

Taxing Capital Income: Options for Reform in Australia

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9.0 Introduction

Income from capital can take many forms such as interest, dividends, capital gains, business profits, royalties, rental income from property, and imputed rent from owner-occupied housing. Much of capital income is difficult to tax. Difficulties in taxing capital income arise both from technical issues such as measurement of economic depreciation and inflation adjustments, and from political obstacles such as resistance to taxing owner-occupied housing. As a result, capital income tax systems, including Australia's, are typically highly complex, incoherent, distortionary and discriminatory.

In an international context, Australia's tax system stands out by relying rather heavily on capital income taxes. In this chapter we review and evaluate the current system of capital income taxation in Australia and discuss a number of options for reform. We start in section 9.1 by noting some important features of the Australian economy which must be kept in mind when designing taxes on capital income. In section 9.2 we compare the main characteristics of the Australian tax system to the tax systems in other OECD countries and describe some recent trends in international tax policy. As a basis for evaluating the current tax system, section 9.3 explains a number of key findings in the theoretical and empirical literature on the effects of capital income taxes in a small open economy. Against this background, section 9.4 takes a closer look at the current Australian capital income tax system and the various distortions that it causes. The section ends by concluding that the system is ripe for reform. Section 9.5 therefore lays out some guiding principles for a future capital income tax reform, and section 9.6 reviews a number of alternative options for fundamental reform. Section 9.7 provides a more detailed discussion of the reform options that seem most promising to us, namely a source-based business income tax that allows a deduction for the normal return to capital and a so-called dual personal income tax which combines progressive taxation of labour income with a low, flat tax rate on all capital income. Since natural resource rents make up a non-negligible share of Australian national income, section 9.8 discusses possibilities for streamlining the taxation of land and natural resources. Section 9.9 summarises the main conclusions of this chapter.

9.1 The Australian Economy

Australia is a small, resource rich, open economy. Over the past three decades, the Australian economy has experienced a significant structural shift. One of the most significant sectoral trends has been the substantial growth in the services

sector, particularly finance, insurance, property and business services, and a decrease in the manufacturing sector. This growing trend towards services will be an important consideration for the taxation of capital income. In particular, these trends suggest that the taxation of financial instruments and intangibles, which has proven to be difficult in the past, will be of increasing importance in the future.

Another significant change over the past thirty years has been globalisation. Despite its geographic isolation, Australia is a relatively open economy. Multinational firms account for a significant amount of economic activity, while trade flows and inward and outward investments are large and continue to grow.

In particular, the stock of foreign inbound investment in Australia has grown significantly over the past twenty years (see Figure 9.1). In 1988, foreign investment was around 51 per cent of GDP, by 2007 it had increased to just under 120 per cent of GDP. This rapid increase in foreign investment has been driven by an increase in portfolio equity and portfolio debt.

Over the period, foreign direct investment (FDI) has remained around 20 to 35 per cent of GDP. Most of Australia's inbound FDI is from the United States (25 per cent), United Kingdom (17 per cent) and Japan (7 per cent). Overall, non-residents own around 30 per cent of equity in Australian companies and around 50 per cent of equity in the mining sector. In 2006–07 approximately AUD21 billion in company income tax and resource taxes and royalties could be attributed to non-resident investors (Australian Treasury 2008).

Australia's stock of FDI as a percentage of GDP is low compared to many developed economies. For example, in 2007 Australia's stock of FDI as a percentage of GDP was around 34.4 per cent, ranking it at 27 of the thirty-seven developed economies. This was below New Zealand (55.6 per cent, ranked 14th), the United Kingdom (48.6 per cent, ranked 17th) and Canada (36.5 per cent, ranked 25th) (UNCTAD 2008).

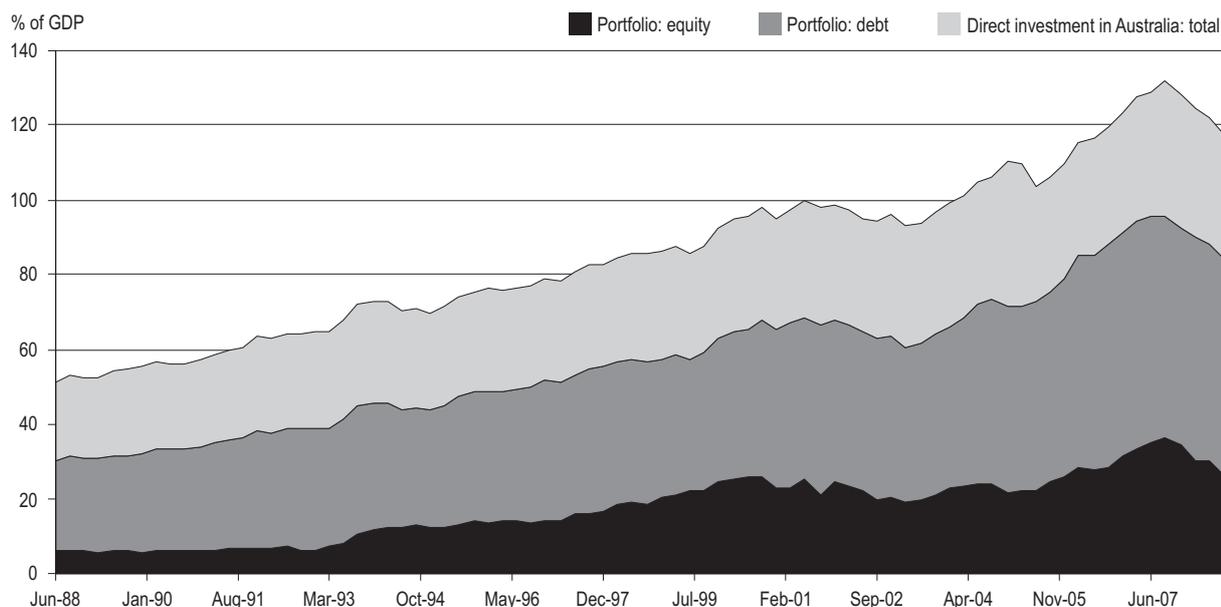
There are two important factors to keep in mind when designing a robust future system of capital income taxation for Australia:

- » natural resource rents make up a non-negligible part of total income; and
- » non-resident capital owners play a significant role in the Australian economy.

In designing a robust capital income tax system for Australia, the challenges associated with the ageing of Australia's population are also an important consideration.

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Figure 9.1 Inbound Foreign Investment in Australia by Type



Source: ABS cat. no. 5302.0.

The *Intergenerational Report 2007* (Australian Treasury 2007) highlighted the profound demographic changes Australia may face over the next forty years. The ageing of the Australian population is expected to slow economic growth, through lower labour force participation, and lead to increased spending in health and aged care, and on the age pension. This will increase pressure on Australia's tax and transfer system.

Enhancing opportunities for real economic growth is a key to meeting these future challenges. One important component of this is ensuring the tax system, as much as possible, does not impede the level and productivity of investment in Australia.

9.2 The Australian Tax System in an International Perspective

9.2.1 Special Features of the Australian Tax System: the Importance of Capital Income Taxes

Australia is considered a relatively low tax country. In 2006, Australia's tax-to-GDP ratio was around 30.6 per cent (OECD 2008), the eighth lowest among OECD Member countries; similarly government expenditure is also below the OECD average. In using these measures Australia appears to be a low tax, low expenditure country though this is to some degree a result of the highly targeted nature of the Australian tax and transfer system with the means testing of benefits.

The Australian tax mix is broadly similar to most OECD countries (Warburton & HENDY 2006). Around 64 per cent

of Australia's tax revenue is from direct taxation on incomes. This compares to the OECD average of around 62 per cent (OECD 2008). While there are similarities at the aggregate level there are significant differences for specific taxes, particularly in relation to taxes on capital income.

Sørensen (2007) attempts to estimate the importance of capital income taxes in the structure of OECD countries using official OECD revenue statistics data. As OECD revenue statistics do not decompose taxes on personal income into taxes on capital income and taxes on labour income, Sørensen splits personal income taxes on capital income by assuming that taxes on personal capital income equal the capital income share of household income.¹ This decomposition implicitly assumes that capital income and labour income are taxed at the same rate.

As shown in Table 9.1 (taken from Sørensen 2007), Australia is one of only two countries that does not levy social security taxes which typically apply to labour income only. In addition, Australia has a significantly higher reliance on company tax compared to other OECD countries. This higher reliance probably reflects a number of factors including a higher level of rents in the Australian economy (particularly resource rents) and a high level of incorporation (see section 9.2.2).

Table 9.2, again based on Sørensen (2007), attempts to more accurately split out personal taxes on capital income by adjusting the estimates to account for many of the concessions applying to capital income.² The results show that the revenue share of personal taxes on capital income is low in all countries examined, with Germany, the United Kingdom and Spain all having virtually no

1 As noted in Sørensen (2007), personal taxes on capital income were estimated by multiplying total personal tax revenue by one minus the estimated labour income share of total household income in 2000. The labour income share of total household income was produced by Carey and Rabesona (2004) who decomposed the business income of the self-employed into an imputed labour income and a residual categorised as capital income.

2 As noted in Sørensen (2007), personal capital taxes (excluding Australia) are estimated by adjusting for the estimated tax reductions due to tax preferences for household saving through pension funds and life insurance companies, reduced or no taxation of the imputed rent from owner-occupied housing,

taxation on personal capital income. Australia has a significantly higher reliance on taxes on capital compared to the other countries examined, with the exception of the United States (however, the estimates for the United States were based on the tax rules prevailing before measures were introduced to provide relief for the double taxation of dividends).

The main driver for Australia's higher reliance on capital taxes is a higher reliance on corporate income tax. As mentioned, this reflects a number of factors including a high level of incorporation and the inclusion of resource rent taxes. However, when taxes on superannuation fund earnings are included as a tax on personal capital income, Australia also has a relatively higher reliance on personal capital taxes.

Table 9.1 Tax Structures in OECD Countries (% of Total Tax Revenue, 2004)

	Taxes on capital				Other taxes					
	Personal capital income taxes ^a	Taxes on corporations	Taxes on property	Total capital taxes	Personal labour income taxes ^b	Social security taxes	Payroll taxes	Total labour taxes	Taxes on goods and services	Other taxes
United States	9.4	8.7	12.0	30.1	25.3	26.3	–	51.6	18.3	–
Japan	2.5	14.2	10.0	26.7	15.3	37.7	–	53.0	20.0	0.3
Germany	8.0	4.5	2.5	15.0	14.8	40.7	–	55.5	29.2	0.0
France	5.8	6.3	7.6	19.7	11.2	37.1	2.6	50.9	25.6	3.6
Italy	10.2	6.9	6.1	23.2	15.2	30.3	–	45.5	26.4	5.5
United Kingdom	6.6	8.1	12.0	26.7	22.1	18.8	–	40.9	32.0	–
Canada	4.2	11.4	10.2	25.8	30.9	15.2	2.0	48.1	25.9	0.2
Australia	7.2	18.2	8.7	34.1	33.0	–	4.4	37.4	28.5	–
Austria	5.8	5.4	1.3	12.5	18.2	33.9	6.1	58.2	28.2	0.9
Belgium	9.5	8.0	3.9	21.4	21.1	31.3	–	52.4	25.0	0.0
Czech Republic	3.8	12.4	1.1	17.3	8.9	42.3	–	51.2	31.2	0.0
Denmark	7.1	9.7	3.8	20.6	43.6	2.4	0.4	46.4	32.7	0.0
Finland	6.1	8.1	2.6	16.8	24.4	26.8	–	51.2	31.7	0.1
Greece	6.8	9.4	4.4	20.6	7.0	34.7	–	41.7	37.1	–
Ireland	4.4	11.9	6.9	23.2	23.0	15.0	0.6	38.6	37.8	–
Korea	1.0	14.3	11.3	26.6	12.6	20.7	0.2	33.5	36.3	3.5
Netherlands	5.4	8.2	5.3	18.9	11.0	36.9	–	47.9	32.0	0.4
New Zealand	9.8	17.2	5.0	32.0	34.2	–	–	34.2	33.8	–
Norway	4.7	22.6	2.6	29.9	18.8	21.6	–	40.4	29.7	–
Portugal ^c	1.9	8.3	4.6	14.8	14.0	31.8	–	45.8	38.6	0.5
Spain	3.2	9.8	8.1	21.1	14.5	34.8	–	49.3	28.0	0.4
Sweden	5.3	6.3	3.1	14.7	26.1	28.4	4.7	59.2	25.8	0.1
Switzerland	3.1	8.6	8.5	20.2	31.7	24.4	–	56.1	23.7	–

Notes: (a) Total personal tax revenue multiplied by one minus the estimated labour income share of total household income in 2000. (b) Total personal tax revenue multiplied by the estimated labour income share of total household income in 2000. (c) Figures for 2003.

Sources: Sørensen (2007a), AFTS Review Panel (2008) and authors' calculations.

