_p)-(1-\tau_c)\tau_f\right)}{(1-\tau_c)(1-\tau_f)} \cdot r$$

Suppose the firm invests 1 currency unit of after-tax profits. This investment yields an after-tax return that is distributed as dividends equal to $([1 - \tau_f]f'(K) + \tau_f r)\ (1 - \tau_d)$, where $\tau_f r$ represents the corporate tax reduction due to the ACE allowance ($\tau_f rI$, where $I = 1$). However, instead of reinvesting the 1 currency unit of after-tax profits, the firm might distribute $\frac{(1-\tau_f)(1-\tau_d)}{(1-\tau_f)(1-\tau_c)}$ currency units as dividends, which can be invested in market debt. The firm stops investing when the after-tax return on investment financed with retained earnings is equal to the after-tax opportunity return of investment in market debt: $\left((1-\tau_f)f'(K)+\tau_f r\right)(1-\tau_d) = \frac{(1-\tau_f)(1-\tau_d)}{(1-\tau_f)(1-\tau_c)} \cdot r(1-\tau_p)$. The cost of capital then follows:

The firm will invest its retained earnings until the marginal increase in value of the firm's equity q equals the cost of the additional investment, which are the net dividends foregone:

$$q = \frac{(1-\tau_d)(1-\tau_f)}{(1-\tau_c)(1-\tau_f)} = \frac{(1-\tau_d)}{(1-\tau_c)} < 1$$

Under the "new new" view, shareholders require the world market interest rate on their investment r. As a result of the ACE, the firm will invest its earnings until the cost of capital equals the interest rate:

$$f'(K) = r$$

The marginal increase in the value of the firm's equity then amounts to:

$$q = 1$$

However, if capital gains are taxed when they are realised and not when they accrue, the effective personal income tax rate on dividends will exceed the effective personal income tax rate on realised capital gains. Interest payments and the normal return on equity distributed as dividends will be immediately taxed at the same personal income tax rate. However, the personal income tax on dividends can be deferred by retaining and reinvesting the profits (normal return on equity and rents). The profit that is retained by the corporation – yielding capital gains – will be taxed at a lower rate because the household can postpone the realisation of these capital gains. This situation is analysed in Box 9.1, which shows the cost of capital on equity-financed investment and the marginal increase in value of the firm's equity under the "new" view.

Consequently, the ACE tax system might be designed to implement neutrality between debt and equity at the corporate level. However, if the tax rates at the personal level are considered as well, equity will become a more preferred source of finance than debt in a closed-economy setting in the absence of a capital gains tax or if capital gains are taxed at the personal level at a lower (effective) rate than dividends and interest payments.

In order to be fully neutral with respect to the corporate investment's marginal sources of finance, the implementation of an ACE tax system might therefore require a reform of the capital income taxes at the personal level as well. Neutrality between debt and equity and between newly issued equity and retained earnings as a marginal source of finance would for instance be achieved if savings would receive expenditure (consumption) tax treatment at the household level and if capital gains would be taxed upon accrual. In that case, interest payments and the normal return on equity – either distributed or retained and reinvested – would escape taxation at the corporate and personal level. Only economic rents would be taxed at the corporate level and the remainder would be taxed again at the personal level.

Corporate finance decisions in an open-economy

This symmetric treatment of debt and equity at the corporate level implies that tax authorities no longer have to implement thin capitalisation rules in order to protect their domestic tax base. Multinationals no longer have an incentive to excessively finance their subsidiaries with debt because equity receives the same favourable tax treatment.

The ACE tax system does tax economic rents and therefore distorts the corporation's decisions that depend on the average corporate tax burden. If governments would increase their corporate tax rate in order to compensate for the revenue loss due to the ACE allowance, especially profitable corporations might find it attractive, even under the ACE tax system, to reallocate their production into a country that levies a lower corporate tax rate (Bond [2000]). Moreover, corporations continue to have an incentive to shift their economic rents to low-tax jurisdictions by means of transfer pricing.

The impact of the ACE tax system for foreign corporate investors will depend on the tax treatment of foreign income in the corporation's country of residence. Equity might become a more preferred source of finance than debt not only in a closed-economy setting but in an international context as well.

In case of a worldwide tax system – foreign received interest, dividends and capital gains might be taxed in the country of residence – foreign interest payments and dividends will be taxed on accrual in the home country, but taxes on capital gains might be deferred until profits are realised. Put differently, foreign shareholders (except for tax-exempt investors) may also prefer the firm to retain and reinvest its earnings instead of distributing them as dividends. Even in an international context, equity then becomes a more preferred source of finance than debt under the ACE tax system. The ACE tax system then implements neutrality between debt and equity only at the corporate level in the host country. Moreover, in case of a worldwide tax system, the introduction of the ACE in the host country might imply only a shift in the tax revenues from the source country to the corporation's country of residence, without having any real effects in the source country.

In case of a dividend exemption tax system – foreign received dividends are supposed to have been taxed in the host country and are therefore tax-exempt in the home country – the normal return on equity, as opposed to interest payments, might escape taxation in

both residence and source country. Equity then becomes a more preferred source of finance than debt for the foreign corporate investor. The introduction of the ACE tax system might then possibly lead, in the long run, to changes in tax treaties.

Personal foreign shareholders might obtain a tax credit only for the host country's withholding taxes on dividends and interest payments. If capital gains in the shareholder's home country are not taxed or are taxed at a lower effective rate, foreign personal shareholders will also prefer equity over debt under the ACE tax system.

Tax revenue

By extending the favourable tax treatment of interest payments to the normal return on equity, governments will reduce their corporate tax revenues. In order to compensate this loss in revenue due to the erosion of the source principle, governments might consider increasing the corporate tax rate that is effectively levied only on economic rents. However, this rate increase might have a negative impact on the location decision of firms, on the amount of foreign direct investment and might induce corporations to shift the economic rents out of the country. In order to avoid these negative effects, governments might decide not to increase the corporate tax rate. In that case, the introduction of the ACE tax system will reduce corporate tax revenues.

In order to reduce the impact of the ACE on tax revenues, governments might consider providing the allowance only to new capital and not to existing (old) capital. In fact by extending the ACE to existing capital, the government provides a lump-sum capital gain to the existing capital owners. It would not have a strong impact on investment behaviour, except in the case of, for instance, firms that are constrained in attracting external sources of finance and whose internal funds are insufficient to finance all their profitable investment opportunities. However, if old capital would not be entitled to the ACE, firms would face an incentive to recategorise their old capital as new capital. Moreover, the costs for the tax administration would be lower if both new and old capital would benefit from the allowance. In fact, the cost of providing the allowance to old capital might not be so high because the capital would already be highly depreciated.

The ACE tax system is efficient irrespective of the type of (accelerated, decelerated or neutral) tax depreciation allowances. However, neutral tax depreciation allowances – tax depreciation rules which follow the economic depreciation of the asset as closely as possible – will result in a more constant stream of tax revenues than accelerated depreciation allowances, especially in years when firms invest a lot. The implementation of neutral tax depreciation allowances might then be preferred from a tax revenue point of view under the ACE tax system.

The ACE systems in Austria, Croatia, Italy and Brazil

ACE tax systems have been implemented in recent years in Austria, Croatia, Italy, Brazil and Belgium (Klemm [2006]).

The Austrian (partial) ACE tax system was operational during 2000 and 2004. It applied only to the book value of new equity (post-tax reform investment). The imputed return (the interest rate on government bonds augmented by 0.8 percentage points) was taxed at a reduced corporate tax rate of 25 per cent instead of the statutory 34 per cent rate. As from 2005 onwards, Austria reduced its corporate tax rate to 25 per cent for all profits and investments.

Italy implemented a (partial) ACE tax system from 1997 to 2003. It also applied to the book value of new equity only. 120 per cent of the book value was used to calculate the ACE in 2000 and 140 per cent in 2001; it was 100 per cent in the other years. The imputed interest rate was 7 per cent from 1997 until 2000; it was 6 per cent afterwards. As was the case in Austria, the imputed return was taxed at a reduced corporate tax rate of 19 per cent instead of the statutory 37 per cent rate (36 per cent in 2001-02, 34 per cent in 2003). As from 2004 onwards, Italy – as did Austria in 2005 – reduced its corporate tax rate to 33 per cent for all profits and investments.

Croatia implemented a full ACE tax system from 1994 to the beginning of 2001. A return of 5 per cent plus the inflation rate of industrial goods (if positive) could be imputed to the book value of the firm's equity stock. This ACE was fully deductible from the corporate tax base (Klemm [2006] and Keen and King [2002]). The statutory corporate tax rate that applied only to economic rents was 35 per cent. Keen and King (2002) found that the ACE tax system worked rather well. However, in 2001, the system was abolished. The statutory corporate tax rate was reduced to 20 per cent instead.

Brazil has an ACE tax system since 1996. The ACE applies to the book value of the firm's entire equity stock; the imputed return is the interest rate on long-term bonds. The ACE can be deducted only if the return is distributed to shareholders. Up to the level of the ACE, dividends can be paid as "interest on equity"; a 15 per cent (personal level) withholding tax will be levied, which also applies to interest payments (Klemm [2006]). The corporate tax gain will be partly lost if the distributed earnings are lower than the ACE. Retained earnings and distributed earnings in excess of the ACE are taxed at the corporate tax rate, which was 34 per cent in 2006. (See Klemm [2006] for more details).

The Belgian ACE tax system

The Belgian allowance for corporate equity tax reform came into force on the 1st of January 2006. The imputed return on equity ("notional interest rate") is determined in relation to the average of long-term interest rates for State loans issued in the previous year (10 years linear bonds). For 2006, it was equal to 3.442%. It is increased by half a point for SMEs.

The deduction for risk capital is available to all companies subject to corporate income tax or to non-resident corporate income tax, excluding companies benefiting from a tax regime that deviates from the common corporate income tax regime. Approved co-ordination centres that still benefit from the profitable tax provisions of the old co-ordination centres scheme are excluded. As a result, they can benefit from the deduction for risk capital only if they lose their co-ordination centre status. Also companies established in a re-conversion zone (old preferential regime being phased out since 1990), investment companies, and certain shipping companies do not obtain the ACE allowance. Participations in other companies are excluded as well (to prevent a double benefit).

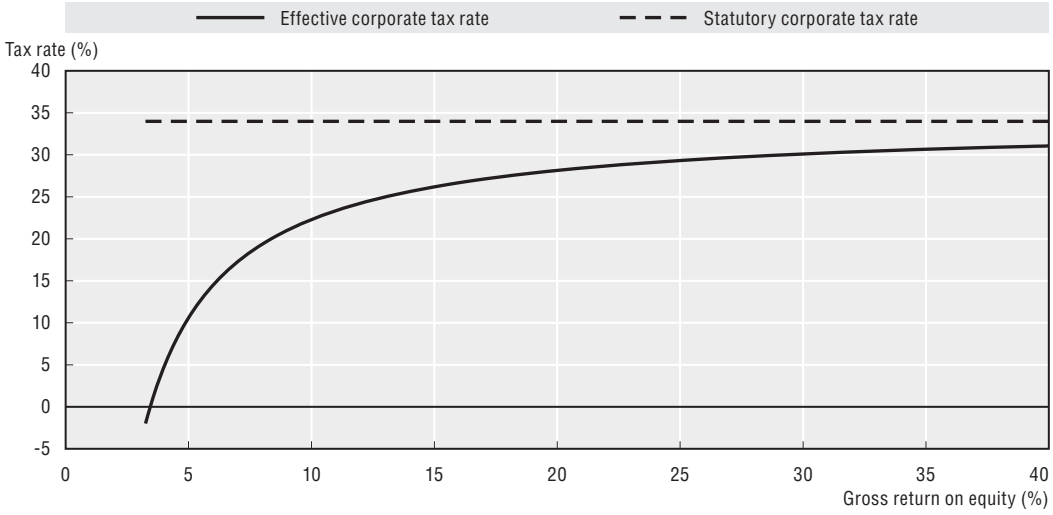
The implementation of the "deduction for risk capital" regime is accompanied by the abolition of the 0.5% duty on new equity capital invested in a company and of the registration duty on increases in statutory capital without contribution of new assets.