Table 9.2 Tax Structures Adjusted for Preferential Treatment of Personal Capital Income, in Selected OECD Countries (% of Total Tax Revenue, 2004)

	Taxes on capital				Other taxes					
	Personal capital income taxes ^a	Taxes on corporations	Taxes on property	Total capital taxes	Personal labour income taxes ^b	Social security taxes	Payroll taxes	Total labour taxes	Taxes on goods and services	Other taxes
United States	7.5	8.7	12.0	28.2	27.2	26.3	–	53.5	18.3	–
Germany	1.0	4.5	2.5	8.0	21.8	40.7	–	62.5	29.2	0.0
France	3.8	6.3	7.6	17.7	13.2	37.1	2.6	52.9	25.6	3.6
United Kingdom	0.3	8.1	12.0	20.4	28.4	18.8	–	47.2	32.0	–
Australia	6.0	15.9	8.7	30.6	36.5	–	4.4	40.9	28.5	–
Netherlands	3.4	8.2	5.3	16.9	13.0	36.9	–	49.9	32.0	0.4
Spain	0.1	9.8	8.1	18.0	17.6	34.8	–	52.4	28.0	0.4

Notes: (a) Figures from the first column of Table 9.1, adjusted for estimated tax reductions due to tax preferences for household savings through pension funds and life insurance companies, reduced or no taxation of imputed rent from owner-occupied housing, relief from double taxation of dividends, and flat tax rates on interest income. The estimated reductions were based on the tax rules prevailing in the period 1994–2000. (b) Figures from the fourth column of Table 9.1, adjusted for the shift in the tax burden from capital income to labour income implied by the preferential treatment of capital income mentioned in note a.

Sources: Sørensen (2007a), AFTS Review Panel (2008) and authors' calculations.

relief from double taxation of dividends, and flat tax rates on interest income. The estimated tax reductions were based on the tax rules prevailing in the period 1994–2000. Estimates for Australia were not available in Sørensen (2007). For Australia, the estimates in Table 9.2 were calculated based on actual revenue collections in 2004 (consistent with AFTS Review Panel 2008, p. 54). For Australia, an adjustment is also made to reallocate taxes on superannuation contributions and earnings as personal capital income taxes as opposed to taxes on corporations.

While Tables 9.1 and 9.2 provide a snapshot picture of the tax system, the sub-sections below briefly review the evolution over time of some key tax rates in Australia and abroad.

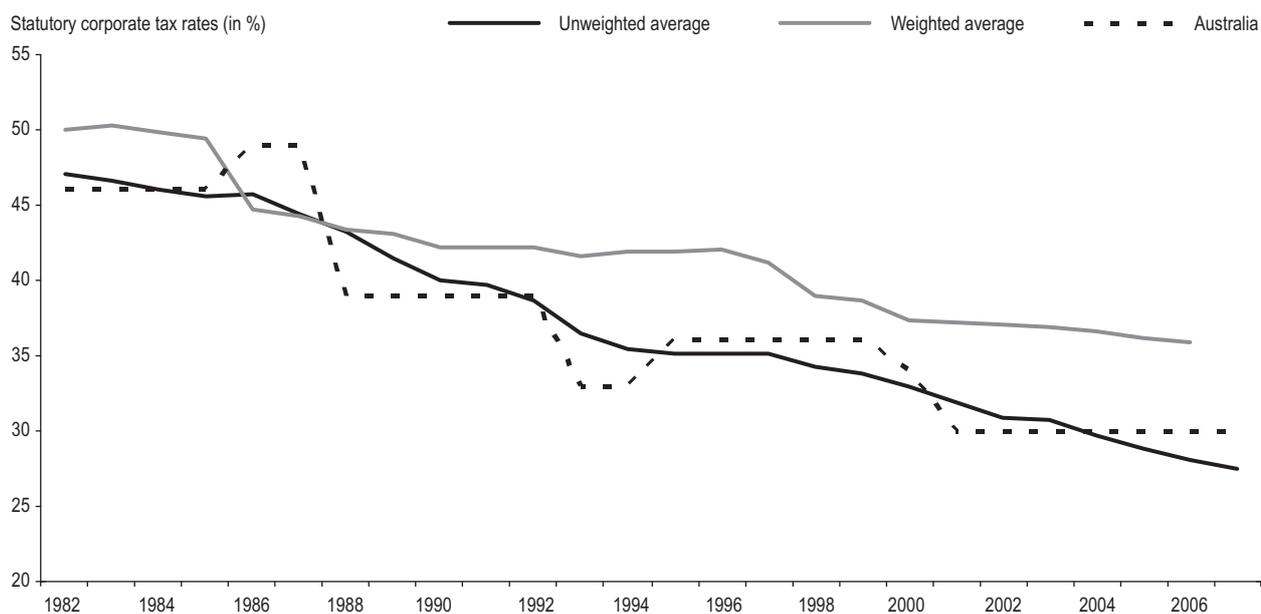
9.2.2 Company Tax

Company tax rates have been falling across the OECD over the past thirty years. As shown in Figure 9.2, the fall in the average corporate tax rate across the OECD has been fairly continuous, though most pronounced in the late 1980s. The unweighted average tax rate fell from around 47 per cent in 1982 to around 28 per cent in 2007. The weighted average, which is dominated by the United States and, to a

lesser extent, by Japan and the United Kingdom, has also shown a clear, although less pronounced, fall from around 50 per cent in 1982 to 35 per cent in 2006. The unweighted average tax rate falling faster than the weighted average implies smaller economies have been moving to reduce rates on source-based taxation.

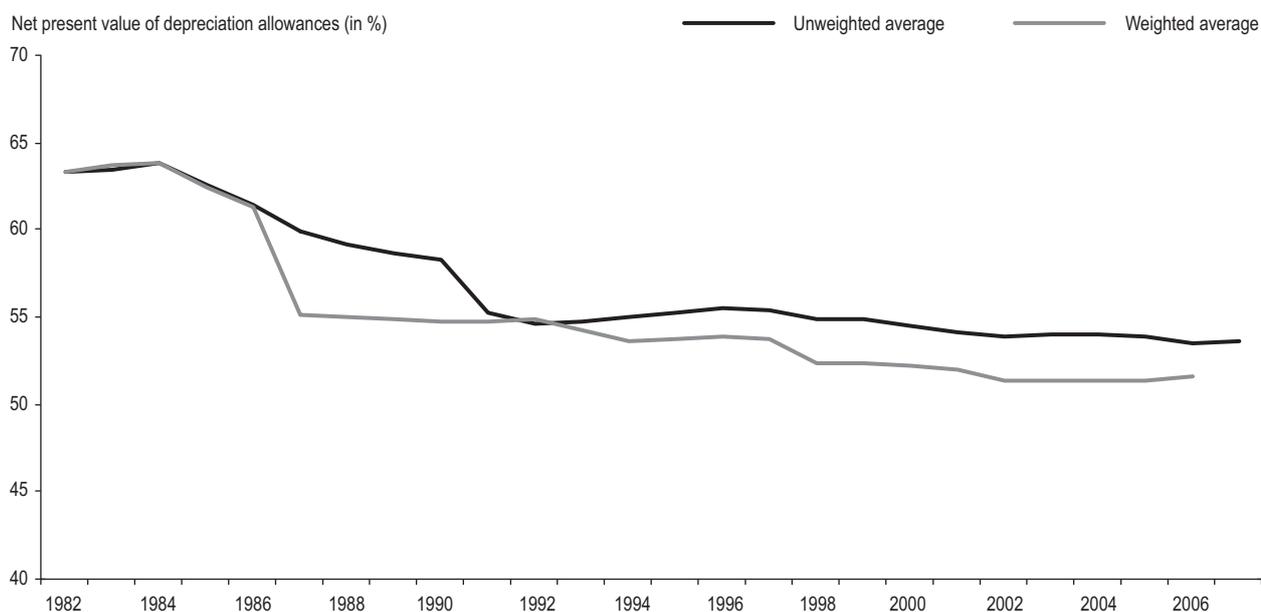
From 1982 to 2004, the Australian statutory company tax rate tended to follow the downward trend of the OECD unweighted average rate, with a few exceptions such as when the company tax and personal tax rates were aligned in 1987 with the introduction of the dividend imputation system. However, since 2004 the unweighted average rate has continued to fall while Australia's rate has remained at

Figure 9.2 Corporate Tax Rates in the OECD, 1982 to 2007



Source: Loretz (2008).

Figure 9.3 NPV of Depreciation Allowances in the OECD, 1982 to 2007

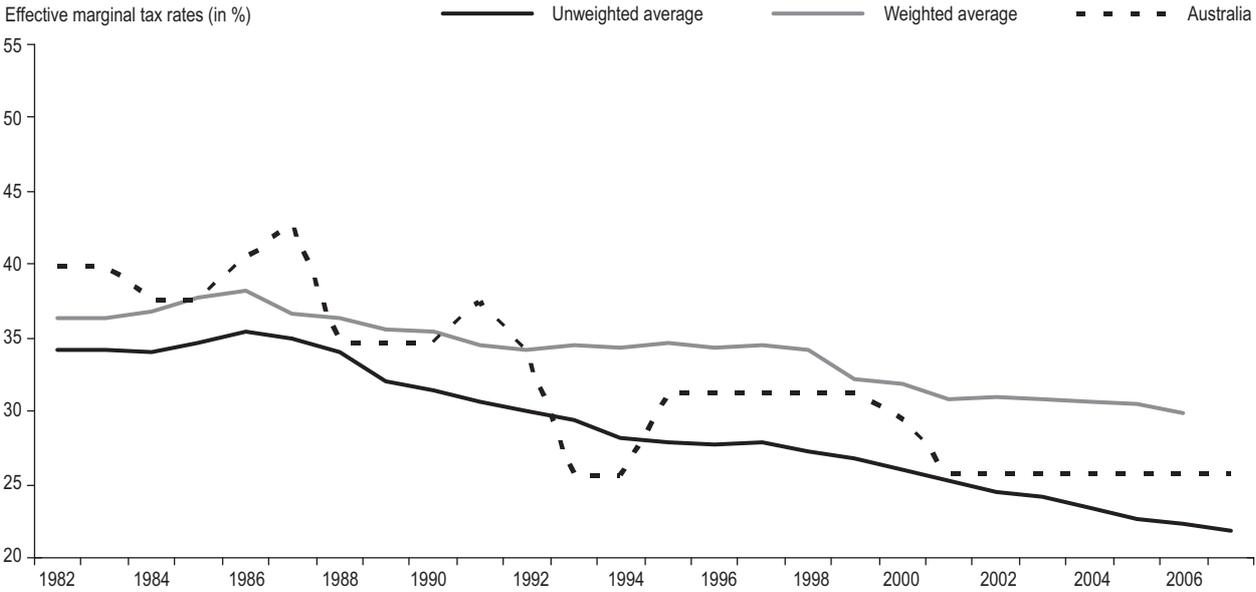


Source: Loretz (2008).

30 per cent. In 2001, when Australia reduced its statutory corporate tax rate to 30 per cent, it had one of the lowest rates in the OECD, but, since that time, most countries have continued to reduce their corporate tax rate, and as such, Australia now has one of the highest corporate rates among the OECD (ninth highest in 2007). In addition to having a relatively high company tax rate within the OECD, Australia's company tax rate is also high relative to some regional countries such as Singapore (20 per cent) and Hong Kong (16.5 per cent).

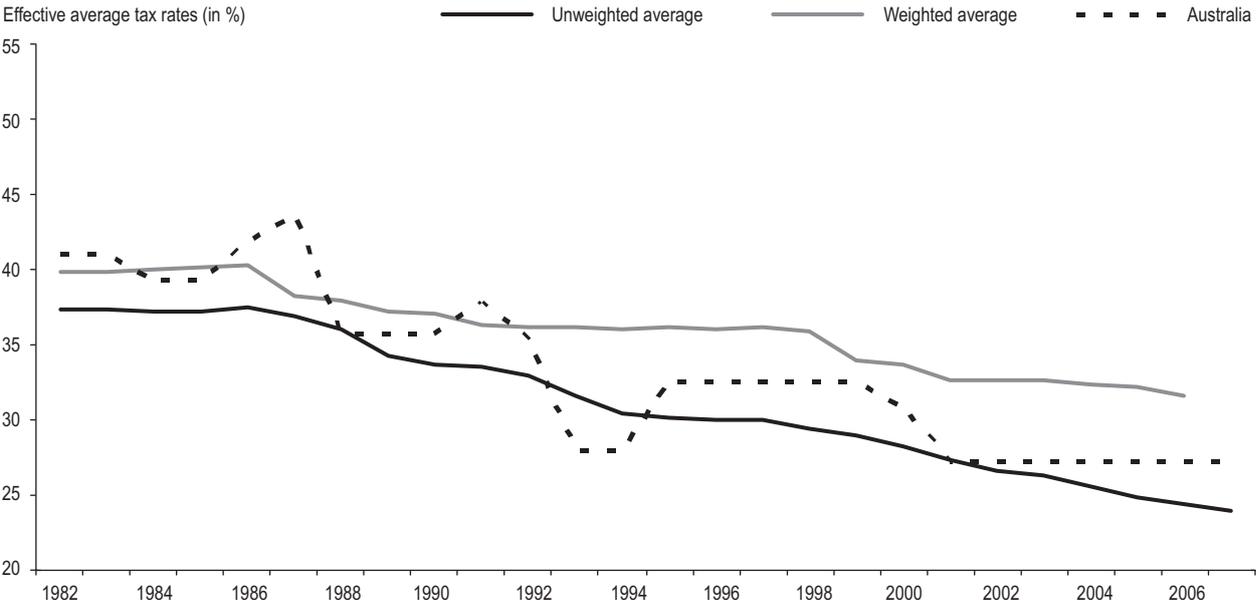
The decline in statutory tax rates across OECD Member countries has been accompanied by a broadening of the tax base with many countries reducing their tax depreciation rates. Figure 9.3 presents the NPV of depreciation allowances for general plant and machinery and industrial buildings³—a drop in the NPV represents a broadening of the tax base. Under this measure, it can be seen that there has been a clear trend towards a broadening of the tax base since the early 1980s across OECD countries. The weighted average shows a significant decline in the

Figure 9.4 Effective Marginal Tax Rates in the OECD, 1982 to 2007



Source: Loretz (2008).