In order to limit the budgetary impact of the introduction of the deduction for risk capital, some compensatory measures have been taken. A new fiscal definition of (tax-free) corporate capital gains has been introduced. The standard investment allowance for SMEs, which allows SMEs to deduct part of the cost of the investment made in the course of the

tax period (3 per cent for assessment year 2005) from their tax base, has been abolished. Finally, SMEs will have to choose between the investment reserve and the allowance for corporate equity. SMEs that have constituted exonerated investment reserves in the course of the taxable period can't combine this advantage with the benefit of the deduction for risk capital, not only for the taxable period in question but also for the following two taxable periods.

Given a "notional interest rate" of 3.442 per cent, Figure 9.1 presents the statutory and effective corporate tax rate for different gross returns on equity. It shows that the tax rate reduction is inversely proportional to the firm's profitability.

Figure 9.1. **Statutory and effective corporate tax rate in Belgium (2006)**



The microsimulation model MiSIS has been applied to simulate the effects of the corporate tax reform. With MiSIS, changes in the corporate tax system can be simulated (only) in a static context. Some tax reform measures are not included in the simulation (the abolition of the duty on capital increases and the new definition of capital gains are not considered). The estimated budgetary impact of the ACE tax reform in Belgium amounts to 10.4 per cent of the tax yield in the reference situation. However, the actual impact might be smaller if the dynamic effects as, for instance, the possible increase in (foreign) direct investment would be considered as well.

The simulation is based on a representative sample of tax returns of which the information is joined to the annual accounts. Companies are divided into deciles, of which the minimum and maximum profitability thresholds are presented in the first two columns of Table 9.1. Profitability is measured as the ratio "net operating surplus" (NOS) divided by "value added" (VA). This measure is only partial since it integrates neither financial nor extraordinary results. In fact, this indicator focuses on the profitability of the economic activity of the company. The analysis only includes companies having a positive ratio. The tax reform gains – expressed as a percentage of the pre-reform taxation – decrease when profitability increases. They amount to 7 to 8 per cent in the first deciles but drop 3.6 per cent in the eighth decile. The ratio profile is not strictly decreasing due to the effect of other factors, among which the equity ratio and some of the compensatory measures which have been taken into account in the simulation.

Table 9.1. **Profitability and effects of the deduction for risk capital**

Deciles of the sample (companies with NOS > 0)	Profitability index (NOS/VA)		Gain % of tax before reform
	Minimum (%)	Maximum (%)	
1	0.0	9.0	7.5
2	9.1	17.1	8.3
3	17.2	25.0	8.4
4	25.0	34.0	6.7
5	34.0	46.6	7.3
6	46.6	64.2	5.9
7	64.3	100.0	7.1
8	100.0	132.4	3.6
9	133.3	395.2	1.2
10	396.2 and more		0.6

The simulation also demonstrates that the relative tax reduction (tax reduction as a percentage of the tax due before the tax reform) resulting from the ACE allowance is higher for SMEs than for larger companies. The analysis incorporated the higher "notional interest rate" for SMEs, that some of the compensatory measures only affect SMEs and the fact that the relative tax reduction is inversely proportional to profitability (see Figure 9.1). Although the biggest part of the deduction for risk capital is allocated to larger corporations, the measure is relatively more profitable for small-sized companies considering the pre-reform tax shares of both types of corporations.

Allowance for proprietor's equity (APE)

The tax burden on labour income exceeds the burden on capital income in many OECD member countries. This provides entrepreneurs with a tax-induced incentive to incorporate and to characterize their labour income as capital income. In order to prevent that the ACE aggravates the distortion in business legal forms, the allowance for "corporate" equity might be provided to proprietorships as well by means of an "allowance for proprietor's equity (APE)" (Brys [2006]).

The allowance for corporate equity exempts the normal return only at the corporate level; the return might continue to be taxed at the personal level. However, the income of the proprietor is taxed only once at the personal income tax rate. The allowance for proprietor's equity will therefore fully exempt the normal return on equity invested in the proprietorship. The tax benefit of the APE will therefore exceed the tax benefit of the ACE. A neutral outcome would then be obtained if the APE would be calculated by imputing a return that is lower than the return which is used to calculate the ACE (Brys [2006]).

Governments might also use the APE as an instrument to reduce the tax-induced incentives for entrepreneurs to incorporate. As the gain of incorporation is increasing in the difference between the progressive personal income tax and the proportional effective capital income tax, governments might even consider implementing an APE that is increasing in the proprietor's income.

Allowance for corporate capital (ACC)

The ACE tax system continues to have different tax rules for debt and equity-financed investment, even though the debt-equity choice no longer is distorted at the corporate level. However, the allowance for corporate equity might be extended to corporate debt.

Governments might allow corporations to deduct an "allowance for corporate capital (ACC)" from their taxable corporate earnings. The ACC would be calculated by imputing a return on the company's total capital – independently of whether this capital is financed with debt or equity – including taxable profits net of corporate tax. The ACC would then replace the current interest deductibility.

This type of tax reform was introduced by Kleinbard (2005, 2007), who presented the Business Enterprise Income Tax (BEIT) as an alternative for the US corporate income tax. The BEIT consists of a "uniform cost of capital allowance (COCA)", which is a tax-exempt allowance for any form of financial capital that the corporation issues to its investors. The COCA then equals the firm's total asset basis times an imputed return (the COCA rate). The COCA can then be deducted – in addition to the tax depreciation allowances – from taxable corporate earnings.

The ACC (COCA) could be calculated by imputing a nominal (risk-free) return to the non-indexed value of the corporate capital. Tax depreciation allowances would then not have to be indexed neither but would have to follow the same depreciation rules as the firm's capital stock. The ACC tax system is efficient irrespective of the type of (accelerated, decelerated or neutral) tax depreciation allowances. The nominal imputed return might be an appropriate nominal interest rate as, for instance, the interest rate on medium term government bonds. However, because governments might allow for a different imputed return than the actual interest rate the firm has to pay, the part of the ACC that corresponds to the debt might deviate from the actual interest payments, which no longer are tax-deductible. This implies that firms no longer face a tax-induced incentive to use a non-arm's length interest rate. Moreover, no ACC would be deductible if the firm's capital stock would be entirely depreciated, even though the firm might continue to pay interest.

Under the ACC, the distinction between debt and equity for tax purposes would cease to exist. Tax administrations would no longer have to categorize financial instruments either as debt or equity for tax purposes; it is the underlying book value of the corporate capital – whatever its source of finance – that entitles the firm to the corporate tax deduction. The ACC will have the same economic implications as the ACE but might further reduce complexity in practice as the actual difference between debt and equity for tax purposes ceases to exist.

Even though there is no longer a tax-difference between debt and equity at the corporate level under the ACC, equity would become a more preferred source of finance than debt because the capital gains tax could be deferred until the gains are realised as opposed to interest payments (and dividends) that are taxed upon accrual at the personal level. This non-neutrality might be tackled through a minimum distribution rule, which would induce corporations to distribute – either as interest payments or dividends – the COCA rate in every period to the investor. Kleinbard (2007) also argues that investors at the personal level would have to include in their taxable income an *anticipated* return – at the same COCA rate – on all their financial investments, regardless of whether they actually receive that return in cash. The presumptive normal return on the investment would then be taxed at the personal level in every period. This tax would then be similar to the current presumptive capital income tax (PCIT) at the personal level (in Box III) in the Netherlands (Brys [2006]).

Under the CCA – PCIT system, the normal return on capital would be taxed only under the presumptive capital income tax. The economic rents would be taxed only at the corporate tax rate (Kleinbard [2007]). There would be no double taxation of the return on capital. The CCA – PCIT system implements full neutrality with respect to debt, newly issued equity and retained earnings. Moreover, the ACC also offsets the differences between tax depreciation and the actual economic depreciation of the asset. However, because corporate tax rates have been under pressure, governments would no longer be able to heavily tax the investment's economic rents. The lower tax burden on economic rents might then be compensated by a higher tax burden on the normal return on capital that is taxed at the personal level. According to Kleinbard (2007), this issue might also be solved through an "excess distributions tax". This tax would be levied at the personal level on realised capital income in excess of the presumptive return on capital that has been taxed before.

9.3. The allowance for shareholder equity tax system

The allowance for shareholder equity (ASE) tax system (Sorensen [2005]) introduces a tax-deductible allowance for the normal return on equity at the shareholder level. This allowance for shareholder equity equals the value of the corporation's equity as reflected in, for instance, the value of the firm's shares, multiplied by an imputed return as, for instance, the after-tax interest rate on medium term government bonds. The allowance for shareholder equity tax system prevents the double taxation of the normal return on equity by providing tax relief for the normal return on equity, not at the corporate level as under the ACE system, but at the personal level instead.

As was the case for the ACE tax which was equivalent to a corporate cash-flow tax, the ASE tax is equivalent to a personal level cash-flow tax. Sorensen (2005) demonstrates that the present value of the tax burden incurred under a personal level cash-flow tax (tax expenditure method) – the savings are deductible from the personal income tax base but the entire return of the investment is taxed – is equal to the tax burden of the ASE tax system – the original savings are not deductible, but only the infra-marginal return (the rent) is taxed. The tax gain as a result of the ASE is identical, in present value terms, to the immediate tax gain under the personal level cash-flow tax, which is equal to the capital income tax rate at the personal level.

Corporate finance decisions in a closed-economy

The ASE tax system continues to exempt interest payments at the corporate level, as opposed to the return on equity that is taxed at the corporate tax rate. The corporation's normal profits are not taxed again at the shareholder level. If the (nominal) interest rate that is applied to calculate the ASE equals the (nominal) interest rate that is paid as a reward for the debt and if the corporate tax rate equals the personal income tax rate on interest payments, the corporation will be indifferent between debt and equity as source of finance in a closed-economy. Under the ASE tax system, the corporate tax continues to act as a "backstop" to the personal income tax (on normal profits and rents), as opposed to the (corporate) ACE tax system where the corporate tax is levied only on rents.

Economic rents might be taxed at the shareholder level under the personal income tax either as dividends or (realised) capital gains. The personal income tax on dividends might be deferred by retaining and reinvesting the profits, which then yields capital gains that are taxed only when they are realised. This implies that capital gains are effectively taxed at a

lower rate than dividends. Consequently, the shareholder will prefer to receive the economic rents in the form of capital gains rather than as dividends. The ASE therefore does not necessarily resolve the difference in tax treatment between retained earnings and newly issued equity (with respect to economic rents).

The neutrality result under the ASE tax system requires that the corporate tax rate equals the personal income tax rate levied on interest payments. If the corporate tax rate would be lower than the personal income tax rate, equity would be preferred over debt. Debt would be preferred over equity if the corporate tax rate would exceed the personal income tax rate levied on interest payments.