Figure 9.5 Effective Average Tax Rates in the OECD, 1982 to 2007



Source: Loretz (2008).

3 The NPVs of capital allowances for general plant and machinery, and industrial buildings, are weighted equally.

mid-1980s reflecting the reforms to the US tax system in 1986. The unweighted average shows a more gradual downward trend, which suggest smaller countries widened their tax bases more gradually (Loretz 2008). Since the early 1990s the trend in base broadening has slowed down significantly, and Loretz suggests this indicates that it may be becoming increasingly more difficult to broaden tax bases any further.

Australia has followed the trend observed across OECD countries to broaden the company tax base most notably by including capital gains (1985–86), income from the life insurance and gold mining industries (1990–91); as well as abolishing accelerated depreciation (1999–2000) and the general investment allowance (1988–89).

While base broadening has, to some degree, offset cuts in the statutory rates, measures of the effective marginal tax rate and effective average tax rates, which take into account the statutory rate as well as elements of the tax base for a hypothetical project, have declined.⁴

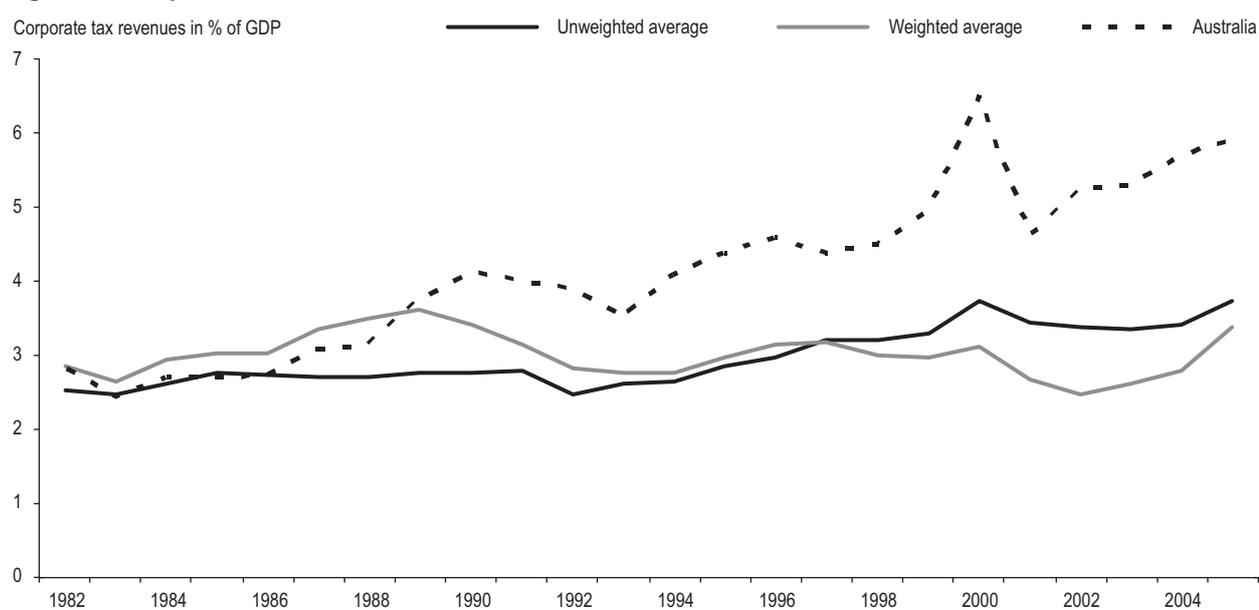
Figures 9.4 and 9.5 present the trends of the Marginal Effective Tax Rate (METR) and the Average Effective Tax Rate (AETR) respectively. Both METRs and AETRs have followed a similar downward trend, suggesting the broadening of the tax base did not offset the fall in statutory tax rates. As highlighted by Loretz (2008), the fall in METRs is less pronounced than the fall in statutory rates and AETRs, indicating that countries may have reduced AETRs to attract profitable businesses (Devereux, Griffith & Klemm 2002). In line with trends in the statutory rate, the unweighted average fell faster than the weighted average suggesting smaller countries reduced their effective tax rates more than some of the larger economies. Effective tax rates in Australia have typically followed the downward trend of

the unweighted average, although since 2001 the unweighted average rates have continued to fall while the rates for Australia have remained flat.

In contrast to the trend in statutory and effective tax rates, corporate tax-to-GDP ratios have tended to increase (see Figure 9.6). From 1982 to 2007, the OECD unweighted average corporate tax-to-GDP ratio increased from 2.5 per cent to 3.7 per cent, while the weighted average corporate tax-to-GDP ratio remained relatively flat over the period increasing from 2.9 per cent to 3.4 per cent. Loretz (2008) suggests this may reflect an increase in the number of corporate taxpayers or average profit levels. Sørensen (2007) notes the growing importance of the company tax may also be explained by the decline in sectors such as agriculture for which the non-corporate organisational form dominated. Auerbach (2006a) suggests that the increasing share of the finance sector in the economy may also have caused the increase in company tax revenue. Auerbach (2006b) also presents evidence for the United States suggesting the continued strength of corporation tax revenues may reflect the asymmetric treatment of losses.

The increase in the corporate tax-to-GDP ratio has been more pronounced in Australia. After following the average trend across OECD countries in the early 1980s, the corporate tax-to-GDP ratio increased from around 2.7 per cent in 1986 to 5.8 per cent in 2005. As such Australia's ratio of company tax to GDP is high in comparison with other OECD countries. Many of the explanations discussed above are also likely to explain the growth in the company tax-to-GDP ratio in Australia. For example, one of the drivers behind the growth in company tax collections in Australia has been the increased profitability of the

Figure 9.6 Corporate Tax Revenues in the OECD, 1982 to 2005



Source: Loretz (2008).

⁴ The effective marginal tax rate measures the tax burden on an investment just earning the cost of an alternative investment; the effective average tax rate measures the tax burden for an inframarginal investment with an economic rent. See section 9.4 for more information on these measures.

corporate sector. Clark, Pridmore and Stoney (2007) find the factor share of the corporate sector increased from 16.6 per cent in 1980–81 to 23.9 per cent in 2005–06.

Another possible explanation could be the introduction of dividend imputation in 1986. Under Australia's dividend imputation system, there is an incentive for companies to pay tax in Australia in order to pay out franked dividends to domestic shareholders, and as such the incentive for Australian multinationals to shift profits offshore or otherwise avoid tax is reduced.

While Australia's ratio of company tax to GDP is high in comparison with other countries it is important to note that institutional factors may also influence these ratios. Warburton and Hendy (2006) identify a number of factors including:

- » *Levels of incorporation differ between countries.* A country with a low level of incorporation will, other things being equal, have lower company tax collections. For example, the United States has large numbers of 'S corporations' which are not included in corporate tax figures.
- » *The way in which the personal and company tax systems are integrated.* Under a classical system of dividend taxation company profits may be taxed twice and this can raise as much revenue as an integrated system with lower company tax collections. Under Australia's dividend imputation system resident shareholders effectively receive a refund of company tax on the distributed profits they receive.
- » *Structure of retirement income systems.* In Australia—unlike most OECD countries—company tax revenue includes taxes on contributions to, and the earnings of, superannuation funds as the legal incidence of these taxes lies with the superannuation funds.
- » *Classification of taxes on resource rents.* Resource taxes can be collected as either excises which are typically classified as indirect taxes or as rent taxes

which typically form part of company tax collections. Australia's petroleum resource rent tax is classified as a company tax.

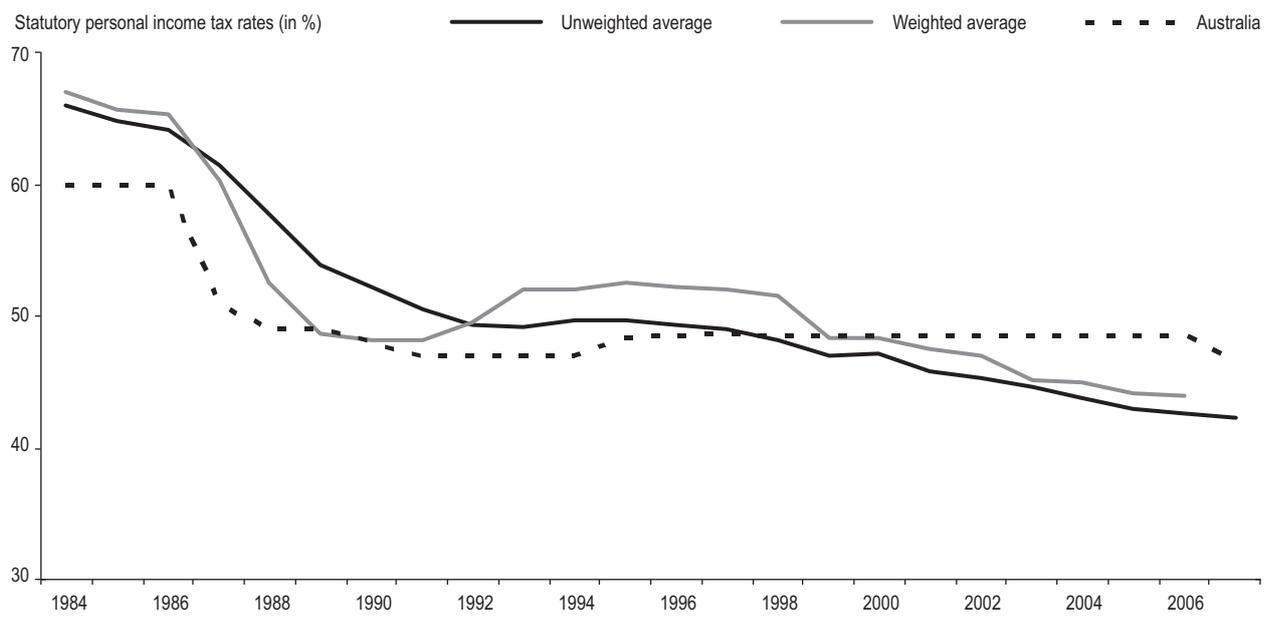
9.2.3 Personal Taxation

In line with corporate taxes, personal taxes have also shown a downward trend. As shown in Figure 9.7, personal tax rates fell quite rapidly across OECD countries in the mid to late 1980s, before easing off in the 1990s. Unlike corporate rates, the weighted and unweighted averages follow a similar pattern, suggesting smaller countries are setting rates in line with larger countries—whereas in relation to corporate taxes smaller countries have continued to cut rates independently. Personal tax rates in Australia have shown a similar trend to the OECD averages, however, as the average top personal rate across OECD countries has continued to decline, the top personal rate in Australia has remained relatively constant.

Personal capital income is taxed in many different ways around the world. The two general approaches to taxing capital income are (i) to treat personal capital income as ordinary income, which is taxed at personal income tax rates, or (ii) to separate capital income from labour income and tax it at different rates. For most OECD countries personal income tax rates apply to capital income. However, most OECD countries impose lower tax rates on particular types of capital income such as dividends or capital gains. In addition, unlike Australia, most OECD countries also impose social security taxes. These taxes, which typically only apply to labour income, effectively result in capital income being taxed at lower rates than labour income.

One clear difference across countries is the way in which the corporate income tax and personal income tax systems are integrated for dividend income. In recent years there has been a refocus on considering the merits of

Figure 9.7 Trends in Top Personal Income Tax Rates



Source: Loretz (2008).

integrating corporate and personal level taxation on distributed profits with European countries moving away from full imputation systems, towards uniform credits (United Kingdom) or reduced dividend tax rates (Ireland). In contrast, Australia and New Zealand have continued to operate full dividend imputation systems.

While the comprehensive income tax has been the main focus of tax systems across the OECD, since the early 1990s the Nordic countries have adopted dual income tax systems to varying extents. Under the dual income tax (which is discussed in more detail in section 9.6.5), personal capital income is typically taxed at a relatively low flat rate whereas labour income is taxed according to a progressive rate schedule. In 2001, the Netherlands introduced a schedular tax system under which an individual's income is classified into one of three boxes, with income calculated separately and with a different tax rate applying to each box.

9.3 Economics of Capital Taxation

To provide a basis for evaluating the current Australian system of capital income taxation and the potential need for reforming it, this section reviews some key results from the theoretical literature on optimal capital income taxation, examining whether and how capital income should be taxed. We also report on some of the main empirical findings regarding the economic impact of capital income taxes. The primary focus will be on a small open economy, taking the tax policies of other countries as given.

9.3.1 Taxes on Saving versus Taxes on Investment

A useful starting point is the distinction between sourced-based and residence-based taxes on capital. Under the source principle, tax is applied in the country where the investment takes place. In Australia, the corporate tax is the most important example of a source-based tax. Under the residence principle, tax is levied on the worldwide income

of residents from saving. In Australia, personal capital income taxes are based on the residence principle.