This equality might not be required if, instead of implementing an *allowance* for shareholder equity, governments would provide a *credit* for shareholder equity. This "credit for shareholder equity (CSE)" tax system can be designed such that it has the same efficiency characteristics as the ASE tax system. If at the personal level, the dividends are first grossed up with the corporate taxes paid, the credit might equal the difference between the personal level taxes on equity income and interest net of the corporate taxes paid. If dividends and interest payments are taxed at the same rate, the credit will then equal the corporate taxes paid. In order to avoid circumstances that governments would have to pay back some of the taxes to shareholders, the personal level tax rate on capital income might then be set above the corporate income tax rate.

Moreover, in order to achieve efficiency under the ASE tax system, tax depreciation allowances might follow the economic depreciation of the asset as closely as possible and might be based on the investment's replacement costs.

Imputed return on equity

In order to tax the return on equity and debt-financed investment in a similar way, the imputed return on the corporation's equity should equal the (nominal or real) interest rate that the corporation pays on its debt-financed investment. More precisely, neutrality requires that the imputed return equals the (nominal or real) interest rate that corporations would have to pay if they would finance marginal (new) investment with debt instead of equity.

The ASE is provided at the shareholder level for all types of investments. It would therefore be administratively costly to allow for a different imputed return for different types of firms and investments. However, the necessity to allow for a firm-specific imputed return is reduced if no risk premium is added to the imputed return for the ASE. Corporations differ in the risk premium required by financial markets, but they do not necessarily face a different interest rate if they issue debt. Neutrality between debt and equity would then require that only a risk-free interest rate is deductible on newly issued debt as well.

Moreover, if only the real interest rate is deductible from the corporate tax base in case of debt-financed investment, the ASE will have to be calculated by imputing only a real return as well.

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The allowance for shareholder equity does not have a fundamental impact on the preferred sources of finance and uses of profits of foreign personal and corporate investors. The debt-equity distortion continues to exist at the corporate level. The ASE tax system is

neutral with respect to the debt-equity choice only for domestic investors. Sorensen (2005) therefore concludes that the ASE reduces the cost of capital on equity-financed investment only for small and medium-sized corporations without access to the international stock market.

Because debt remains the most-preferred source of finance at the corporate level as the entire return on equity-financed investment continues to be taxed at the corporate tax rate, multinationals will face a tax-induced incentive to finance their subsidiaries excessively with debt. In order to protect the tax base, thin capitalisation rules remain necessary. Moreover, the ASE tax reform does not change the corporations' incentives for shifting profits to lower taxed jurisdictions by means of transfer pricing.

Tax revenue considerations

Because the normal return on equity is no longer taxed at the shareholder level, tax revenues will decline. In order to compensate this loss in revenue, governments might consider increasing the corporate tax rate. Again, this rate increase might have a negative impact on the domestic amount of corporate investment, on the international location decision of firms, on the amount of foreign direct investment and might induce corporations to shift the economic rents out of the country.

The loss in revenue, however, might be smaller than under the ACE tax system as the corporate income tax under the ASE tax system continues to be levied on the normal return of foreign-owned equity-financed investment, which escapes taxation under the ACE tax system.

The ASE tax system puts tax revenues further under pressure because the corporate income tax rate has to be equal to the personal income tax rate levied on interest payments. Especially in an international environment where the corporate tax rate has been decreasing over time, the required equality limits the revenue that can be raised through the taxation of interest income. However, it does not necessarily reduce the revenue that can be raised through the taxation of the infra-marginal return on equity because the economic rents might be taxed at the shareholder level at a higher rate than interest payments.

Another consideration is that the allowance for shareholder equity is calculated on the basis of the value of the firm's shares. The tax revenue that government will raise might be more volatile compared to the revenue raised under the allowance for corporate equity tax, which uses the firm's book value of equity to calculate the corporate allowance.

The ASE tax system in Norway

The ASE tax system is a rather new tax system that has been recently implemented in Norway as of 1 January 2006. It is referred to as the "rate-of-return allowance" (RRA). It is calculated as the purchase price of the share multiplied by an after-tax risk-free interest rate of 2.1 per cent in 2006 (announced in January 2007); it is the yearly average of the after-tax return of the interest on 3 month-government bonds for that year. The rate-of-return allowance applies to the shares of Norwegian and foreign firms owned by resident taxpayers in Norway. This tax system replaces the previous imputation system as well as the RISK scheme (OECD [2006]).

In addition to the corporate income tax of 28 per cent, the Norwegian government levies a personal income tax at the shareholder level on realised shareholder income, which consists of dividends plus any realised capital gains minus realised capital losses, after deduction of the RRA (Sørensen [2005]). The capital income tax at the personal level, which also applies to interest payments, is 28 per cent (2006).

Given a 28 per cent corporate and capital income tax rate at the personal level and an after-tax imputed interest rate of 2.1 per cent, the firm will earn a normal return of 0.021/(1 – 0.28) or 2.91667%. In case of equity, this normal (risk-free) return will be taxed at the corporate tax rate, which yields an after-tax return of 2.1%. This return will not be taxed at the shareholder level. In case of debt, the firm's interest rate amounts to 2.91667%; the interest payments will only be taxed at the personal level at a rate of 28%, which yields an after-tax return of 2.1%. This example then demonstrates that the investors are indifferent between debt and equity-financed investment and shows why the *after-tax* interest rate is used as imputed return at the shareholder level.

If the distributed dividends are lower than the RRA, the surplus tax free amount can be carried forward by stepping-up the basis of the shares with the unused RRA. This amount will then be the new basis that is used in calculating the RRA in the following period. The unused RRA from previous periods and the current period's RRA, calculated on the basis of the stepped-up basis, will then be offset against current period's distributed dividends or against any capital gain if the equity is sold.

The normal rate of return on equity-financed investment is not taxed at the shareholder level and is therefore taxed only at the corporate tax rate of 28 per cent. Dividends and realised capital gains in excess of this normal rate of return are taxed at the shareholder level as capital income at a rate of 28 per cent. This then yields a total maximum marginal tax rate on dividends of 48.16 per cent. Because the tax on capital gains can be postponed until the shares are sold, the effective tax burden on capital gains (insofar that realised income exceeds the RRA) will be lower than 48.16 per cent. However, because the basis of the shares is stepped-up with the unused RRA, shareholders in Norway are indifferent to whether they receive the normal return on equity-financed investment as dividends or capital gains.

In fact, the Norwegian ASE tax system imposes the top personal income tax rate on labour income to be equal to the tax burden on economic rents in order to avoid excessive income shifting between labour and capital income. In 2006, the top marginal personal income tax rate (including employee and employer social security contributions) declined to 53.9 per cent. The reduced rate differential between capital and labour income on the margin will therefore reduce the tax-induced incentives to convert labour income into capital income.

Under the ASE tax system in Norway, the government determines either the personal income tax rate on labour income, from which the corporate tax rate (and therefore the personal income tax rate on interest payments and economic rents) follows, or the corporate tax rate, which will imply a certain level for the top personal income tax rate on labour income. It remains to be seen if Norway will be able to respond to further corporate tax rate reductions in other countries, while maintaining its current ASE tax system with its nice efficiency properties.

Tax administrative issues

The ASE tax system requires that the purchase price of all shares and their price when they are sold are registered for each taxpayer. Moreover, the amount of distributed dividends will have to be registered for each firm as well; the amount of retained profits, however, will not have to be registered. Sorensen (2005) therefore concludes that the ASE tax system must be based on a central shareholder register recording the acquisition and sale of shares and the payment of dividends by companies. This type of register was implemented in Norway in 2004. He argues that the system is not necessarily more complex than any other tax system that taxes also capital gains.

The Norwegian RRA allowance applies not only for Norwegian firms but also for foreign firms. Moreover, it applies to quoted and unquoted firms. The information requirements for Norwegian quoted firms does not seem to raise many problems; the valuation of the shares of unquoted firms is more difficult but would have to be considered under a capital gains tax as well. However, the valuation of shares and the registration of distributed dividends of quoted and unquoted foreign firms might be more difficult. This might give rise to new tax evasion opportunities.

Shares might also be traded during the fiscal year. Ideally, shareholders would receive a part of the ASE (rate of RRA) in proportion to the fraction of the year during which they have owned the share (Sorensen [2005]). This might be administratively very costly. The Norwegian government has therefore proposed that the RRA be fully assigned (only) to the shareholder that owns the share at the end of the year. Sorensen (2005) points out that this implies that the RRA will be capitalised in share prices, as the seller will forego the RRA at the end of the year. He also explains that this might create tax-arbitrage opportunities as the RRA will not be capitalised in the shares owned by foreign investors as they cannot benefit from the ASE tax system in Norway.

9.4. The shareholder allowance for corporate equity tax system

Under the (corporate) allowance for corporate equity (corporate ACE) tax system (see Section 9.2), the corporate income tax stops being a withholding tax on the normal return on equity-financed investment. This is not necessarily a disadvantage if dividends and capital gains are taxed upon accrual at the shareholder level. However, most OECD member countries do not tax capital gains at the personal level or they tax capital gains only upon realisation (and often at a lower rate). In that case, shareholders can defer the shareholder level taxes until the shares are sold. The entire tax burden on the normal return on equity-financed investment could then be deferred almost indefinitely.

This issue might be solved if the ACE, instead of being deductible at the corporate level, would be transformed into a tax allowance that could be claimed at the shareholder level. Under the shareholder allowance for corporate equity (shareholder ACE) tax system, the allowance for corporate equity would be calculated in a similar way as under the corporate ACE tax system. However, instead of deducting the ACE from the corporate tax base, the corporation would divide the ACE by the number of shares. Each share would receive its part of the ACE and shareholders would be entitled to deduct the shareholder allowance from the equity income tax base – not from taxable interest payments – at the personal level.

If the tax rate on equity income at the personal level would exceed the corporate income tax rate, shareholders under the shareholder ACE tax system would obtain a larger advantage than under the corporate ACE tax system. In order for the shareholder ACE tax to yield the same tax gain as under the corporate ACE tax and the corporate cash-flow tax, the capital income tax rate on equity income at the personal level would have to be equal to the corporate income tax rate. Moreover, the shareholder ACE that cannot be claimed because the firm did not distribute dividends or because shareholders did not realize their capital gains would have to be carried forward with interest.

Instead of providing an allowance per share, governments might provide a tax credit for each share equal to the ACE that is assigned to each share multiplied by the corporate tax rate. In order to yield the same tax gain as under a corporate cash-flow tax, the shareholder credit for corporate equity (shareholder CCE) tax system would only require – in order to avoid circumstances that governments would have to pay back taxes to shareholders – that the capital income tax rate on equity income at the personal level is not lower than the corporate income tax rate.

What are the differences between the shareholder ACE and the ASE tax system? First, the shareholder ACE is a source-based tax allowance while the ASE is a residence-based tax allowance. The shareholder ACE applies to all equity-financed investment in the source country, while the ASE applies to the equity investment by resident shareholders (either on their domestic equity investments or on their worldwide equity investments as is the case in Norway). Second, the shareholder ACE is based on the book value of the firm's capital stock while the ASE is calculated using the value of the shares in the stock market. This might imply that tax revenues under the ASE will be more volatile than under the shareholder ACE. It might also imply that the administrative costs for implementing a shareholder ACE will be considerably lower and that it creates less opportunity for tax evasion.

Corporate finance decisions in a closed-economy

Under the shareholder ACE tax system, interest payments would only be taxed at the personal income tax rate. The normal return on equity-financed investment would be taxed at the corporate tax rate. Shareholders would be able to claim their part of the ACE at the shareholder level, which would offset the capital income taxes on the normal return on equity at the personal level. Economic rents would be taxed at the corporate tax rate and distributed dividends and (realised) capital gains would be taxed again at the personal level. Neutrality between debt and equity would then be achieved in a closed-economy setting if the capital income tax rate on interest payments at the personal level equals the corporate income tax rate.

Under the shareholder CCE tax system, interest payments are taxed only at the personal income tax rate. The normal return on equity-financed investment is taxed at the corporate tax rate and is taxed again at the capital income tax rate at the personal level. Shareholders, however, can reduce their personal capital income tax liability by using their CCE. If shareholders claim a CCE, the equity income will be grossed-up with the credit before the shareholder level taxes are determined. The normal return on equity is then effectively taxed at the shareholder's personal capital income tax rate (if this rate exceeds the corporate income tax rate). Economic rents will be taxed at the corporate tax rate and the distributed dividends and (realised) capital gains will be taxed again at the shareholder level. The shareholder CCE tax system does not require that the personal capital income tax rate on interest payments equals the corporate tax rate, as is required under the shareholder ACE tax

system. However, neutrality between debt and equity under the shareholder CCE tax system does require that the personal level tax rate on interest payments equals the capital income tax rate on the return on equity at the shareholder level.

The shareholder ACE and CCE tax systems resolve the difference between debt and equity. However, shareholders will prefer to receive the economic rents in the form of capital gains instead of dividends as was the case under the corporate ACE tax system. Under the corporate ACE tax system, shareholders also preferred to receive the normal return as capital gains instead of dividends; equity then became a more preferred source of finance than debt in a closed-economy setting. This no longer is the case under the shareholder ACE tax system because the corporate income tax acts as a withholding tax for the capital income tax rate on the normal return on equity at the personal level. Under the shareholder CCE tax system, shareholders might continue to prefer capital gains over dividends, also for the normal return on equity-financed investment, but to a smaller degree than under the corporate ACE tax system. This preference will be increasing in the difference between the capital income tax rate on equity income at the personal level and the corporate tax rate.

Corporate finance decisions in an open-economy

Not only domestic shareholders might benefit from this tax allowance or credit. The tax system might be designed such that foreign shareholders can claim the allowance/credit to offset the withholding taxes on distributed dividends to foreigners. In practice, however, foreign investors might not necessarily be able to benefit from the full allowance/credit if it would be allowed only against withholding taxes. If, on the other hand, the shareholder allowance/credit for corporate equity would become marketable on the financial market, foreigners would be able to immediately benefit from the allowance/credit by selling their claim. Or, alternatively, the tax system might be designed such that foreign shareholders receive a refund for the corporate taxes paid.

As a result, as long as foreign investors can benefit from the ACE, the shareholder ACE or CCE tax system have the same efficiency properties in an open-economy as the corporate ACE tax system (see Section 9.2).

Tax revenue

Similarly to the introduction of a corporate ACE system, governments might finance the implementation of the shareholder ACE or CCE tax system by raising the corporate income tax rate. As pointed out, this might have a negative impact on the location decision of firms, on FDI and might induce corporations to shift economic rents out of the country. Instead, governments might consider increasing other taxes, including the capital income tax rates at the personal level.

Given an international environment where countries compete over corporate tax rates, the required equality between the personal level tax on interest payments and the corporate tax rate under the shareholder ACE might limit the revenue that can be raised through the taxation of interest income. This problem, however, is not present under the shareholder CCE tax system.

9.5. The comprehensive business income tax system

The US Treasury Department's (1992) Comprehensive Business Income Tax (CBIT) implements neutrality in the debt-equity choice in a different way. The CBIT taxes the return to capital of corporations only once. Under the CBIT tax authorities allow no deduction of either interest payments or the return on equity from taxable corporate earnings. Except for the CBIT rate, no additional withholding taxes would be imposed on distributions to equity holders or on payments of interest. If a CBIT-type of corporation receives interest or dividends from another corporation that already has paid the CBIT, these earnings might be added to a so-called excludable distributions account (EDA) in order to avoid double taxation (Department of the US Treasury [1992]).

The original aim of this business-level tax (Hubbard [2002]) was to implement a single rate on all corporate income at a rate equal to the top marginal personal income tax rate on capital income. Interest payments, dividends and capital gains would then no longer be taxed at the household level. Under the CBIT system, there is no need for integration of corporate and shareholder level taxes.

Corporate finance decisions in a closed-economy

Under the CBIT, the marginal effective tax rate on investment financed with debt, newly issued equity or retained earnings is equal to the business tax rate – also determined by the fact that the CBIT reform stipulates that tax depreciation allowances should follow economic depreciation as closely as possible. In fact, because the CBIT is the only tax levied on capital income, the implementation of neutral tax depreciation allowances becomes more important than under current corporate income tax systems. Under the CBIT system, firms are then indifferent between debt, newly issued equity and retained earnings as the investment's source of finance in a closed-economy setting. The cost of capital under the "new" view is derived in Box 9.2.

In addition to the increased importance of neutral tax depreciation allowances, the CBIT is also more sensitive to tax-deferral as a result of the reliance on the realisation principle to measure gains from real assets. The US Treasury (1992) therefore recognised the need for an additional compensatory tax if the actual CBIT paid would be too low (Kleinbard [2005]). The CBIT would be levied on corporate income in excess of the income in the "Excludable Distributions Account" (EDA). If a CBIT-type of corporation receives interest or dividends from another corporation that already has paid the CBIT, the earnings might be added to the EDA in order to avoid double taxation.

A large part of total interest income is effectively not taxed in most countries – for instance because tax-exempt institutional investors invest a large part of their portfolio in debt. The introduction of a corporate income tax on interest payments might then strongly increase the cost of debt finance for corporations. This will not only reduce the amount of investment projects that will be undertaken but might also force corporations into bankruptcy. The CBIT might therefore require a rather low corporate income tax rate.

The US Treasury (1992) suggested that the Comprehensive Business Income Tax might apply not only to corporations but also to non-corporate businesses. The CBIT system would then also eliminate the tax-induced distortions between the corporate and non-corporate business sectors.

However, in order to ensure an equal tax treatment of wage earners and the self-employed, the CBIT system would need to split the income of the self-employed into a

Box 9.2. **The CBIT under the "new" view and the "new new" view**

In case of a comprehensive business income tax, the cost of capital on a firm's marginal debt-financed or equity-financed investment under the "new" view and the "new new" view equals:

$$f'(K) = \frac{r}{(1-\tau_f)}$$

Notice that the cost of capital of debt-financed investment under all the other tax systems discussed in this report equals $f'(K) = r$. The marginal increase in the value of the firm's equity amounts:

$$q = 1$$

labour income component and a capital income component. The part considered as labour income would then be taxed in most countries according to the progressive income rate schedule, while the part considered as capital income would be taxed at the proportional CBIT rate.

Income-splitting would be less of an issue – except for lower-income self-employed – if the CBIT rate would be equal to the top personal income tax rate. This however would require a high CBIT rate in many OECD member countries. In fact, the CBIT rate would need to be even higher if social security contributions would also be taken into account. It is unlikely that levying such a high CBIT rate would be feasible, especially from an open-economy perspective. The choice between capital income and labour income would therefore continue to be distorted under a CBIT system in many OECD member countries.

The CBIT could be introduced gradually in order to alleviate the effects on the existing capital stock (Cnossen [1996]). In fact, the US Treasury (1992) suggested phasing in the CBIT over a period of about 10 years.

Corporate finance decisions in an open-economy

The taxation of interest income at source has a strong impact on foreign (personal) investors, who not only have to pay corporate taxes at source on all profits without deducting interest. The CBIT system will provide neutrality between debt and equity in an international context only if the country of residence of the foreign (personal) investor levies the same tax rates on interest payments as on dividends and capital gains (or if foreign-source income is not taxed in the investor's country of residence). Even in that case, neutrality might not be achieved if capital gains are taxed only upon realisation in the home country. It is therefore unlikely that neutrality between debt-equity will be achieved under the CBIT system in an international context.

The impact of the CBIT tax system on foreign corporate investors will depend on the tax treatment of foreign income in the corporation's country of residence. In case of a dividend exemption tax system – foreign dividends are supposed to have been taxed in the host country and are therefore tax-exempt in the home country as opposed to interest payments that are supposed not to have been taxed at source – interest payments under the CBIT system might then be taxed in both residence and source country. Equity then becomes a more preferred source of finance than debt for the foreign corporate investor. The introduction of the CBIT tax system (as was the case for the ACE tax system) might

then possibly lead, in the long run, to changes in tax treaties. In case of a worldwide tax system – foreign received interest, dividends and capital gains might be taxed in the country of residence – the introduction of the CBIT in the host country might shift the tax revenues from the corporation's country of residence to the source country. This then not necessarily implies that the taxation of interest payments (at source) will induce many real effects in the source country.

The cost of debt that is financed by foreign investors will increase. Foreign investors will require a higher before-tax interest rate such that, after the CBIT, they earn the world-market interest rate. However, the increase in the cost of debt might be tempered because the withholding taxes on outbound interest payments might be abolished when the CBIT is introduced.

Considering only the taxes at the corporate level, corporations would no longer face a tax-induced incentive to finance their investment with debt instead of equity. Thin capitalisation rules might therefore no longer be required.

Tax revenue considerations

The corporate tax base under the CBIT system will be larger than the corporate tax base under current corporate income tax systems or under the ACE tax system. The broadness of the CBIT tax base – also because the corporate tax rate continues to tax the return on foreign-owned investment in the source country – and the reduction in tax-planning strategies that corporations follow to effectively reduce the taxes at the corporate level then allow a low corporate tax rate. On the other hand, The CBIT system taxes all capital income only at the corporate level and no longer at the personal level. This might require a rather high corporate tax rate to compensate for the loss of tax revenue at the personal level.

However, corporations have been rather successful in avoiding corporate income taxes under current corporate income tax systems. It is very likely that companies will continue to find and implement tax-planning strategies that allow them to effectively reduce the taxes at the corporate level, especially when the lack of taxes at the personal level implies a high corporate tax rate. It therefore seems that the CBIT system might be successful only if governments would levy a rather low corporate tax rate. Even if this would imply that tax revenues would decline, increasing the corporate income tax rate might only reduce tax revenues even further.

CBIT and immediate expensing (ICBIT)

The CBIT might be accompanied by immediate expensing of investment (ICBIT). In that case, the full return on debt and equity-financed investment will be taxed at the corporate tax rate. However, because of to the immediate expensing, the normal return of the investment will not be taxed (see Box 9.3). Only the economic rents will be taxed at the corporate tax rate. Under the ICBIT, the return on investment might however be taxed at the personal level.