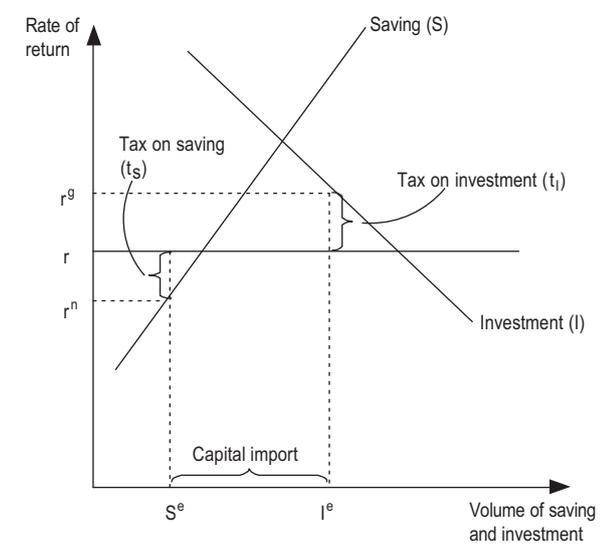
For an open economy too small to affect the return to internationally mobile capital, the economic impacts of source- and residence-based taxes can be very different. This is illustrated in Figure 9.8 where the volumes of domestic saving and investment are measured along the horizontal axis and their rates of return are indicated on the vertical axis. The downward-sloping *I*-curve reflects the marginal pre-tax return to domestic investment which declines as a growing volume of investment exhausts the more profitable investment opportunities. The upward-sloping *S*-curve shows how the volume of domestic saving is assumed to increase as the after-tax return to saving goes up. The horizontal line labelled *r* indicates the exogenous world interest rate or the required international rate of return on shares if we consider equity-financed investment. If the domestic government levies a source-based 'tax on investment' t_I (which could be the domestic corporation tax), domestic investment must yield a minimum rate of return r^e in order to provide investors with the rate of return *r* they are able to earn elsewhere in the world. Hence the level of domestic investment will be I^e . If the government also imposes a 'tax on saving' t_s , say, in the form of a residence-based personal tax on interest income, the volume of domestic saving will be S^e . The excess of domestic investment over domestic saving must be financed through capital imports, so the current account deficit will be $I^e - S^e$.

In the simple world described by Figure 9.8, it is clear that taxes on investment such as a source-based corporation tax will discourage domestic investment and reduce capital imports whereas they will have no impact on domestic saving. By contrast, taxes on saving such as the residence-based personal capital income tax will lead to lower domestic savings and increased capital imports while having no effect on domestic investment. The important implication for tax policy is that if the domestic government wishes to stimulate domestic real investment, it should concentrate on lowering its source-based taxes on investment. On the other hand, if the policy aim is to stimulate total wealth accumulation, policy-makers should focus on lowering taxes on saving.

9.3.2 Incidence and Efficiency Effects of a Source-Based Capital Tax

Building on the above analysis, we may now use Figure 9.9 to illustrate some fundamental propositions in the theory of capital income taxation in the small open economy.⁵ Along the horizontal axis we measure the total stock of capital invested in the domestic economy by domestic and foreign investors. The *I*-curve shows how the marginal pre-tax rate of return to capital (capital's marginal product) declines as the stock of capital increases. Since capital will tend to be more productive the greater the pool of labour with which it is combined, the position of the *I*-curve will depend on the existing level of employment. The horizontal *r*-curve

Figure 9.8 Taxes on Saving versus Taxes on Investment in a Small Open Economy



⁵ We are indebted to Matt Benge for suggesting the following graphical analysis to us. See also Benge (1999).

shows the return capital owners can obtain by investing elsewhere in the world, net of any source-based taxes that foreign governments may choose to impose. If the domestic government levies the source-based tax t_I on domestic investment, the marginal pre-tax rate of return on such investment will thus have to equal r^g to ensure that domestic investment earns an after-tax return that matches the net return obtainable in other countries. Hence the domestic capital stock will be taken to the level K_0 in Figure 9.9. Since the I -curve indicates the rise in total output generated by each additional unit of capital, the total area under the curve measures total domestic GDP. With an investment tax t_I domestic GDP will thus be equal to the area $A+B+C$. The rectangle C measures the net income accruing to the suppliers of capital to the domestic economy, and the rectangle B is the government's capital tax revenue. The triangle A finally measures that part of total income which accrues to domestic labour (which is taken to be the only other factor of production).

Suppose now that the government abolishes the source-based capital tax t_I and adjusts the tax schedule for labour income in a way that keeps the average and marginal after-tax wage rate constant. With an unchanged net wage rate, the supply of labour will also be unchanged, so total after-tax labour income will still be equal to area A . With an unchanged level of employment, the I -curve in Figure 9.9 also remains in the same position as before, but because of the removal of the capital tax, the domestic capital stock increases to the level K_1 , so total pre-tax labour income becomes equal to $A+B+D$. Hence the revenue from the labour income tax must be $B+D$. By abolishing the capital tax and giving up the capital tax revenue B , the government can thus raise the revenue $B+D$ from the labour income tax without making domestic workers worse off than before. Since domestic savers still receive an after-tax return equal to r on their savings, it

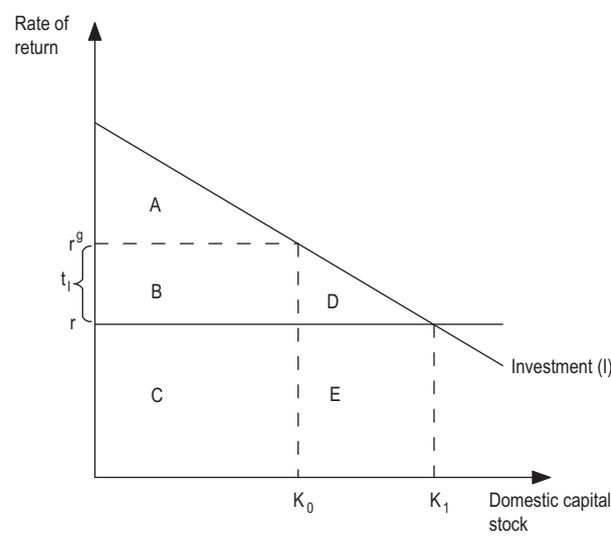
follows that they will likewise be just as well off as before. In other words, replacing a source-based capital tax with a higher labour income tax enables the government to raise the additional revenue D without reducing the welfare of the private sector.

Two striking conclusions follow from this analysis. First, under perfect capital mobility the burden of a source-based capital tax levied by a small open economy is fully shifted on to the domestic factors of production such as labour and land. Since the source tax falls only on domestic investment, investors can always escape the burden of the tax by moving their capital abroad, so capital will flow out of the domestic economy until the pre-tax return on domestic investment has risen by the full amount of the tax. This results in a capital shallowing of the economy, which lowers the productivity of the less mobile factors, such as labour and land, whose owners must therefore accept lower wages and rents. In this way the burden of the source-based capital tax is shifted on to the less mobile local factors of production.

Second, the analysis in Figure 9.9 implies that it is inoptimal for a small open economy faced with perfect capital mobility to levy a source-based tax on the normal return to capital. As we have seen, such a tax is an indirect way of taxing labour, and it is more efficient to tax labour directly, since this will allow a greater revenue to be raised without further reducing the welfare of domestic workers and savers (or, alternatively, allow the same revenue to be raised at a lower welfare cost to the private sector). It is more efficient because labour directly rather than indirectly through a source-based capital tax avoids the capital shallowing associated with the latter tax and hence implies a higher net national income, as shown by Gordon (1986) and Razin and Sadka (1991). (In Figure 9.9 the rise in national income resulting from the shift from capital taxation to labour taxation equals the area D which is the difference between the rise in GDP, given by area $D+E$, and the increased net payments to international investors, given by area E .)

The theoretical analysis above implies at least two testable predictions. The first one is that the imposition of a source-based capital tax induces a capital outflow. The second prediction is that such a tax is to a large extent shifted on to workers through lower wage rates. There is substantial empirical evidence supporting both of these hypotheses. For example, in their comprehensive survey of a wealth of empirical studies, de Mooij and Ederveen (2008) conclude that the typical semi-elasticity of FDI with respect to the effective marginal corporate tax rate is around -4.0 , meaning that a 1 percentage point increase in the METR causes a 4 per cent drop in the stock of inbound FDI. If the share of the total domestic capital stock owned by foreigners is, say, 30 per cent, such a drop in FDI would imply a 1.2 per cent fall in the total capital stock, and hence a drop in GDP of around 0.4 per cent, on the common assumption that the elasticity of total output with respect to the capital stock is about one-third.⁶

Figure 9.9 The Effects of a Source-Based Capital Tax in a Small Open Economy



⁶ With competitive markets the capital income share in GDP will equal the elasticity of output with respect to capital. In most OECD countries, the observed capital income share is around one-third.

Recent empirical work using cross-country data on corporate taxes and wages also provides mounting evidence that the corporate income tax is shifted on to workers to a very high degree. For example, Hassett and Mathur (2006) find that a 1 per cent increase in the corporate tax rate is associated with nearly a 1 per cent drop in wage rates, and Felix (2007) estimates that a 10 percentage point increase in the corporate tax rate decreases annual gross wages by 7 per cent. Moreover, the central estimate of Arulampalam, Devereux and Maffini (2007) suggests that 61 per cent of any additional corporate tax is passed on in lower wages in the short run and around 100 per cent in the long run. These econometric findings are broadly in line with the analysis of Harberger (2006) who uses a computable general equilibrium model to estimate that domestic labour bears around 95 per cent of the overall burden of the corporation tax.⁷

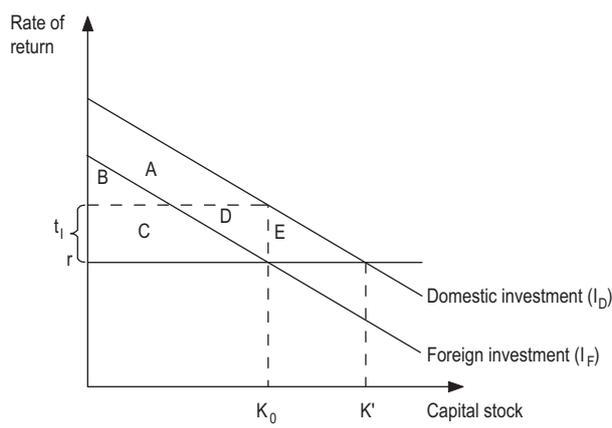
9.3.3 Taxes on the Normal Return versus Taxes on Rents

Despite the supporting empirical evidence just mentioned, the theoretical analysis in the previous section invites one obvious objection: if it is inoptimal for small open economies to levy source-based taxes on capital, why do governments persist in collecting taxes such as the corporation tax?

Part of the answer lies in the important distinction between taxes on the normal return to capital and taxes on rents, that is, pure profits in excess of the going market rate of return on capital. The analysis above applies only to taxes on the normal return. If investors can earn so-called location-specific rents by investing in a particular country, the government can levy a source-based capital tax without inducing a capital flight. This is illustrated in Figure 9.10 where we consider investment in a particular sector, say, mining. Suppose that such investment requires a specialised type of capital equipment and suppose for simplicity that this capital is the only factor of production apart from the land containing the natural resources being extracted. The I_F -curve in Figure 9.10 shows the marginal rate of return obtainable on investment in mining in the foreign economy, while the I_D -curve shows the marginal return generated by investment in mining in the domestic economy. Because of an assumed relative domestic abundance of minerals, mining at any given level of investment is more profitable at home than abroad, so the I_D -curve lies above the I_F -curve.⁸ The horizontal r -curve indicates the world rate of interest at which capital can be borrowed (the 'normal' return).

As a further (innocent) simplification, suppose that the domestic mines and the equipment needed for their exploitation are owned by foreign investors. In the absence of tax, investors would find it profitable to install mining equipment in the domestic economy up to the level K' where the marginal return is just equal to the world interest rate. Since the total value of mining output is given by the total area below the I -curves, foreign investors would earn a total rent equal to the area $A+B+C+D+E$ in the absence of tax. Now suppose the domestic government levies a source-based (unit) capital tax at the rate t_I . If foreign

Figure 9.10 Effects of a Tax on Location-Specific Rents



investors were to invest in the domestic economy, they would then only invest up to the level K_0 where they would earn a rent equal to area $A+B$. Alternatively, investors could undertake a similar amount of investment in the foreign mining sector in which case they would earn a rent equal to $B+C$. Since the two I -curves run parallel to each other (again, this is just an innocent simplification), the areas $A+B$ and $C+D$ are identical, so the rents obtainable at home and abroad are likewise identical when the domestic source tax rate is t_I . It follows that the domestic government can impose a source tax up to this level and capture an amount of revenue $C+D$ without deterring foreign investors. This revenue constitutes a net addition to domestic national income and hence should not be foregone.

The existence of location-specific rents may thus help to explain why source-based capital taxes have not tended to vanish despite the dramatic increase in international capital mobility in recent decades. Natural resources are perhaps the most obvious factor giving rise to location-specific rents, but such rents may also stem from a good local infrastructure, an efficient public administration, a well-educated and flexible workforce, and from so-called agglomeration forces whereby a concentration of business firms in a given location tends to generate cost savings and various positive spillover effects from one firm to another (see Sørensen 2007a, pp. 184–6).

In addition, Sørensen (2007a) points to several other factors enabling or forcing the governments of small open economies to continue collecting source-based capital taxes. First, although the international mobility of capital has grown, it is still not perfect. Investor portfolios are still biased towards domestic assets, perhaps because investors are less familiar with the workings of foreign financial markets, and firms often face significant adjustment costs if they want to relocate business investment across borders. These frictions mean that governments have some scope for imposing source-based capital taxes without causing a massive capital flight.

Second, when levying corporation tax on profits repatriated by domestic parent companies from their foreign affiliates, countries practising worldwide income taxation offer a credit for taxes already paid in the foreign source country, up to a limit given by the domestic tax on

⁷ Gentry (2007) provides a good overview and discussion of these and related studies on the incidence of the corporate income tax.

⁸ For example, this may reflect the quality of the deposit, where the higher the quality of the deposit the lower the marginal cost of extraction.

the foreign profits. Insofar as profits are repatriated rather than reinvested in the source country, that country may therefore impose a source tax up to the limit on the foreign tax credit without reducing the incentive for inbound investment from countries with a credit system. This may be particularly relevant for Australia where about half of total inbound FDI originates from countries like the United States, the United Kingdom and Japan which are all practising worldwide corporate income taxation with a foreign tax credit.