This type of tax system is therefore similar to a corporate cash-flow tax. The ICBIT, however, is a corporate income tax and not a cash-flow tax. Corporate income continues to be included in the tax base when it is earned, not when cash is actually received, and corporate expenses are deducted when they are incurred, not when cash is paid. However, countries that would want to move to a corporate cash-flow tax might reform their corporate income tax systems gradually over time, by accelerating their depreciation

Box 9.3. **The ICBIT under the "new" view and the "new new" view**

In case of an "immediate expensing comprehensive business income tax", the cost of capital on a firm's marginal debt-financed or equity-financed investment under the "new" view and the "new new" view equals:

$$f'(K) = r$$

The marginal increase in the value of the firm's equity amounts to:

$$q = (1 - \tau_f)$$

Similarly to the impact of a corporate cash-flow tax (see Box 6.1), a reduction in the corporate tax rate will only lead to windfall capital gains for existing shareholders, as the reduction in τ_f will increase the marginal increase in the value of the firm's equity q.

allowances and by reducing the interest deductibility over time. Once they would have implemented an ICBIT – this would not require that income cannot be taxed at the personal level – the move towards a genuine corporate cash-flow tax would only be the next step.

9.6. Destination-based corporate cash-flow tax

The destination-based corporate cash-flow tax is levied on domestic sales with a deduction for the purchases from domestic suppliers and for labour costs, as discussed in Chapter 6. Export sales would not have to be included and imports would not be deductible from the tax base. Because this tax allows for a deduction of wage costs, this tax is basically a tax on domestic consumption out of non-wage income.

The destination-based VAT, especially the VAT that is levied using the subtraction method, is very similar to the destination-based corporate cash-flow tax. In fact, these taxes differ only with respect to wages that are included in the VAT base but which are excluded from the corporate cash-flow tax base. This can be illustrated by using some simple accounting identities (Cnossen [2001]). For a closed economy, it holds that:

$$C + S \equiv Y \equiv W + R \text{ or } C \equiv Y - S \equiv W + R - I,$$

where C is consumption, Y is total income, S is saving, I is investment ($S = I$), W is labour income and R is capital income, which consists of the normal return on capital and economic rents. Value-added is represented by $W + R - I$ (labour plus capital income net of investment) and is the base for the VAT. At the business level, the value added is equivalent to the difference between sales and purchases calculated on a cash-flow basis. The corporate cash-flow is equal to $R - I$. The VAT is therefore a tax on labour income and on corporate cash-flow. The tax on corporate cash-flow taxes the normal return on capital which is already in place, plus the economic rents from past and future investments. The normal return on new capital is not taxed.

In an open-economy, it holds that:

$$X - M + E \equiv I^f \text{ or } X - M \equiv I^f - E,$$

and

$$Y \equiv W + R \equiv C + X - M + I,$$

where X is exports, M is imports, E is net earnings from abroad and I^f is net investment abroad.

Under the destination-basis, exports are exempted but imports cannot be deducted from the tax base. The tax base of the destination-based VAT, equal to *C*, can then be written as:

$C \equiv W + (R - I) - (X - M)$ and $C \equiv W + (R - I) - (I^f - E)$

The destination-based VAT therefore equals a tax on labour income plus a destination-based corporate cash-flow tax. $R + E - I - I^f$ is the tax base of the destination-based corporate cash-flow tax. It is therefore a tax on domestic (either domestically-owned or foreign-owned) capital income and domestically-owned foreign capital income, as far as this income is consumed in the domestic market, net of new domestic (either domestically-owned or foreign-owned) investment and domestically-owned foreign investment. Put differently, the destination-based corporate cash-flow tax taxes the normal return of domestic and domestically-owned foreign capital already in place plus the economic rents from past and new domestic and domestically-owned foreign investment, as far as this income is consumed in the domestic market. The normal return on new domestic and domestically-owned foreign investment is not taxed.

The destination-based VAT, as levied by all OECD member countries except the US, taxes the value added of all factors of production: both capital and labour. If the aim of governments would be to tax the value added created only by capital, they might consider introducing a destination-based corporate cash-flow tax that allows a deduction for wage costs.

Under the destination-based corporate cash-flow tax, all earnings of domestic – either owned by residents or foreigners – and domestically-owned foreign (existing) capital would be taxed to the extent that these earnings arise from sales to firms and consumers in the domestic jurisdiction. Earnings that are reinvested benefit from the cash-flow tax treatment and are therefore deductible from the corporate cash-flow tax base. Earnings that arise from sales to firms and consumers abroad would not be taxed (domestically) either.

The destination-based corporate cash-flow tax does not distort the corporation's marginal investment as a result of the cash-flow tax treatment. However, if personal level taxes are considered as well, full neutrality will not necessarily be achieved under a (destination-based) corporate cash-flow tax as discussed in Section 6.3.

The destination-based corporate cash-flow tax will not distort the location decisions of firms either because corporations will only be taxed if they serve the domestic market. They will not be taxed if they serve foreign markets because exports are not included in the corporate tax base. However, if goods sold to the domestic market from a foreign country are not taxed at the border, for instance because of inefficient border controls, corporations might obtain an incentive to sell from abroad (for instance by selling over the internet).

The destination principle has a number of advantages over the origin principle. First, the destination principle removes the transfer pricing problems, as discussed in Chapter 7, as opposed to a tax based on the origin principle. Second, destination-based taxes primarily distort consumer markets but not product markets, as corporations can buy products free of tax. The destination principle then might imply "production efficiency", which is achieved when corporations face the same input prices and the same output prices. Origin-based taxes primarily distort producer markets. The origin principle then might imply "exchange efficiency", which is achieved when consumers face the same product prices (Cnossen [2001]). Diamond and Mirrlees (1971) have demonstrated that achieving production efficiency is preferred over the realisation of exchange efficiency.

However, the destination principle is not without its problems either, as it requires border controls since the tax is levied on imports. Under a normal VAT, tax is levied at the border when goods and services are imported. For taxable businesses, this tax is again credited against the tax on domestic sales. An alternative way of taxing imports would be not levying the tax on imports to businesses at the border on the one hand, but not allowing its deduction against domestic sales on the other hand. This indirect method of taxing imports to businesses, which is used by the destination-based corporate cash-flow tax, might entail an administrative simplification. It avoids levying a tax at the border that is creditable later anyway. However, governments would have to control which goods are exported and imported in order to raise the tax and to prevent tax avoidance and evasion. Governments would have to check that goods have actually crossed the border and that imports by private persons are not channeled through taxable corporations.

The destination-based corporate cash-flow tax could be implemented side by side with the ordinary VAT. However, most OECD-countries already have a VAT. It seems difficult to imagine that countries might introduce a tax that is almost similar to a tax that is already in place. It might be a more realistic option for countries that have still not introduced a VAT to implement a destination-based corporate cash-flow tax as an alternative to a corporate income tax. Since wage costs are deducted, the tax base of the destination-based corporate cash-flow tax would be smaller than the base of the ordinary VAT. If it would replace the VAT, the rate would probably have to increase to sustain the same revenue. Or, the destination-based corporate cash-flow tax could be implemented indirectly by increasing the VAT – especially in countries that already levy a VAT but at relative low rates – and by reducing social security contributions at the same time.

9.7. Origin-based corporate cash-flow tax

This section discusses the origin-based corporate cash-flow tax. Under an origin-based corporate cash-flow tax, the corporate tax would be levied on domestic and foreign sales with a deduction for the purchases from domestic and foreign suppliers – including investment goods – and for labour costs. The origin-based VAT is very similar. In fact, these taxes differ only with respect to wages that are included in the VAT base but which are excluded from the corporate cash-flow tax base.

These tax bases can be illustrated by the accounting rules that were introduced in Section 9.6. The inclusion of exports net of imports implies that the origin-based VAT tax base equals $C + (X - M)$:

$Y \equiv W + R \equiv C + X - M + I$ and $C + (X - M) \equiv W + (R - I)$.

The origin-based VAT therefore equals a tax on labour income plus an origin-based corporate cash-flow tax. $R - I$ is the tax base of the origin-based corporate cash-flow tax. It is a tax on domestic and foreign-owned domestic capital income net of domestic and foreign investment in the domestic country. Put differently, the origin-based corporate cash-flow tax taxes the normal return of domestic and foreign-owned domestic capital already in place, plus the economic rents from past and new domestic and foreign-owned domestic investment. The normal return on new domestic and foreign-owned domestic investment is not taxed. The origin-based VAT has the same tax base but it also taxes labour income.

The remainder of this section discusses different origin-based corporate cash-flow tax proposals of the two-tier type: corporations are taxed on their cash-flow net of wages, but labour income will be taxed at the personal level. We will discuss the Hall and Rabushka

flat tax and Bradford's X-tax. Both tax proposals are limited to real transactions and exempt financial transactions. We will also present the hybrid proposal of Mc Lure and Zodrow, which taxes corporations on an R+F-base and individuals on an R-base.[3] First, we evaluate the origin-based VAT.

Origin-based Value Added Tax

General consumption taxes like the VAT generally follow the destination principle. However, it would be technically feasible to levy consumption taxes on an origin basis. In fact, the main difference between the origin-based VAT and the origin-based corporate cash-flow proposals discussed in this section is that the VAT includes wages in its tax base, while the corporate cash-flow tax taxes labour income separately at the personal level.

The implementation of the origin-basis would cause a number of problems. If only a small number of countries would adopt the origin-basis, the goods and services produced domestically by these countries would be taxed at the origin, even if they are exported. If other countries would levy the VAT on a destination-basis, these exported goods would then be taxed again, which would result in double taxation. This would make it very difficult for corporations that reside in a country that levies an origin-based VAT to compete internationally.

If all countries would levy the VAT on an origin-basis, exports would not be taxed again when they are imported in another country. In that case, the competitiveness of corporations would depend on the VAT rate levied at the origin. Corporations that export from a country with a high VAT rate would find it difficult to compete against similar goods that are produced in a country where the origin-based VAT rate is low. An origin-based VAT would therefore distort the location of capital and investment of corporations that compete on the world market. An origin-based tax will therefore create strong incentives for tax competition (in VAT rates).

Hall-Rabushka flat tax

In the early 1980's, Robert Hall and Alvin Rabushka developed a consumption type of tax system that has the administrative advantages of a value-added/cash-flow tax but does not impose a higher relative tax burden on low-income households than on higher-income households, as opposed to most other consumption taxes.

The Hall-Rabushka flat tax consists of two tiers: the corporate cash-flow tax and a personal-level tax, which taxes total wages, salaries and retirement benefits less the total amount of family allowances. Pension contributions, which are paid with taxable labour income, are deductible from the personal income tax base but the pension (original saving contributions plus return) is taxed when it is received under the personal income tax. Other savings are not deductible at the personal level, but the return on these savings is not taxed at the personal level either. The personal level tax is made progressive by providing a family allowance that increases in the number of dependents. Without the personal exemptions, the tax would be equivalent to a subtraction-method VAT, but with labour income taxed at the household level rather than at the corporate level. No other income would be taxed and no other deductions would be allowed. The proposal taxes the corporate cash-flow and the taxable personal income at the same flat rate (the rate was 19 per cent in their original proposal).

The corporate cash-flow tax is an R-base tax and therefore does not include financial flows in the tax base (interest payments, for instance, are no longer tax-deductible). As discussed in Section 6.1, this implies that the return on debt and equity-financed investment will be taxed through the increase in taxes on sales. Investment outlays, however, are deductible. The normal return on (debt and equity-financed) investment is therefore effectively not taxed. The tax is therefore neutral in the choice between debt and equity as a source of finance and also between newly issued equity and retained earnings (also because the investment's return would not be taxed again at the personal level). In fact, only economic rents will be taxed (once) at the business level. Because the normal return is effectively not taxed at the corporate level and is not taxed at the personal level either, the Hall-Rabushka flat tax exempts the normal return on debt and equity entirely from taxation.