Third, if governments did not levy a source-based tax on foreign-owned companies, it might be relatively easy for domestic residents to set up corporations that are nominally foreign-owned with the purpose of accumulating income free of domestic tax within such companies. This would undermine an important function of the corporate income tax which is to serve as a backstop to the personal income tax by ensuring that retained corporate profits cannot accumulate free of tax.

A further reason for the continued existence of the source-based corporation tax on the normal return to equity may simply be that voters and the policy-makers they elect do not fully understand the complex mechanisms whereby the burden of such a tax tends to be shifted on to domestic workers and landowners. If the company tax is perceived as a tax on the owners of corporations, including well-to-do foreign investors, it may be politically infeasible to abandon the source principle even if economists argue that a source tax on the normal return creates large distortions.

(a) Mobile versus Immobile Rents

While location-specific rents provide scope for source-based capital taxation even in small open economies, so-called *firm-specific* or *mobile* rents cannot be subject to source taxes without a negative effect on inbound direct investment, as emphasised by Devereux and Griffith (1998, 2002). A firm-specific rent may arise from, say, a firm's possession of a specific technology, product brand or management know-how. Such intangible assets may generate above-normal profits regardless of the location of production, so a source-based tax on such rents will induce investors to consider an alternative location for their investment.

(b) Rents and Entrepreneurship

The point that mobile rents cannot be taxed at source without creating a distortion is generally acknowledged. As a parallel, it is sometimes argued that much of what is labelled 'rents' is really a reward derived from some elastic factor of production that cannot be taxed without generating a distortion. For example, Gordon and Hausmann (2009) argue that a large part of reported corporate income is really a return to entrepreneurial activity and talent and hence should be seen as a form of labour income. Insofar as this is correct, and if the supply of entrepreneurship is elastic, the corporate income tax will thus discourage entrepreneurial activity in the corporate organisational form. However, this observation does not

imply that corporate 'rents' should not be taxed. If these rents are really a form of labour income, they should be taxed as such in order not to distort the occupational choice between employment and self-employment and the choice between the corporate and the non-corporate form of business organisation. The tax reform for Australia proposed in section 9.7 follows this principle.

(c) Rents and Risk-Taking

A popular view in many business and policy circles is that 'rents' appearing to be 'pure' profits really reflect a risk premium necessary to induce investors to incur risks. On this basis it is argued that taxes on 'rents' will discourage risk-taking and hence should be kept low or avoided altogether. However, at least since the contribution of Domar and Musgrave (1944) economists have recognised that the tax system may actually encourage risk-taking when losses are fully deductible. To illustrate, suppose an investor with initial wealth W_0 invests a fraction a of this wealth in a risky asset generating an uncertain rate of return x , while the remaining fraction $1 - a$ is invested in a risk-free asset (e.g. a government bond) yielding a 'safe' rate of return r . Suppose further that the government levies a proportional tax at the rate t on the 'rent' $(x - r)aW_0$ earned from the risky asset. If the tax code allows full loss offset so that the taxpayer receives a refund if the excess return $x - r$ on the risky asset is negative, the investor's wealth W_1 at the end of the period will then be:

$$(1) \quad W_1 = \underbrace{r(1-a)W_0}_{\text{Return on the safe asset}} + \underbrace{[x-t(x-r)]aW_0}_{\text{Return on the risky asset}} \\ = rW_0 + (1-t)(x-r)aW_0$$

Now suppose that, in the absence of tax, the investor would have invested the fraction a' of his wealth in the risky asset whereas in the presence of tax he chooses to invest the fraction

$$(2) \quad a = \frac{a'}{1-t}$$

in that asset. By inserting (2) into (1), we get

$$(3) \quad W_1 = rW_0 + (x-r)a'W_0$$

which shows that if the investor reacts to the imposition of tax by adjusting his portfolio composition in accordance with (2), he will always end up with exactly the same net return on his total wealth as he would have earned in the absence of tax. Therefore, if the investor's portfolio had an optimal composition before the introduction of the tax, it must be optimal for him to respond to the tax in accordance with (2), since he will then have the same expected net return and face exactly the same degree of uncertainty as before.⁹ From (2) we thus see that the introduction of a tax on 'rent' will actually *increase* the fraction of wealth invested in the risky asset, so from a *social* viewpoint the tax increases the amount of risk-taking, whereas the amount of *private* risk-taking is unchanged, since the government absorbs a share of all losses and gains equal to the tax rate t .

⁹ More precisely, by responding to the imposition of tax as described by (2), the investor is keeping constant the entire probability distribution of final wealth, as pointed out by Sandmo (1989).

As shown by Sandmo (1989), this analysis extends directly to the case where investors can choose among many risky assets. In that case, it is optimal for investors to increase the fraction of wealth invested in all risky assets by the same factor $1/(1 - t)$ if the government introduces a tax at the rate t (with full loss offsets) on all returns above the risk-free rate r . Hence such a tax will not distort the pattern of investment in risky assets, but will simply increase the portfolio weight of all risky assets by the same percentage at the expense of investment in the risk-free asset.

These benchmark results assume that the tax system allows full loss offset, but in practice this is rarely the case. With limitations on loss offsets, the effect of taxation on risk-taking becomes theoretically ambiguous, as taxes elicit offsetting substitution and wealth effects on the demand for risky assets (Sandmo 1985). Still, even with imperfect loss offsets, a tax on above-normal returns will not necessarily reduce the total (social) amount of risk-taking. This will only occur if the limitations on loss offsets are so strict that the resulting negative wealth effect on the demand for risky assets outweighs the positive substitution effect (the risk-sharing effect) described by equation (2).

(d) Source Taxation and Profit-Shifting

We have noted the importance of the distinction between mobile and immobile rents and the importance of considering whether an apparent 'rent' is actually a return to a factor whose supply is elastic. A final important distinction under source-based taxation is that between the location of real investment and production activities and the location of the taxable profits they generate. A high source-based capital income tax—including a tax on pure rents—creates an incentive for multinational firms to shift taxable profits from the domestic towards foreign low-tax jurisdictions by manipulating transfer prices and royalties in connection with intra-company transactions, and by shifting debt and the associated deductible interest payments from foreign affiliates to domestic members of the multinational group. To defend their tax bases against such practices, most OECD governments have introduced complex transfer-pricing rules and thin capitalisation rules that significantly increase the costs of tax administration and compliance. Despite these elaborate rules, there is ample empirical evidence (surveyed by de Mooij & Ederveen 2008) that the location of the taxable profits of multinationals is in fact quite responsive to statutory tax rate differentials. The possibility of international profit-shifting is therefore an important constraint on tax policy in an open economy.

9.3.4 The Effects of Taxes on Saving

Having discussed the taxation of investment, we now turn to the taxation of savings which mainly takes the form of the residence-based personal tax on worldwide capital income. In practice, it may be difficult for the domestic tax authorities to monitor and enforce tax on foreign source capital income, but for the moment we will assume that a residence-based savings tax can actually be enforced.

(a) Should Savings Be Taxed at All?

A basic issue in normative tax theory is whether the normal return to saving should be taxed at all? According to two

influential papers by Chamley (1986) and Judd (1985), the answer is 'no' if policy-makers adopt a long-run perspective. These authors rely on the popular Ramsey growth model in which the long-run after-tax real interest rate is tied to the consumer's exogenous rate of time preference. With a constant long-run equilibrium after-tax interest rate, a capital income tax gets fully shifted on to the pre-tax interest rate, that is, the supply of capital is in effect infinitely elastic in the long run. This explains why it is inoptimal to tax the normal return to saving within the framework of the Ramsey growth model.

In the Ramsey model, savers behave as if they had an infinite time horizon. Many economists consider the so-called life-cycle model of saving to be more realistic than the Ramsey model. In the life-cycle model consumers 'only' look ahead to the end of their own lives and are assumed to be retired from the labour market in the late stage of their life-cycle. A benchmark proposition following from the work of Atkinson and Stiglitz (1976) states that if present and future consumption are equally substitutable for leisure, the normal return to saving should not be taxed, even if the alternative to capital income taxation is a distortionary labour income tax. A capital income tax raises the relative price of future consumption by lowering the after-tax interest rate, thus requiring the consumer to give up more consumption today to obtain an extra unit of consumption tomorrow. A capital income tax would therefore distort the savings decision, but this distortion would serve no purpose because it would not help to offset the distortionary effect of the labour income tax when present and future consumption are equally good (or bad) substitutes for leisure. By contrast, if leisure is more complementary to future than to present consumption—so that the amount of leisure time tends to increase as the consumer gets older—a capital income tax that raises the relative price of future consumption will tend to discourage the consumption of leisure, thereby inducing more work effort and offsetting the distortionary effect of the labour income tax. Erosa and Gervais (2002) argue that since the leisure taken by the typical consumer tends to increase with age, leisure and future consumption are indeed complements. This provides a rationale for a capital income tax to offset the negative impact on labour supply stemming from the labour income tax.

Saez (2002) also argues that a positive tax on the normal return to saving is part of an optimal tax system. He notes the empirical regularity that individuals with more education tend to have higher savings rates than people with less education, perhaps because the former group tends to be more forward-looking. If the level of education is an indicator of a person's innate abilities (his/her exogenous earnings capacity), and savings rates are correlated with education, a tax on savings will tend to fall disproportionately on the more able individuals and will thus help the government to redistribute income from high-ability to low-ability individuals in a less distortionary manner.

The extensive recent surveys by Auerbach (2006), Sørensen (2007a) and Diamond and Banks (2008) report a number of other findings in the theoretical literature suggesting that the normal return to saving should in

general be taxed under an optimal tax system. In other words, an expenditure tax that exempts the normal return will be optimal only under rather restrictive assumptions.

(b) The Effects of Savings Taxes and Imputation Systems in a Small Open Economy

In a closed economy, a tax on saving is also a tax on investment, since the two must equal each other when there are no opportunities for capital imports or exports. In a small open economy we saw that, given the stylised assumptions underlying Figure 9.8, a tax on saving such as the residence-based personal capital income tax has no impact on the level of domestic investment, since the resulting drop in domestic saving is fully offset by an additional inflow of foreign capital.

The openness of the economy also has strong implications for the effects of policy measures to alleviate the double taxation of corporate income at the shareholder level, for example through a full imputation system such as that operating in Australia. For companies with access to the international stockmarket, an imputation system has no impact on the cost of corporate capital and hence no impact on investment incentives. Nor does an imputation system have any impact on total saving under the assumptions made in section 9.3.1. Indeed, on those assumptions the only effect of the system is to transfer ownership of shares in domestic companies from foreign to domestic shareholders.

The first of these propositions follows from the fact that when the domestic stockmarket of a small open economy is fully integrated with the international stockmarket, the required rate of return on domestic shares (within a given risk class) is exogenously determined from abroad, being given by the return required by international investors who are of course not subject to the domestic personal tax on dividends. Hence the cut in the effective dividend tax rate implied by a dividend tax credit that is granted only to domestic shareholders cannot reduce the required rate of return on shares issued by domestic companies and thus cannot lower their cost of equity finance.

The second and third propositions mentioned above may be best understood by considering the following condition for portfolio equilibrium, where r is the pre-tax rate of return on domestic shares required by domestic residents, m is the effective personal (marginal) tax rate on the return to shares, i is the pre-tax interest rate on risk-free (government) bonds, t is the personal (marginal) tax rate on interest income, and p is the required risk premium on shares, assumed to depend positively on the fraction e of the investor's total wealth that he or she has invested in shares¹⁰:

$$(4) \quad r(1-m) = i(1-t) + p(e)$$

In this equation $i(1-t)$ represents the risk-adjusted net return to saving. The risk premium p simply compensates for the fact that investment in shares is riskier than investment in government bonds, ensuring that both forms of investment yield the same net returns in risk-adjusted terms. In a small open economy, the pre-tax interest rate i

is exogenously given from the world capital market, so the risk-adjusted net return to saving cannot be influenced by an imputation system that reduces the effective personal tax rate m in equation (4). This explains the proposition that an imputation system will not affect the domestic savings rate in a small open economy.

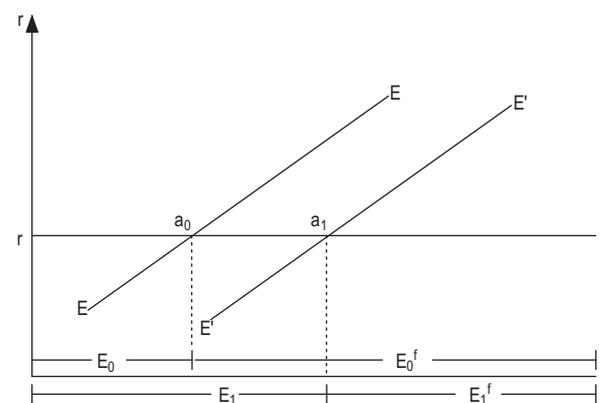
As mentioned above, the required pre-tax return on domestic shares is likewise given from abroad in a small open economy. Hence we may write

$$(5) \quad r = \bar{r}$$

where \bar{r} is the exogenous rate of return on shares required by foreign investors. If we insert (5) into (4), we see that the latter equation uniquely determines the fraction of domestic wealth invested in shares (e), given the domestic personal tax rates and the pre-tax rates of return on bonds and shares determined in the world capital markets. If the domestic government lowers the effective personal tax rate m by granting an imputation (dividend) tax credit to resident shareholders, domestic investors will increase the fraction of wealth invested in shares until the risk premium $p(e)$ has risen sufficiently to re-establish the portfolio equilibrium condition (4). In other words, as the imputation credit increases the attractiveness of shareholding to domestic investors, they take over some of the domestic shares previously held by foreign investors who stand ready to sell domestic shares at the price determined in the international stockmarket, that is, the stock price corresponding to the fixed rate of return \bar{r} . Thus the only effect of the imputation system is to change the pattern of ownership of domestic shares, whereas it cannot reduce the cost of equity finance (and hence the cost of capital) for domestic corporations. This establishes the third proposition stated above.

Figure 9.11, taken from Andersson et al. (1998), illustrates this proposition. The vertical axes of the figure measure the rate of return on domestic shares before personal tax (r), while the length of the horizontal axis indicates the total market value of shares issued by domestic corporations, divided into shares held by domestic investors (E) and shares held by foreign investors (E^f). The

Figure 9.11 Effects of Dividend Tax Relief in a Small Open Economy



Source: Andersson et al. (1998).

10 For the moment we simplify by ignoring the possibility that the risk premium may also depend on the tax rate m . We return to this issue at the end of this section.

EE-curve shows the domestic investors' demand for shares before the introduction of the imputation system. For given personal tax rates, a higher value of r will imply a higher after-tax return to shareholding, and domestic investors will then wish to hold a greater amount of shares in their portfolios (at the expense of smaller bond holdings). This explains the positive slope of the *EE*-curve. The horizontal line \bar{r} in Figure 9.11 indicates the required rate of return on domestic shares enforced by the international capital market. The level of \bar{r} is determined by the arbitrage condition that the foreign investors' net return on domestic shares must equal the exogenous net return they may earn by investing in foreign shares (of a similar risk class).

Prior to the introduction of the imputation system, the allocation of the outstanding stock of domestic shares between domestic and foreign investors is determined by point a_0 where the *EE*-curve intersects the exogenous return on shares required by foreign investors. The length of the interval E_0 indicates the amount of domestic shares held by domestic investors. The remaining amount E^f will then be held by foreign investors.

Now suppose the domestic government introduces an imputation (dividend) tax credit to domestic resident shareholders. For any given pre-tax rate of return r , the after-tax return to domestic investors will then go up, and their demand for domestic shares therefore shifts outward from the *EE*-curve to the curve $E'E'$ in Figure 9.11. As a consequence, a new portfolio equilibrium is established at point a_1 where domestic investors have increased their holding of domestic shares to the amount E_1 , leaving the smaller amount E_1^f to be held by foreign investors.

The theoretical analysis in Figure 9.11 is consistent with recent evidence from the United Kingdom produced by Bond, Devereux and Klemm (2007). Using data from around the time of the 1997 UK dividend tax reform, which removed a significant tax credit for an important group of resident investors (UK pension funds), these authors found that the reform had little impact on UK equity prices but mainly led to a reduction of UK ownership of UK equities.

Note another important implication of this analysis: when tax relief for debt finance is granted at the company level (through the deduction for interest expenses) while tax relief for equity finance is granted at the resident shareholder level (e.g. through an imputation system), the shareholder tax relief cannot eliminate the tax bias in favour of debt finance because it does not succeed in lowering the cost of equity finance for domestic companies.

This analysis suggests that governments of small open economies may be misguided if they believe that personal tax relief targeted at domestic shareholders will stimulate domestic real investment activity. However, the analysis does not cover the sector of smaller companies whose shares are not traded in the international stockmarket. For the owners of these companies a portfolio equilibrium condition like (4) may still be relevant, but instead of (5) the marginal return to shares before personal tax will now be given by an equation such as:

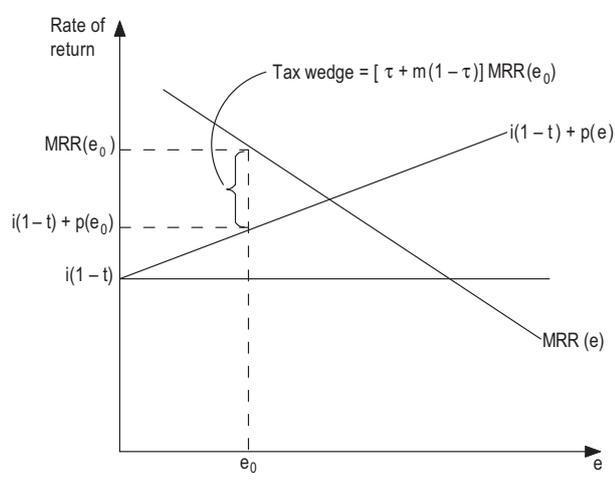
$$(6) \quad r = MRR(e)(1-\tau)$$

where MRR is the marginal rate of return to corporate investment before corporate and personal tax, and τ is the corporate income tax rate. In (6) the marginal pre-tax return on corporate investment $MRR(e)$ is assumed to decline with the amount of wealth e invested in the company, reflecting a gradual exhaustion of the more profitable investment opportunities as the amount of investment goes up.

Figure 9.12 shows how the tax system affects the amount of investment (captured by our variable e) in domestic companies without access to the international stockmarket. When equations (5) and (6) both have to be satisfied, the amount of investment ends up at the level e_0 where the pre-tax marginal return $MRR(e_0)$ ensures that shareholders earn an after-tax return $i(1-t) + p(e_0)$ equal to the after-tax risk-free interest rate plus a risk premium reflecting the amount of risk (measured by e_0) they incur. We see that the corporation tax (τ) as well as the effective personal tax rate on the return to shares (m) drive up the required pre-tax return on corporate investment (also referred to as the cost of corporate capital), thereby reducing the volume of investment. Insofar as investment is financed by new equity rather than by retained earnings, the introduction of an imputation system to alleviate the double taxation of dividends will reduce the effective tax rate m , thus stimulating corporate investment. This stimulus may be particularly important when a new company is set up or when a (young) company is rapidly expanding, since these are situations where entrepreneurs typically have to rely on finance by new equity.

For simplicity, the analysis above has ignored one complication: since a tax on the return to shares involves a sharing of risks between the government and the taxpayer, the risk premium p in equation (4) could depend not only on the fraction of wealth invested in shares, but also on the effective tax rate m . Sørensen (2005c) undertakes a rigorous formal analysis of this issue and finds that, due to the risk-sharing effect just mentioned, a personal tax on the full return to equity could in fact reduce the required risk premium on highly risky shares¹¹ which are not traded

Figure 9.12 Effects of Double Taxation of Equity Income from Small Companies



11 A 'highly risky share' is one whose return has a high positive covariance with the return on the 'market portfolio' of shares.

internationally, whereas the tax will drive up the risk premium on shares with a relatively low risk. Thus Sørensen's analysis shows that a personal tax on the full return to shares will tend to distort the pattern of risk-taking (in contrast to the tax on the risk premium analysed in section 9.3.3), even if it will not always drive up the cost of corporate capital. Such distortions to risk-taking cause a loss of economic efficiency, just as the tax distortion illustrated in the simplified analysis in Figure 9.12 generates an efficiency loss.

9.3.5 Conclusions on the Effects of Capital Income Taxation in an Open Economy

A conventional source-based corporate income tax is a tax on investment that causes distortions in many dimensions of decision-making. As we have seen, a source-based tax on the normal return to capital is likely to be particularly distortionary and to be shifted to a very high degree on to domestic workers and landowners. A source-based tax on mobile rents will also tend to distort the international location of investment, and a high statutory corporate tax rate provides an incentive to shift taxable profits out of the domestic jurisdiction through transfer-pricing and thin capitalisation.

In addition to these distortions, differences in the tax treatment of income from incorporated and unincorporated firms may distort the choice of organisational form, and the asymmetric tax treatment of debt and equity—whereby interest on debt is deductible from the corporate tax base whereas the cost of equity finance is not—tends to distort corporate financial policies which may also be distorted by differences in the tax treatment of dividends and capital gains on shares. Finally, insofar as the valuation of business assets and liabilities for tax purposes deviates from the true economic values (e.g. because of accelerated depreciation and lack of inflation adjustment), the tax system will likewise distort the level and pattern of investment.

A residence-based personal capital income tax is a tax on saving that distorts the choice between present and future consumption. We nevertheless found that a positive savings tax is likely to be part of a second-best optimal tax system, given that the alternative to a savings tax would be higher distortionary taxes on labour income. Moreover, we found that an imputation system to alleviate the double taxation of dividends at the resident shareholder level will not stimulate domestic saving and will not reduce the cost of capital for companies with access to the international stockmarket, whereas it will tend to reduce the cost of equity finance for smaller companies without such access.

Based on a comprehensive survey of the relevant empirical studies, de Mooij and Ederveen (2008) have calculated what they consider to be 'plausible' semi-elasticities of the corporate tax base for five of the decision margins mentioned above. Their estimates are summarised in Table 9.3 where the semi-elasticity measures the percentage change in the corporate income tax base induced by a 1 percentage point increase in the relevant tax rate or tax rate differential. The choice of organisational

Table 9.3 Semi-Elasticity of the Corporate Tax Base for Five Decision Margins

Behavioural margin	Relevant tax	Semi-elasticity of tax base
1. Organisational form	Statutory corporate-personal tax differential	-0.7
2. Financial policy	Statutory corporate tax rate (debt-equity discrimination)	-0.15
3. Profit-shifting	Statutory corporate tax rate	-1.2
4. Investment		
—intensive margin	METR	-0.4
5. Investment		
—extensive margin	AETR	-0.65

Source: de Mooij and Ederveen (2008, Table 4).

form responds to the differential between the statutory corporate income tax rate and the top marginal personal income tax rate, while the debt/equity choice and decisions on profit-shifting react to the statutory corporate tax rate. The marginal effective tax rate (METR) measures the corporate tax burden on the marginal unit of investment which generates no net profit to the firm, while the average effective tax rate (AETR) measures the proportion of the total value of an investment project which is paid in tax. A higher METR reduces corporate investment on the so-called intensive margin, that is, it reduces the optimal amount of investment in a given country. A higher AETR affects investment on the so-called extensive margin, by making it less attractive to locate investment in the country where the tax has gone up. Sørensen (2004) shows that the AETR is a weighted average of the METR and the statutory corporate tax rate, where the weight given to the statutory rate rises with the ratio of the firm's average to its marginal rate of return. For firms with a high average profitability the AETR will thus converge on the statutory tax rate.

Table 9.3 suggests that the corporate tax base is particularly sensitive to profit-shifting, but also quite sensitive to tax-induced changes in organisational form and in investment, especially at the extensive margin. Tax-induced increases in corporate debt ratios seem to be less important for the aggregate tax base. Since circumstances differ across countries, the elasticities in Table 9.3 may not hold in the Australian context but in the absence of specific evidence for Australia they may nevertheless provide a useful indication of the likely magnitude of the various behavioural responses to the corporate tax system.

9.4 A Closer Look at the Current System of Capital Income Taxation in Australia

As a basis for identifying the potential need for reform, this section describes the current Australian system of capital income taxation in greater detail, starting with company taxation and the taxation of natural resources before moving on to personal taxation.¹² Guided by the analysis in section 9.3, we thus start by considering the Australian taxes on investment, including taxes on immobile rents, before studying the taxes on saving. In section 9.4.4 we try to

¹² The description of the current tax system draws on Australian Treasury (2008), which provides a comprehensive outline of Australia's tax and transfer system.

quantify the magnitude of the current tax wedges on investment and saving for the most important asset types.

9.4.1 Company Taxation

Australia notionally has a source-based company income tax system on the full nominal return to equity. Resident companies are taxed on their domestic profits, with profits generated from direct (non-portfolio) offshore operations generally exempt from tax, pursuant to the dividend exemption system. Non-resident companies are taxed on their profits generated within Australia. Company tax is levied on income from trading, investment and capital gains, less specific deductions; including current expenditure, depreciation of capital equipment and structures, and interest payments.

The purpose of Australia's company tax system is to act as a:

- » withholding tax on income earned by Australian residents, through shares in a resident company; and
- » final tax on income earned by non-residents, through shares in an Australian or non-resident company's branch in Australia.

The company tax has also been particularly important in relation to the taxation of Australia's non-renewable resources and this is discussed in more detail below.

(a) Statutory Tax Rates

The statutory tax rate on corporate income in Australia has fallen substantially over the past three decades (Figure 9.13), largely in response to concerns over international competitiveness. The rate is currently 30 per cent.

(b) Capital Allowances and Expenditure

While the statutory corporate tax rate has been falling, this has been offset to some degree, at least more recently, by a broadening of the tax base including the removal of tax concessions.