The flat tax might be levied on all types of businesses, not only on corporations, but also on proprietorships and partnerships. The tax would therefore be neutral between the different business legal forms as well.

Because of the R-base, financial institutions escape taxation. We described in Section 6.5 the difficulties of measuring the services that are provided by financial institutions, especially because customers pay for these services through the interest rate that they receive or have to pay. Hall and Rabushka try to offer a solution to this problem. They argue that financial institutions might report the price of services provided to their customers separately from the interest rate they offer or charge. This price could then be included in the tax base, while the expenses of the financial institutions might then be deductible as well. In case of deposits, the price of the services would equal the difference between the market interest rate and the (lower) rate that banks offer on savings accounts. In case of loans, the price would be the difference of the interest rate charged on the loan and the (lower) market interest rate.

Bradford X-tax

David Bradford's X-tax is a variant of the Hall-Rabushka tax. In fact, Bradford has refined his proposal over time, which implies that there is no single tax called the "X-tax". Instead, the X-tax is a series of ideas that are subject to refinement and improvement as more is learnt (Weisbach 2002).

The X-tax is similar to the Hall-Rabushka flat tax. It is a two-tiered R-based corporate cash-flow tax, which does not include financial services, and has a personal level tax that taxes labour income. However, as opposed to Hall and Rabushka's tax, the X-tax has graduated rates on household's labour income. These graduated rates allow for more tax progressivity at the personal level. Bradford's rate schedule has a zero rate bracket and a number of rates that increase with labour income. The top rate might be the same rate as the corporate cash-flow tax rate (or a rate not higher than the corporate rate). However, because of the differences in the corporate cash-flow tax rate and the rates at the personal level, the tax system might provide incentives for income shifting between capital and labour income.

Hybrid consumption tax

Mc Lure and Zodrow have proposed a cash-flow tax system which is similar to the two-tier Hall-Rabushka flat tax and the X-tax. Their tax is called the hybrid consumption tax (HCT), and was originally developed for Bolivia. For more details, see Mc Lure and Zodrow (1995).

The business tax would be on an R+F-base, while the personal level tax would be levied on an R-base. Mc Lure and Zodrow explain why financial flows might be included in the business tax base. They argue that the exemption of financial institutions might be perceived to be unfair. The introduction of a separate tax on financial institutions would add complexity to the tax system and could possibly continue to distort the allocation of resources across financial and non-financial activities. Moreover, because of the immediate expensing characteristic of cash-flow taxation, many firms – but especially firms in their start-up phase – might experience a negative cash-flow. Mc Lure and Zodrow noticed that many governments have been reluctant to allow either refunds or carrying forward with interest. However, the inclusion of loan proceeds in the R+F tax base reduces the likelihood that firms would experience a negative cash-flow. Finally, they argue that the R-base – when the corporate cash-flow tax is introduced – would be significantly smaller during the first years after the introduction of the tax than the R+F-base. The R+F-base might avoid strong tax revenue losses for the government the first years after the introduction of the tax.

The individual level tax would continue to be levied on an R-base. This implies that capital income is not included in the personal income tax base, as is the case under the Hall and Rabushka tax and Bradford's X-tax.

Notes

1. In Australia, capital gains on portfolio equity shares that are held less than 1 year are included in taxable personal income. 50 per cent of the capital gains on shares that are held for 1 year or longer are included in taxable income. Capital gains are taxed at the marginal ordinary personal income tax rate (OECD [2006b]). Imputation tax credits for corporate income taxes paid are only available for distributed dividends but not for capital gains.
2. It is implicitly assumed that the corporation can borrow at the same interest rate to offset different profiles of tax payments over time.
3. The Unlimited Savings Allowance (USA) tax is the reverse of the hybrid tax of Mc Lure and Zodrow. It taxes businesses on an R-base and individuals on an R+F-base. The Unlimited Savings Allowance tax is based on the destination principle.

PART V

Policy Conclusion

FUNDAMENTAL REFORM OF CORPORATE INCOME TAX – No. 16 – ISBN 978-92-64-03811-0 – © OECD 2007

Fundamental corporate income tax reform centres around four major policy concerns. Governments in many countries attempt to maintain corporate tax revenues at its current levels and at the same time try to create an attractive investment climate for domestic and foreign investors, reduce the tax-induced distortions and the corporate tax code's complexity.

Fundamental corporate income tax reform involves complicated issues. This section summarizes the main findings and focuses especially on the main policy conclusions that can be drawn from this report.

A question that requires to be answered first is whether it would be efficient to entirely exempt capital income from tax and to raise tax revenues through other taxes instead. The analysis in this report indicates that no strong case can be made for the exemption from tax of the return on capital income at the corporate or personal level. However, this result does not necessarily undermine the case for a corporate cash-flow tax, which exempts the normal return on equity from tax at the corporate level. Governments might consider implementing a corporate cash-flow tax because it reduces the tax code's complexity and reduces the tax-induced financial distortions, but not because the tax might imply a move towards a tax system that exempts the entire return on investment from tax.

In fact, there are good reasons to tax capital income at the corporate level. The main reason for imposing a corporate tax is that the tax plays an important withholding function, acting as a "backstop" to the personal income tax. In this respect, one might argue that tax systems that exempt the normal return on equity (and debt) from taxation at the corporate level undermine one of the main reasons for having a corporate tax. The corporate tax might also be needed to avoid excessive income shifting between labour income and capital income. The corporate tax also acts as a withholding tax on equity income earned by non-resident shareholders, which might otherwise escape taxation in the source country. Moreover, governments might levy a corporate tax because firms earn location-specific rents and/or because capital is not perfectly mobile.

Tax revenues

Policy makers are concerned about the tax revenues that are raised by the corporate income tax. In effect, governments are worried that further rate reductions will diminish the revenue from corporate income taxes. However, despite the strong reductions in statutory corporate tax rates, corporate tax revenues have kept pace with – or even exceeded – the growth in GDP and the growth in revenues from other taxes in many OECD countries. This might partly have been caused by the broadening of corporate tax bases, for instance through the provision of less generous tax depreciation allowances. Yet, marginal corporate effective tax rates have declined over time, implying that the reductions in the statutory corporate tax rates have had a stronger impact on the marginal corporate tax burden than the base broadening measures.

Even though corporate tax rates have decreased, some economic theories have predicted a much stronger "race-to-the-bottom" type of corporate tax competition. Until now, this has not been observed in OECD countries partly because of increased corporate profitability and income shifting via incorporation. Yet, driven by tax competition forces, it is likely that small open-economies will continue to take the lead in further lowering their corporate tax rates the most. The larger-sized countries might be obliged to reduce their corporate tax rates in response. However, there may be less scope in the future to offset reductions in statutory rates by expanding the corporate tax base.

Moreover, many fundamental reforms of corporate income tax would imply a substantial loss in corporate tax revenue. In order to compensate for this loss in revenue, governments might consider increasing the corporate tax rate. However, this rate increase might have a negative impact on the domestic amount of corporate investment, on the international location decision of firms, on the amount of foreign direct investment, it might induce corporations to shift their profits out of the country and it might result in lower wages as the burden is (partly) shifted onto labour.

In addition, firms increasingly engage in tax-planning and tax-sheltering activities, which put corporate tax revenues further under pressure. Corporations are able to shelter income by exploiting structural rules within the corporate income tax system. For instance, corporate tax shelters take advantage of the fact that income is taxed only when it is realised and of the difference between debt and equity. A change in these key rules would protect the government's corporate income tax revenues, but would require fundamental corporate tax reform.

Eventually, there are two possibilities with respect to corporate tax revenues. Either revenue received from corporate income taxes will diminish, as tax rates are reduced without any further capacity to increase the corporate tax bases. Or the offsetting pressure to raise revenue from this source will break the reductions in statutory rates. In fact, lower corporate income tax rates might also result in lower personal income tax (and social security) revenues as an increasing number of firms face an incentive to incorporate. On the one hand, it might be possible that the rate of the corporate tax rate reductions will continue to slow, especially with the greater efforts in combating the shifting of profits between jurisdictions. In addition, it seems unlikely that governments will willingly forgo the substantial revenues they have been accustomed to raise from corporate income taxes. On the other hand, capital might continue to become more and more internationally mobile. This might increase the tax competition especially for mobile profits. Moreover, if countries are faced with a decrease in the economic defences against corporate tax competition, for instance because there are smaller agglomeration effects in the case of a large number of small open economies, there could be a race-to-the-bottom type of corporate tax competition.

Efficiency considerations

Efficiency considerations form a second driver of fundamental corporate income tax reform, as corporate income tax systems distort the corporate firm's finance and investment behaviour in a number of ways. One of the main distortions is due to the different tax treatment of debt and equity as interest payments are deductible from the corporate income tax base while the return on equity is taxed. This difference in tax treatment not only distorts the corporations' finance and investment behaviour from a

domestic but also from an international point of view. Other main distortions are the distortion in the allocation of profits and losses over different locations and the distortion created by the different tax treatment of newly issued equity and retained earnings (dividends *versus* capital gains).

The corporate income tax system also distorts the type of investment project that the firm decides to invest in because tax depreciation allowances often deviate from the actual economic depreciation of the underlying asset and this difference might vary across different types of assets. Moreover, the corporate income tax system distorts the choice of businesses regarding their legal form because, for instance, proprietorships are taxed under the personal instead of the corporate income tax. The corporate income tax system is also not neutral with respect to mergers and acquisitions.

Fundamental reform of the corporate income tax will improve the tax system's efficiency. This can be concluded from the summary table, which summarizes some of the main the efficiency implications of the main fundamentally reformed corporate tax systems that have been discussed in this report. The table focuses on the debt *versus* equity distortion, on the distortion of new equity *versus* retained earnings and on the tax-induced distortion as a result of depreciation. The table focuses on the impact of corporate taxes both in a domestic and an international setting (only the host country's corporate tax rate is considered in the table) and on the impact of both corporate and personal level taxes (only in the domestic case). The table distinguishes between capital gains that are taxed upon accrual or upon realisation.

The tax-induced distortions depend of course not only on the host country's tax system but on the investor's home country's tax system as well. For instance under the ACE tax system, equity might become a more preferred source of finance than debt either whether the home country implements an exemption system or a worldwide tax system. The neutrality implications will also depend on the corporate tax rate in both countries and on the corporation's deferral and other tax-planning strategies. A similar conclusion resulted from the discussion on corporate cash-flow tax issues in an international context (see Chapter 7).

Finally, the location of investment and the allocation of profits across different jurisdictions continue to be distorted under all corporate tax type of tax systems that are discussed in this report except under the destination-based corporate cash-flow tax.

Tax complexity

The enormous complexity of the corporate income tax system, which results in high compliance costs for corporations and administrative and enforcement costs for governments, provides another motive for fundamental corporate tax reform. In fact, the complexity of the corporate income tax system often provides corporations with an opportunity to engage in tax-planning and tax-sheltering activities. On the other hand, it might be naïve to believe that governments can implement simple corporate tax systems given the increased complexity of the globalizing business environment. The complexity of the tax code and the distortions created by the corporate income tax system are therefore closely linked.

Fundamental reform might be an option to tackle jointly the complexity and the reduced efficiency of current corporate income tax systems. Corporations point to the international corporate income tax rules, the accrual accounting rules, the capitalisation of assets and the sensitivity to timing to be the main sources of corporate income tax

complexity and therefore of corporate compliance costs. Other important sources of tax complexity are the different tax treatment between debt instruments and all other financial instruments as equity, the existence of different types of legal forms that are taxed differently, the tax rules with respect to business restructurings and the tax rules with respect to the transfers of business assets.