Following the recommendations of the Review of Business Taxation (Ralph 1999) there has been a progressive

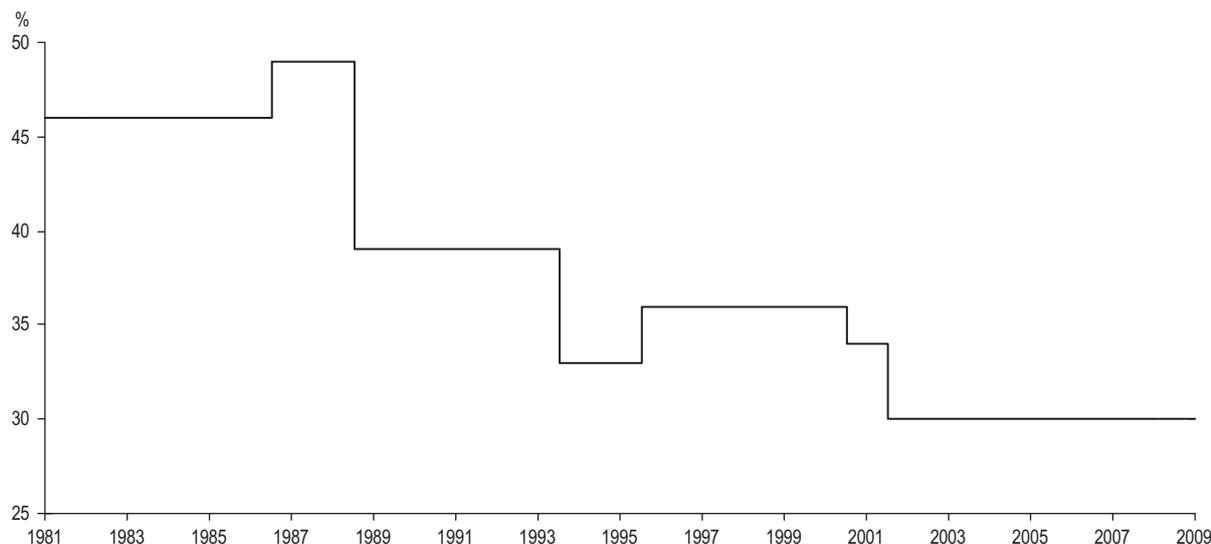
shift towards better aligning capital allowances for plant and equipment to economic depreciation, with rates based on the effective life of the asset. These measures are aimed at improving the neutrality of investment decisions, hence the allocation of capital within the economy. Given the difficulties in measuring economic depreciation, an issue with all income tax systems is that tax depreciation can be at best only an approximation for true economic depreciation.

Under the Australian capital allowance regime deductions are based on the asset's historical cost, and can be calculated using one of two methods. Under the prime cost method the decline in value is calculated as a constant percentage of the asset's cost and reflects a uniform decline in value over the asset's effective life. Under the diminishing value method the decline in value is geometric, based on the asset's base value (purchase price of the asset less decline in value) multiplied by the diminishing value rate (200 per cent/effective life of the asset).

Concessional arrangements are often used by governments to encourage particular investments or industries. In Australia, there are a number of such exceptions where tax depreciation is allowed to diverge from rates based on effective life (Table 9.4). For example, buildings are depreciated under separate provisions at rates of either 2.5 per cent or 4 per cent per annum using the straight-line method (implying effective lives of around forty and twenty-five years), while effective lives are capped for assets including: trucks, tractors, airplanes, and gas production and pipeline assets. In addition, expenditure on mineral exploration activities and certain repairs and maintenance are immediately deductible, even though the benefit from the expenditure is generated over time.

Another issue that arises under an income tax system is the tax treatment of intangible assets such as goodwill, rights and marketing assets. Intangibles are becoming increasingly important on company balance sheets.¹³ The tax treatment of intangibles under the Australian tax system is

Figure 9.13 Australian Company Tax Rates, 1981 to 2009



Source: OECD Tax Database.

¹³ For the United States, Corrado, Hulten and Sichel (2006) find that intangibles account for just over half of the book value of listed companies.

Table 9.4 Capital Allowance and Other Deductions—Selected Assets

Asset	Effective life	Tax life	Option for declining balance method
Computer	4	4	Y
Computer lathes	10	10	Y
Tractor	12	6 ² / ₃	Y
Truck	15	7.5	Y
Airplane (general use)	20	10	Y
Gas transmission assets	30–50	20	Y
Gas production assets	20–30	15	Y
Repairs and maintenance		Immediately expensed	n.a.
Buildings		40 and 25	N
R&D		Effective life with 125% or 175% uplift	Y
Intangible assets			
Goodwill (created)		Immediately expensed	n.a.
Goodwill (acquired)		Not depreciable, but deduction for costs incurred in maintaining	n.a.
Advertising		Immediately expensed	n.a.
Inhouse software		4	N
Standard patent	20	20	N
Spectrum licence	Term of licence	Term of licence	N
Blackhole expenditure	Undefined	5	N

Note: n.a. = not applicable.

somewhat ad hoc. The creation of intangible assets, such as goodwill through advertising, and firm-specific training, is immediately expensed while the cost of acquiring intangible assets is written down at accelerated rates for some assets, such as inhouse software, or over the asset's effective life, such as patents and licences. A provision of last resort provides a deduction over five years for capital expenditures that are not otherwise covered, so-called blackhole expenditure, although this does not apply to acquired goodwill which is not deductible.¹⁴

The current tax system also provides concessional arrangements for research and development (R&D)-related expenditure. Eligible R&D expenditure is deductible at the rate of 125 per cent. A premium deduction of 175 per cent applies for companies that increase expenditure on the labour-related component of R&D. Certain entities are able to receive a refundable tax offset equivalent to the value of the R&D tax concession—this is a particular benefit to those companies not in a tax paying position.

(c) Treatment of Losses

The Australian tax system, like all other tax systems around the world, treats gains and losses asymmetrically. Gains are subject to immediate taxation, while tax refunds are typically not provided for losses at the time they are incurred. Losses can, however, be carried forward indefinitely and deducted against assessable income in later years, for companies subject to various loss-transfer rules. This partial loss-offset is designed primarily to protect government revenue. While losses can be carried forward indefinitely under the income tax system, they are not indexed and consequently their present value falls over time.

The loss-transfer rules are integrity measures which restrict activity that would enable companies to utilise losses sooner. The primary test for loss-utilisation in Australia is the Continuity of Ownership Test (COT), which restricts the transfer of losses to different investors. The COT requires that shares carrying more than 50 per cent of

the voting, dividend and capital rights continue to be beneficially owned by the same persons from the start of the loss year to the end of the income year in which the loss is deducted. The aim of the COT is to prevent losses from being transferred to new investors who may value them more highly (Australian Treasury 2004).

Where the COT is failed due to the company having a substantial change in ownership, the company may still be able to recoup losses if the Same Business Test (SBT) is satisfied. Under the SBT a company must maintain the same business in the year of recoupment of the loss as it conducted prior to the change of ownership that led to the COT failure.

While there are restrictions on loss transferability through the COT and the SBT, certain businesses are allowed to transfer losses. For instance, sole traders and partnerships are able to flow through their losses to owners, and wholly-owned corporate groups are allowed to offset losses against income from other areas of their corporate group under the consolidation regime. Furthermore, Abhayaratna and Johnson (2009) suggest that restrictions on loss-utilisation may have also lead to pressure for specific concessions to compensate and attract investors to investments which suffer as a result of the restrictions.

(d) Inter-Corporate Dividends and Capital Gains on Shares

Inter-corporate dividends are taxed two ways. For consolidated groups, intra-group dividends are ignored. For other companies that receive dividends, the treatment is similar to that applying to individuals (discussed in section 9.4.3(e)) with the grossed-up value of the dividend included in assessable income with any franking credits used to offset any tax liability. To ensure dividend income is not double taxed when distributed to another taxpayer, franking credits attached to a dividend are credited to the receiving company's franking account.

Upon disposal of a share, capital gains tax applies to the full nominal realised gain. To ensure the realisation-based

¹⁴ While acquired goodwill is not depreciable, where it declines in value, expenditure incurred to maintain it is typically immediately deductible, meaning investments in goodwill have access to deductions equivalent to allowing write-off broadly consistent with economic depreciation.

capital gains tax does not impede takeovers and other similar arrangements, roll-over relief is available for capital gains arising from an exchange of interests in companies or fixed trusts.

(e) Small Business Tax Concessions

A number of tax concessions are available for small business (businesses with annual turnover of less than \$2 million). These concessions include: special depreciation provisions, including immediate expensing for assets costing less than \$1,000; a tax offset of up to 25 per cent of the tax liability on business income (entrepreneurs tax offset); and a number of capital gains tax concessions.

(f) Treatment of Cross-Border Income Flows

Outbound Investments of Resident Companies

Broadly, an Australian resident company is not taxed on income from offshore non-portfolio investments (where the investment is through a foreign branch or there is a greater than 10 per cent equity stake in a foreign company). This is because non-portfolio dividends are not taxed when repatriated to the Australian company under the dividend exemption system.

At the time profits are earned, 'active' (business or trading) income is generally not taxed under Australia's Controlled Foreign Companies (CFC) rules. The rules operate to prevent the avoidance of Australian tax through the accumulation of lowly taxed 'passive' income (such as interest, dividends and royalties) in a CFC.

Generally, the rules do not apply to income that is comparably taxed offshore.¹⁵ Also, the rules do not apply to 'active' CFCs (where more than 95 per cent of income is generated from active operations) so that Australian companies engaging in genuine offshore commercial operations are not disadvantaged relative to competing companies operating in the same market.

If the CFC rules apply, income earned by a CFC is attributed to Australian residents and included in their taxable income. To avoid double taxation, taxpayers with an interest of less than 10 per cent are only allowed a deduction for the foreign tax paid by the CFC in respect of the CFC income attributed to the taxpayer whilst, for interests greater than 10 per cent, credit for such foreign tax is possible. Income that is attributed is not subsequently taxed when distributed or when included as part of a capital gain upon disposal of an interest in a CFC.

Inbound Investment of Non-Residents

As discussed previously, equity investments by non-residents in Australia are primarily taxed through company tax. A final withholding tax applies to unfranked dividends (income has not been taxed at the company level). The current dividend withholding tax rate is 30 per cent, however, under Australia's tax treaties the rate applying to

dividends is generally reduced to between zero to 15 per cent, depending on the circumstances.

Final withholding taxes are also levied on interest and royalty payments. The current interest withholding tax rate is 10 per cent on gross interest, however, a number of exemptions are available in domestic law (e.g. interest from certain publicly offered debentures, and interest derived by non-resident superannuation funds) and through Australia's tax treaties agreements. The domestic royalty withholding tax is currently 30 per cent but is generally reduced to between 5 and 15 per cent through the tax treaty agreements.

The exemptions and differential rates applying across Australia's numerous treaties are likely to be a significant source of complexity for Australian companies.

9.4.2 Taxation of Natural Resources

Australia has significant non-renewable resource endowments relative to other countries. Boulhol (2008) found that Australia's natural resources, excluding agriculture, as a percentage of total capital, ranked fourth in the OECD, behind Norway, Canada and New Zealand. Despite Australia's relative abundance of natural resources, Australia has an inconsistent and complex array of tax and non-tax instruments applying to the resource sector.

Different tax arrangements apply for different resources and for the same resource depending on its location. Australia relies significantly on the company income tax system to tax natural resources, with possibly around 50 per cent of tax from the mining sector coming from company tax (Australian Treasury 2008). Company tax is particularly important in relation to resource rents from the mining sector with around 50 per cent of Australia's mining assets owned by non-residents.

The main types of resource taxes are volumetric royalties, *ad valorem* royalties and rent-based taxes.¹⁶

(a) Petroleum Resource Rent Tax

The Petroleum Resource Rent Tax (PRRT) is a profit-based rent tax which generally applies to all petroleum projects in offshore areas. The PRRT is levied at a rate of 40 per cent of a project's net cash flow and is deductible for company income tax purposes. Under the PRRT, losses are accumulated at threshold rates and can be used to offset future profits. The tax is paid when the net cash flow, including accumulated costs, becomes positive.

The threshold rates vary with the type of expenditure. The threshold rate applying to losses associated with exploration expenditures is the long-term bond rate plus 15 percentage points, if the expenditures were incurred within five years of lodging data required for the granting of the production licence, otherwise, the threshold rate is the GDP deflator. Losses arising from general expenditures are accumulated at the long-term bond rate plus 5 percentage points.

¹⁵ CFCs resident in 'listed' countries (Canada, France, Germany, Japan, New Zealand, United Kingdom and the United States), which are considered to have tax systems comparable to Australia's, are generally only taxed on specifically designated, concessionally taxed income, although a *de minimis* exemption may be available.

¹⁶ While labelled as taxes in official statistics, the arrangements outlined above actually reflect a return to the community for the use of its natural resources. These natural resources are unrealised assets, not included on the national balance sheet. In effect, a more appropriate treatment of natural resources would be to include them on the national balance sheet, and treat the taxation revenue as income from the sale of the national asset.

Table 9.5 Summary of State and Territory Resource Royalties

State	Royalty type	<i>Ad valorem</i> %	Profit %	Comment
Western Australia	Specific/ <i>ad valorem</i>	1.25–7.5		Mainly <i>ad valorem</i> —in general, ores 7.5%, concentrates 5%, metals 2.5%; gold 1.25–2.5% based on price; export coal 7.5%; specific royalty on coal not exported.
Queensland	<i>Ad valorem</i>	1.5–7		Coal 7%, other minerals—fixed rate option 2.7%, variable rate option 1.5–4.5% based on price.
New South Wales	<i>Ad valorem</i>	4–7		Coal—deep underground 5%, other underground 6%, open cut 7%; other minerals 4%; exception is profit royalty for specified Broken Hill mines
Northern Territory	Profit		18	Based on net value of production where the first \$50,000 is not liable for the royalty.

Sources: Hogan (2007, 2008).

(b) Other Arrangements Applying to Resources

Apart from company tax and Petroleum Resource Rent Tax applying to certain off-shore resources, Australia's taxation of mining resources largely relies on volumetric and *ad valorem* royalties levied by the states.

State mining royalties vary from mineral to mineral and from state to state. Royalties for 'hard rock' minerals, oil and gas are typically levied on an *ad valorem* basis. The rates for minerals such as copper, gold and silver are typically around 4 per cent of the value of production, while for oil and gas they are about 10 per cent of the value of well-head production.

For coal, the rate differs depending on the type of coal, (black or brown) and how it is mined (above or below ground). For example, Victoria and South Australia impose royalties based on the energy content of the coal while New South Wales distinguishes between coal mined underground and from open-cut mines.