In many countries, governments might also attempt to reduce corporate tax compliance costs without having to reform their corporate income tax system fundamentally. For instance, corporate tax compliance costs might be reduced by increasing the conformity between taxable income and income used for financial accounting purposes, by changing the tax rules less frequently and by keeping the rules as simple as possible.

Efficiency under fundamentally reformed corporate tax systems

	Corporate tax-induced distortions/neutral corporate tax treatment										
	Debt >< equity				New equity >< retained earnings					Depreciation	
			Corporate tax + personal level taxes (domestic)				Corporate tax + personal level taxes (domestic)				
	Corporate level: domestic	Corporate level: international[1]	Capital gains taxed upon accrual	Capital gains taxed upon realisation or at a lower rate	Corporate level: domestic	Corporate level: international[1]	Capital gains taxed upon accrual	Capital gains taxed upon realisation or at a lower rate		Tax >< economic depreciation	Impact of inflation on depreciation
								Normal return	Economic rents		
CIT in most countries	D	D	D	D	N	N	N	D	D	P	P
Full imputation	D	N/D	N	D	N	N	N	D	D	P	P
ACE/ACC	N	N	N	D	N	N	N	D	D	N	N
ACC + PCIT	N	N	N	N	N	N	N	N	N	N	N
ASE	D	D	N	N	N	N	N	N	D	P	P
Shareholder ACE	D	N/D	N	N	N	N	N	N	D	N	N
CBIT	N	N	N	N	N	N	N	N	N	P	P
Corporate cash-flow	N	N	N	D	N	N	N	D	D	N	N

D = distorted, N = neutrality, P = possibly neutral, PCIT = presumptive capital income tax.
1. Only the host country's corporate tax rate is considered.

Corporate cash-flow tax reform

The corporate income tax system might be replaced by a corporate cash-flow tax system. This would offer many advantages. Under a corporate cash-flow tax, income is taxed only when cash is received and costs are deductible immediately when purchases are made. The capitalisation of assets is therefore no longer required due to the immediate expensing of the investment and the economic depreciation of assets no longer has to be measured. Different investment projects are therefore no longer taxed in different ways and many of the complex timing-related problems of current corporate income tax systems are avoided. Moreover, no inflation accounting is required and the tax code no longer influences the realisation of the corporation's capital gains.

Because the normal return on equity and the interest payments are not effectively taxed at the corporate level, a corporate cash-flow tax does not distort the choice between debt and equity and between newly issued equity and retained earnings at the corporate level. Only

economic rents are effectively taxed under a corporate cash-flow tax. There is no double taxation of the normal return on equity. However, economic rents are taxed both at the corporate and at the shareholder level. This type of tax reform might reduce the cost of capital of marginal equity-financed investment. This might result in increased domestic and foreign corporate investment. Excessive (corporate tax-induced) debt financing of investment will not be a problem; thin capitalisation rules are therefore no longer required. The corporate cash-flow tax system however continues to distort the corporation's decisions that depend on the average corporate tax burden as, for instance, location decisions.

However, a corporate cash-flow tax reform does raise new problems. It implies major adjustments for corporations and tax authorities compared to a corporate income type of tax reform. Moreover, the immediate expensing of investment will imply a reduction in corporate tax revenues. This loss in revenue will be severe especially during the first years after the introduction of the tax but tax revenues might be lower in the long run as well. Complex transitional rules might be required to compensate for this loss in tax revenue in the shorter run. Transitional rules will also have to be considered with respect to the tax treatment of existing capital assets. Moreover, new loopholes might arise and the implementation of cash-flow taxes might create problems with respect to the existing international tax agreements.

Neutrality of the corporate cash-flow tax also requires that the corporate tax rate is kept constant over time. Moreover, corporate cash-flow tax systems do not implement full neutrality between debt and equity and between newly issued equity and retained earnings if capital gains at the personal level are taxed upon realisation instead of upon accrual. Full neutrality will only be achieved if savings are not taxed at the personal level or if savings receive consumption tax treatment at the personal level as well (but even then, capital gains would have to be taxed upon accrual). Otherwise, equity will be tax-preferred to debt as source of finance.

Countries might implement either a destination-based or an origin-based corporate cash-flow tax. A destination-based corporate cash-flow tax provides reduced incentives to corporations to locate in low-tax jurisdictions and it avoids transfer pricing problems. However, it does not tax the normal return and the economic rents on domestic or foreign-owned domestic capital consumed abroad. Yet, the taxation of income flowing abroad was one of the important objectives of a corporate tax. A destination-based corporate cash-flow tax might imply a reduction in tax revenues for exporting countries. Net importing countries, on the other hand, might gain. However, countries that create a lot of economic rents by exporting goods, and if these economic rents are consumed at home, might raise a lot of tax revenue. Moreover, destination-based taxation requires border controls to check whether goods actually have been exported and to ensure that imported goods are taxed.

In fact, most countries already have a destination-based tax system in the form of the VAT that could be applied to replace the corporate income tax. By increasing the VAT rates and reducing social security contributions – the VAT does not only tax the corporate cash-flow but wages as well – governments might have an opportunity to abolish the corporate income tax.

An origin-based corporate cash-flow tax does tax the return on foreign-owned domestic capital, and it requires no border controls. However, transfer pricing problems will be present and a source-based corporate cash-flow tax will be sensitive to tax competition, as corporations face a tax-induced incentive to produce in jurisdictions where they face the lowest tax rate.

Fundamental corporate income tax reform

A fundamental corporate income type of tax reform can take different forms. The main characteristics and implications of the different types of corporate income tax systems will be briefly summarised below (see also the summary table in the appendix), but they all have in common that they attempt to solve the differences in the tax treatment of debt and equity.

A corporate income type of tax reform probably involves less complex adjustments than a corporate cash-flow type of tax reform. On the other hand, fundamental corporate income tax reforms do not resolve the complexities caused by accrual accounting, the capitalisation of assets and the required inflation accounting and the tax treatment of corporate capital gains, which is achieved under a corporate cash-flow tax.

Full imputation systems provide full integration of the corporate income tax on distributed and retained profits with the capital income tax on the return to equity at the shareholder level. As a result, full imputation systems allow for neutrality between debt and equity in a closed-economy setting. However, if non-residents do not obtain a tax credit in the host country (and not in the home country either), the host country's imputation system does not reduce the cost of capital for firms that raise their funds on the international equity market.

The allowance for corporate equity (ACE) tax system provides a deductible allowance for corporate equity in computing taxable corporate profits, similarly to the deduction of interest payments in corporate income tax systems. The ACE tax system does not distort the choice between debt and equity as source of finance at the corporate level. The cost of capital of (marginal) equity-financed investment might decrease because the normal return on equity is not taxed at the corporate level. This might have a positive effect on domestic and foreign corporate investment. Excessive debt financing of investment will not be stimulated; thin capitalisation rules are therefore not required under the ACE tax system. Moreover, the ACE also offsets the differences between tax depreciation and the actual economic depreciation of the asset, as is the case under a corporate cash-flow tax.

However, the ACE tax system will not implement full neutrality between debt and equity and between newly issued equity and retained earnings if capital gains are taxed upon realisation instead of upon accrual. Being similar to the outcome under a corporate cash-flow tax, full neutrality (with respect to the marginal source of finance) will only be achieved if savings receive consumption tax treatment at the personal level as well. Moreover, corporate tax revenues will decline if the corporate tax rate does not increase to compensate for the ACE allowance. However, an increase in the corporate tax rate will have negative effects on investment and on the location decisions of (especially) profitable corporations and it will increase the transfer pricing problems. If the ACE allowance is financed by a corporate tax rate increase, the reduction in the effective corporate tax levied on the less profitable firms' profits will be financed by an increase in the effective corporate tax rate levied on the profits of the more profitable firms. In order to prevent the adverse effects of a corporate tax rate increase, governments might try to find other ways to finance the ACE allowance.

Tax authorities might decide to provide the allowance for corporate equity at the shareholder level instead. The corporate income tax then continues to be a withholding tax even on the normal return on equity. In fact, governments might achieve this in two ways. Under the shareholder allowance for corporate equity tax system, the ACE would be

transformed into a tax allowance that offsets the capital income taxes at the shareholder level. In order for the shareholder ACE to have the same implications as a corporate cash-flow tax, the corporate income tax rate will have to be equal to the capital income tax rate at the personal level. Or, instead of providing an allowance per share, governments might provide a tax credit, which equals that part of the ACE that is assigned to each share multiplied by the corporate tax rate. This tax system is referred to as the shareholder credit for corporate equity tax system.

The allowance for shareholder equity tax system introduces a tax-deductible allowance for the normal return on equity at the shareholder level. The part of the dividend or the capital gain that corresponds to the "normal" rate of return is tax-free in the hands of the shareholder and the rents are subject to a shareholder-level tax. The corporate tax rate continues to function as the backstop to the personal income tax also under the ASE tax system. The ASE tax system is therefore an interesting position between a full imputation system and a classical tax system. Under this corporate income tax system, there is no debt-equity distortion in a closed-economy. In fact, the ASE tax system does not require expenditure tax treatment of savings at the personal level in order to obtain full neutrality with respect to the marginal sources of finance in a closed-economy. Moreover, the cost of capital of (marginal) equity-financed investment might decrease, which will stimulate investment by the residents of the country that implements the ASE tax system.

However, in order to obtain the neutrality features of the ASE tax system, the corporate tax rate has to be equal to the personal income tax rate on interest payments. Moreover, shareholders may prefer to receive economic rents in the form of capital gains rather than as dividends, which implies that the external *versus* internal equity choice is distorted for investments that generate economic rents (these conclusions are also true for the shareholder ACE tax system). The ASE tax system does not have any fundamental impact on the preferred sources of finance and uses of profits of foreign personal and corporate investors. Thin capitalisation problems and transfer pricing problems might be present under the ASE tax system. Corporate tax revenues will decline because of the ASE allowance, but probably less than under the ACE allowance because the normal return on foreign-owned equity-financed investment continues to be taxed under the corporate income tax; it would escape taxation under the ACE tax system. On the other hand, corporate tax revenues might decline even more because the personal income tax rate that is levied on interest payments has to be equal to the corporate income tax rate. This might put the tax revenues under pressure, especially in an international environment where the corporate income tax rate might continue to decrease.

The CBIT tax system implements neutrality between debt and equity in a different way. Under the CBIT, the government does not allow for the deduction of interest payments and the normal return on equity from taxable corporate earnings. The investment's return is, however, not taxed again at the personal level. The CBIT tax system is fully neutral with respect to the choice between debt and equity and between newly issued equity and retained earnings (for both the normal return and the economic rents). Excessive (corporate tax-induced) debt financing will not be stimulated; thin capitalisation rules are therefore not required.

The CBIT type of tax reform increases the cost of capital of debt-financed investment, which may drive corporations into bankruptcy. On the other hand, when the absence of additional personal income taxes are considered as well, the total tax burden on domestic

debt and equity-financed investment might decrease, which will have a positive impact on the overall domestic investment in the country. However, the tax reform will not have a positive impact on foreign direct investment, because foreigners will have to pay corporate taxes also on the interest payments they receive while the tax system in their country of residence will not necessarily have changed. Moreover, the CBIT would have to be phased-in over time to avoid bankruptcy problems. Tax revenues might be expected to decrease because capital income is no longer taxed at the personal level. Corporations have been successful in designing tax-planning (tax-avoidance) strategies that minimize the corporate tax liabilities. The CBIT tax system might therefore be as vulnerable to tax-planning as current corporate income tax systems. In order to limit the incentives for tax-avoidance, the CBIT might be expected to work only if a rather low corporate tax rate is levied. This, however, will decrease tax revenues even further.

This report has also demonstrated that fundamental tax reform does not necessarily lead to the desired outcome if only the taxes at the corporate level are considered. The outcome of fundamental corporate income tax reform will also be determined by the personal level taxes – both for residents and foreigners – and by the foreign corporate tax system. Moreover, the tax burden on different legal forms, especially of unincorporated businesses, would have to be considered as well. The corporate tax rate is a key factor in the success of fundamental corporate tax reform as well. A tax reform that has desirable neutrality implications but which requires a high tax rate in order to raise a sufficient amount of tax revenue might have more negative than positive effects.

ISBN 978-92-64-03811-0
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Tax Glossary

Accelerated depreciation allowances: when (actual) tax depreciation allowances are more favourable than economic depreciation allowances.

Accrual-basis (accrual) accounting: income is taxed when it is earned – not when cash is received – and expenses are deducted when they are incurred – not when cash is paid.

Actual tax depreciation allowances: the depreciation allowances prescribed by the tax code.

Allowance for corporate equity (ACE) tax system: tax system that allows for a deductible allowance for the normal return on corporate equity at the corporate level.

Allowance for shareholder equity (ASE) tax system: tax system that allows for a deductible allowance for the normal return on the shareholder's equity at the shareholder level.

Arm's-length price: a price charged in transactions between related parties that correspond to the (market) price that would be charged in transactions between unrelated parties.

Average effective tax rate: the taxes that effectively have to be paid as a proportion of the income.

Branch: part of a firm that is not separately incorporated.

Capital export neutrality: when investors bear the same tax burden on their domestic and foreign investments.

Capital import neutrality: when all investors in a country bear the same tax burden.

Carry-over: the transfer of tax attributes, such as tax losses and foreign tax credits, to a previous tax year (carry-backward) or a future tax year (carry-forward).

Cash-basis (cash-flow) accounting: income is taxed when cash is received and expenses are tax-deductible when cash is actually paid.

Closely-held corporation: a corporate firm that is owned by controlling shareholder(s).

Comprehensive business income tax (CBIT) system: tax system that taxes all corporate earnings at the corporate level; interest payments are not tax-deductible.

Controlling shareholder: a shareholder who holds a controlling amount of shares (*e.g.* 5 per cent) of the corporate firm.

Corporate cash-flow tax: tax on the corporation's earnings which are determined according to the cash-flow accounting rules; no distinction is made between investment expenses and other business expenses.

Corporate income tax: tax on the corporation's profits which are determined according to the accrual-basis accounting rules.

Corporation: a firm that has a separate legal identity from its owner(s).

Cost of capital: the minimum required real rate of return an investment must earn in order to yield the investors' opportunity return on the invested funds.

Declining-balance depreciation: if the cost of the asset is written down for tax purposes by an amount that declines exponentially over time.

Deferral of tax: a tax strategy whereby tax liability may be deferred or postponed for some period of time.

Depreciation (tax depreciation) allowances: a deduction that a firm may make from taxable earnings to reflect the reduced value of its assets.

Destination-based tax: the tax levied on commodities in the country where the consumption of the goods and services takes place.

Double-dip situation: when tax relief is obtained in more than one country for the same expense, for instance with respect to the deduction of interest payments from the corporate tax base.

Dual income tax: tax system that taxes capital income at a single rate and labour income at higher rate(s).

Economic depreciation: the actual (physical) fall in value of the asset in a given period.

Economic depreciation allowances: the depreciation allowances that compensate for the actual fall in value of the asset in a given period.

Economic rents: the return on equity in excess of the normal return.

Excess burden (efficiency loss, deadweight loss) of a tax: the reduction in the taxpayers' welfare above the welfare loss as a result of the income reduction due to payment of the tax.

Exemption method: the country of residence taxes its residents on their domestic-source income but exempts their foreign-source business income from domestic tax.

Foreign tax credit: taxes paid on income in the source country may be credited against the residence country's taxes on the resident taxpayer's foreign-source income.

Full integration (imputation) tax system: a tax system that allows individual taxpayers to reduce the taxes on capital income at the personal level by the corporate taxes that effectively have been paid on that capital income.

Home country: residence country: country where (personal or corporate) taxpayer resides.

Horizontal equity: the principle that states that taxpayers in "similar circumstances" should pay the same amount of taxes.

Host country: source country: country where income is earned.

Immediate expensing: if the cost of the investment can immediately be deducted from taxable earnings.

Intangible assets: assets belonging to a business which are not material. Investment in intangible assets refers to investment in research and development, advertising and other marketing expenses, and company training.

Lock-in effects and capital gains taxation: because capital gains are taxed usually only when they are realised, the capital gains tax discourages the realisation of capital gains. Agents induced to hold appreciated assets because of capital gains tax when they otherwise would sell are said to be "locked in".

Loophole: opportunities available in the tax law that allow taxpayers to reduce their tax burden.

Marginal effective tax rate: the additional tax that has to be paid on the last unit of investment.

Neutral taxes: taxes that have no excess burden.

Normal rate of return on equity: the return on equity that corresponds to the return (interest rate) that can be earned on debt.

Origin-based tax: tax levied on commodities in the country where the goods and services are produced.

Parent corporation: a corporation that controls another corporation.

Presumptive capital income tax: a proportional tax levied on a predetermined return, irrespective of the savings' and investments' actual return.

Profit shifting: the artificial movement of profits between jurisdictions, for example by manipulating prices or debt levels.

Proprietor: the owner of an unincorporated firm.

Proprietorship: an unincorporated firm owned by a single individual or family.

R-base corporate cash-flow tax: cash-flow tax that includes only real transactions in the cash-flow tax base.

R+F-base corporate cash-flow tax: cash-flow tax that includes real transactions and non-equity financial transactions in the cash-flow tax base.

Race-to-the-bottom tax competition: situation that leads to very low tax rates in the countries that compete over taxes.

Residence-based tax: the tax levied by the country in which the owner of the domestic and foreign-source income is resident for income tax purposes.

Residence-based tax system: resident taxpayers are taxed upon their worldwide income, irrespective of the country where this income is earned.

Residence country: host country: country where (corporate or personal) taxpayer resides.

Retained earnings: the after-tax profits that are not distributed to the shareholders as dividends but that are reinvested in the firm.

Shareholder allowance for corporate equity tax system: tax system that allows for a deductible allowance for the normal return on corporate equity at the shareholder level.

Shareholder credit for corporate equity tax system: tax system that allows for a deductible credit for the normal return on corporate equity at the shareholder level.

Source-based tax: the tax levied in the (source) country where the income arises.

Source country: host country: country where income is earned.

Straight-line depreciation: if the historical cost of the asset is written down for tax purposes by a fixed percentage of the cost of the investment in each year.

Subsidiary: a corporation that is controlled by another corporation.

Tax allowance: amount that can be deducted from the tax base.

Tax-arbitrage behaviour: when economic agents change their saving and investment behaviour in order to minimise their tax liabilities (to maximise the tax advantages offered by the tax authorities).

Tax burden: the claim on consumption, income or wealth resulting from the imposition of a tax.

Tax compliance: the extent to which taxpayers comply with tax laws.

Tax compliance costs: monetary and non-monetary costs that taxpayers face in complying with the tax code.

Tax credit: an amount that can be deducted from the amount of tax due.

Tax enforcement: the extent to which tax authorities make sure that tax rules are obeyed.

Tax expenditure method: method that allows for the deduction of savings from the tax base but the savings augmented by their return are included in the tax base when the benefits become available.

Tax incidence: the amount of the tax burden on different taxpayers once the effects of the tax are accounted for.

Tax planning: activities undertaken by the firm in order to minimize its tax liabilities.

Tax prepayment method: method that does not allow for the deduction of savings from the tax base, but the savings augmented by their return will not be taxed.

Tax (of capital gains) upon accrual: capital gains are taxed when the value of the share(s) increases, irrespective of whether the shares are sold (so irrespective of whether the capital gains have been realised).

Tax (of capital gains) upon realisation: capital gains are taxed when the shares are sold.

Thin capitalisation rules: the rules that limit the fraction of the investment that may be financed by debt, particularly from related companies and/or foreign countries.

Tobin's q: the (marginal) increase in value of the firm's equity as a result of a marginal unit of investment.

Transfer pricing rules: rules that ensure that prices on transactions between related parties do not deviate strongly from the prices that would be set on market transactions between unrelated parties.

Vertical equity: the principle that states that taxpayers with "the better circumstances" should bear more of the tax burden.

Withholding tax: tax on income imposed at source usually by a third party that is obliged to reduce its payments by the amount of the tax and to remit the funds to the government in the source country.

Worldwide tax system: resident taxpayers are taxed upon their worldwide income, irrespective of the country where this income is earned.

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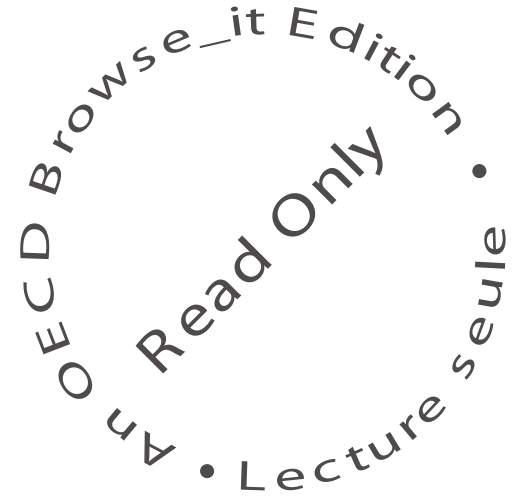

OECD PUBLICATIONS, 2, rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(23 2007 06 1 P) ISBN 978-92-64-03811-0 – No. 55875 2007

OECD Tax Policy Studies

Fundamental Reform of Corporate Income Tax

Policymakers in OECD countries are concerned about whether they can maintain their current levels of corporate income tax revenues and how they can create an attractive investment climate for domestic and foreign investors. They are also concerned about the distortions induced by their corporate income tax systems and are looking for ways to reduce corporate income tax complexity. These goals can be achieved through fundamental corporate income tax reform.

This report presents the recent trends in the taxation of corporate income in OECD countries and discusses the main drivers of corporate income tax reform and evaluates the gains of fundamental corporate tax reform. The corporate tax-induced distortions are discussed from a domestic and international tax point of view. This study also considers tax revenue and tax complexity issues.

Countries can fundamentally reform their corporate income tax systems in different ways. Governments might implement a full imputation tax system, a corporate allowance for corporate equity (or capital) tax system, a shareholder allowance/credit for corporate equity tax system, an allowance for shareholder equity tax system or a comprehensive business income tax system. Or, instead of taxing corporate income, governments might implement a corporate cash-flow tax. In that case, countries might implement a destination-based corporate cash-flow tax or an origin-based corporate cash-flow tax (the Hall-Rabushka flat tax, the Bradford X-tax, and Zodrow and Mc Lure's two-tier progressive rate cash-flow tax). These fundamental corporate tax reform proposals are discussed in detail.

No. 16

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ISBN 978-92-64-03811-0
23 2007 06 1 P