For bulk materials (e.g. salt, building materials etc.), royalties are typically levied on a volumetric basis.

Unlike the other states the Northern Territory utilises a profit-based royalty regime for all minerals based on the net value of a mine's production. The rate is set at 18 per cent.

9.4.3 Personal Taxation

Although certain forms of saving are subject to expenditure tax treatment, the Australian personal income tax system is inspired by the ideal of comprehensive income taxation. Under current Australian tax law, taxable income from all sources is added up to arrive at total taxable income, which is subject to a common progressive tax schedule. As such, (taxable) capital income is technically subject to the same marginal tax rate as labour income.

As a general principle, Australian residents are taxed on a worldwide basis, with a foreign income tax offset (credit) provided for foreign taxes paid to alleviate double taxation.

According to the Australian Bureau of Statistics (ABS 2007), the principal assets of Australian households are: their own home (44 per cent of household assets); other property, including rental properties (16 per cent); superannuation (13 per cent); shares and interests in trusts (12 per cent); personal use assets (11 per cent); and bank accounts and bonds (4 per cent).

(a) Marginal Tax Rates

Marginal personal tax rates in Australia are around the OECD average, with a top rate of 46.5 per cent. However, benefits are means tested and as such effective marginal tax rates are often significantly higher, adding considerably to the progressivity of the tax-transfer system. For example, METRs for a secondary earner earning around \$900 per week can be as high as 65 per cent (Australian Treasury 2008), and in some case METRs can be over 80 per cent. Similarly, while there are income tax exemptions for individuals on pensions, the means testing of pension benefits through the assets test can result in nominal effective tax rates on deemed capital income of 65 per cent and higher. As the income tax system is based on nominal income, the real effective top tax rate can be significantly higher.¹⁷

While Australia has high effective top marginal tax rates on capital income, this rate applies to very few forms of capital income. Imputed rent and capital gains from owner-occupied homes are exempt from tax, capital gains (including those from investment properties and shares) partially exempt, while retirement savings, in the form of superannuation, are concessionally taxed.

(b) Capital Gains

Consistent among most countries with capital gains tax (CGT) systems, Australia taxes capital gains on a realisation basis, that is, when the asset is sold. Realised capital gains are subject to personal income tax but, in general, only half of the gain is included in taxable income. While typically only half the gain is subject to tax, expenditures incurred in earning the gain, such as interest expenses, are generally fully deductible at the time they are incurred.

Due to capital gains and losses being determined on a realisation basis, losses from capital gains tax assets can only be used to offset capital gains. This is to prevent taxpayers from realising losses when they accrue and deferring gains. Net capital losses (where capital losses exceed capital gains in the period) can be carried forward indefinitely and used against future capital gains.

As highlighted in Table 9.6, there are a number of concessional arrangements for the taxation of capital gains. These include assets acquired before the introduction of CGT (20 September 1985) and gains on an individual's main residence. In addition, roll-overs are provided on assets transferred at death and upon marital breakdown.

¹⁷ For example, for an asset generating a real return of 6 per cent with inflation at 2.5 per cent, an individual facing a marginal tax rate of 30 per cent has a real effective tax rate on their capital income of 57.5 per cent.

(c) Housing and Other Real Estate

Owner-occupied housing receives consumption tax treatment, with imputed rents and capital gains exempt from tax and no deduction provided for mortgage interest. At the state level, transactions taxes, namely stamp duty, applies to the purchase of property, while local governments generally apply rates on the unimproved value of the land.

Investment or rental properties are taxed under the income tax system, with rent net of deductions for maintenance, depreciation and interest expenses taxed as income. Where the property is held for more than 12 months, only half of the capital gain is taxed on realisation.

(d) Superannuation

Superannuation is concessional tax compared to other savings. Contributions made to a superannuation fund on behalf of an employee, including those made by salary sacrifice, are not included in an individual's personal income and are taxed at 15 per cent. Superannuation fund earnings are taxed at 15 per cent¹⁸, while benefits from a taxed fund are typically exempt from tax from age 60, thus resulting in an effective t-t-E system.

From 60 years of age, superannuation fund earnings are also exempt from tax (resulting in a t-E-E system), but as discussed previously, subject to the pension income or assets test which effectively taxes returns (actual under

income test, deemed under assets test) on superannuation accounts (Table 9.7).

(e) Personal and Company Tax Integration

The personal and corporate income tax systems are integrated via a full imputation system for the taxation of dividends. Australia and New Zealand are the only two remaining OECD countries with full dividend imputation systems. Under this system domestic shareholders receive a credit for domestic taxes paid by the company; in Australia these credits are fully refundable.

As no Australian tax is paid by an Australian company on its foreign profits and foreign taxes do not give rise to imputation credits, when dividends from these profits are distributed to resident Australian shareholders, no imputation credits are available.

One significant area of pressure under the current tax system is the wedge between the top personal tax rate and the corporate tax rate. The tax wedge which is currently 16.5 per cent (and higher if means testing is included), provides incentives for individuals to incorporate, and retain income within the company, and to income split by paying dividends to shareholders with lower marginal tax rates. A number of measures have been introduced to address these issues for small business, including the alienation of personal services income rules (APSI rules).

Table 9.6 Summary of Capital Gains Tax Provisions

Asset/event	Tax treatment
Assets acquired before 20 September 1985	Exempt (excludes superannuation funds)
Assets acquired before 21 September 1999	Can choose to calculate the capital gain on the indexed cost base or reduced gain (e.g. for individuals only half the gain is taxable, see below).
Personal taxpayer	
Held for less than 12 months	Full nominal gain is taxed on realisation
Held for more than 12 months	Half nominal gain is taxed on realisation
Company	
Held for less than 12 months	Full nominal gain is taxed on realisation
Held for more than 12 months	Full nominal gain is taxed on realisation
Superannuation fund	
Held for less than 12 months	Full nominal gain is taxed on realisation
Held for more than 12 months	Two-thirds of the nominal gain is taxed on realisation
Other concessions	
Owner-occupied home	Gains or losses on the disposal of an individual's main residence are exempt from capital
Death of taxpayer	An automatic roll-over is provided where a capital gains tax asset is transferred upon death of a taxpayer.
Small business	There are four small business CGT concessions: —exemption where the asset has been held for more than 15 years —50% discount for active assets —exemption where proceeds are used in connection with retirement —Roll-over where a replacement asset is acquired
Scrip for scrip	A capital gains tax roll-over is provided for capital gains arising from an exchange of interest in a company or fixed trust

Table 9.7 Superannuation Taxes versus Taxes on a Bank Account

	Superannuation fund	Bank account
Contributions	Taxed at 15%	Taxed at individual's marginal rate
Earnings	Up to age 60—taxed at 15% From age 60—subject to pension income and assets test, but exempt from further tax if in draw-down phase	Up to age 65—taxed at individual's marginal rate and subject to transfers means testing From age 65—taxed at individual's marginal rate (including Senior Australian's Tax Offset—pension age), and subject to pension income and assets test
Benefits	Generally exempt	Exempt

¹⁸ While the statutory tax rate for superannuation funds is 15 per cent, only two-thirds of a capital gain is included in assessable income where the asset has been held for at least twelve months.

The APSI rules aim to ensure personal services income is assessable for the individual whose efforts or skills generated the income. There are a number of tests to determine if the APSI rules apply. The first attempts to distinguish whether the individual is an independent contractor. If this test is not satisfied then where 80 per cent or more of income is earned from one entity the personal service rules will apply; if not, additional tests are employed to determine if the APSI rules will apply.

Despite these rules, income splitting and tax deferral remains a significant issue particularly in relation to closely held businesses and trusts.

9.4.4 Distortions Caused by the Present System of Capital Income Taxation

As a way of summarising and quantifying the distortions caused by the current tax system, this section presents estimates of average and marginal effective corporate tax rates on investment across various asset types and the different modes of finance. Similarly, to examine distortions in the pattern of saving, estimates of marginal effective tax rates on the real return to the most important forms of household savings are also presented.

(a) Measuring the Effective Tax Burden on Capital Income

The effective tax burden on capital income can be measured using Marginal Effective Tax Rates (METRs) and Average Effective Tax Rates (AETRs).¹⁹

The AETR measures the proportion of the value of an investment project which is paid in tax. It is given by the net present value of the tax paid by the investment divided by the present value of the pre-tax profit flows from the investment. As shown in Sørensen (2009) the AETR can be given by:

$$(7) \quad AETR = \frac{\tau [p - \rho + (1 - A)(\rho + \delta) - \beta(r + \pi)]}{p}$$

where τ is the company tax rate, p is the real net rate of return before tax, ρ is the company's real cost of finance, that is, the rate of return required by the investor supplying the funds for the project, A is the net present value of allowances, δ the real rate of economic depreciation, β is the debt-to-asset ratio, and $r + \pi$ is the nominal interest rate.

From equation (7) it can be seen that the AETR can be used to measure the tax burden on inframarginal projects where $p - \rho$ is the pure rent from the project, that is, the difference between the actual pre-tax return and the investor's required return.

In contrast to the AETR, the METR measures the tax burden on the marginal unit of investment which generates no net profit for the investor. The METR is given by:

$$(8) \quad METR = \frac{c - \rho}{c}$$

where c is the real pre-tax rate of return on the marginal investment (user cost of capital). The user cost of capital, as shown in Sørensen (2009), is given by:

$$(9) \quad c = \frac{(1 - \tau A)(\rho + \delta) - \tau\beta(r + \pi)}{1 - \tau} - \delta$$

This framework is used in the following sub-sections to estimate effective tax rates consistent with the discussion presented in section 9.3.

(b) Investments

In line with the analysis presented in section 9.3, the effective tax rates on investments assume a small open economy, where investors can invest in domestic and international shares and bonds, and multinationals can be owned by many shareholders who may reside in different countries. As such the company's cost of finance is determined on the international capital market (r in Figure 9.8).²⁰ Because capital is assumed to be internationally perfectly mobile, a company's finance and investment decisions depend on the internationally determined cost of finance and on source-based capital income taxes (corporate income tax) and are not affected by capital income taxes at the personal level (residence-based taxes).

A high company tax rate may negatively impact upon economic activity. First, it can discourage capital investment by increasing the user cost of capital (pre-tax required rate of return), which reduces marginal labour productivity (and thus wages) (see section 9.3). Second, it may discourage foreign direct investment (FDI) which can be an important source of innovation.²¹ Last, it can increase investment distortions arising from difficulty in measuring true economic income, which will lower capital productivity.

Table 9.8 presents METRs and AETRs for a variety of investments. There are significant differences in METRs for investments in different asset types, with METRs ranging from zero per cent for assets which are immediately expensed (such as exploration expenditure) to 82.5 per cent for acquired brand equity. As higher METRs imply the company requires a higher minimum pre-tax return in order to undertake the investment, a higher METR will tend to reduce the optimal scale of investment. Differing METRs across assets are therefore likely to lead to a misallocation of resources in the economy.

Distortions Caused by Difficulties in Measuring Economic Income

Inherent in any comprehensive income tax system are difficulties with respect to calculating economic income. Such issues arise in relation to adjusting for inflation, measuring changes in real asset values and appropriately accounting for the timing of revenues and expenditure. All of these issues can result in distortions to firms' investment decisions.

Where the tax system does not adjust for inflation, such as Australia's nominal income tax system, the inflationary component of the return, which compensates the investor for the reduction in purchasing power, is taxed. Not adjusting taxable income to account for inflation, will tend to increase

19 The methodology used to calculate METRs and AETRs in this chapter is based on Sørensen (2009).

20 The cost of equity finance may depend on the world-market interest rate plus an appropriate risk premium (see Sørensen 2009).

21 While it is often argued FDI can provide 'spill-over' benefits it is unclear how significant the potential spill-overs are for a developed economy such as Australia.

the required rate of return from an investment (r^s in Figure 9.8), in order to earn a given real after-tax rate of return (r in Figure 9.8). Excluding the impacts of depreciation, as a result of taxing the full nominal return to capital, METRs will be higher than the statutory rate. This can be seen in Table 9.8 with the effective marginal tax rate on a bank account of around 38 per cent. The greater the share of inflation to the total nominal gain the higher the METR (this is discussed in more detail in the section 9.4.4(c), which examines effective tax rates on different savings vehicles).

Capital allowances under the current tax system are based on historical cost, again due to difficulties in accounting for inflation. Under historical cost depreciation, even if economic depreciation is correctly measured, in the presence of inflation the real value of the depreciation allowance will be eroded resulting in METRs greater than the statutory rate. As shown by Auerbach (1979), this will introduce biases favouring long-lived (durable) investments. This distortion favouring long-lived assets is highlighted in Figure 9.14, which presents METRs for assets with different effective lives, but assuming that the depreciation rate for tax purposes is equal to the real economic rate ($\delta = \phi$). For short-lived assets such as a computer the METR is around 37 per cent, however, for a long-lived asset the effective rate approaches the statutory rate of 30 per cent.

While depreciation provisions based on historical cost may distort investment decisions, at modest rates of inflation, such biases are likely to be small, particularly relative to distortions introduced because of difficulties in determining actual rates of economic depreciation, and distortions arising from government support.

There is significant uncertainty and complexity involved in estimating rates of economic depreciation.²² Hulten and Wykoff (1981), who undertook a significant study of economic depreciation in the United States, found that economic depreciation can be reasonably approximated by

a constant diminishing value rate of depreciation. This rate can be given by:

$$\delta = \frac{\text{Declining balance factor}}{\text{Economic life of the asset}}$$

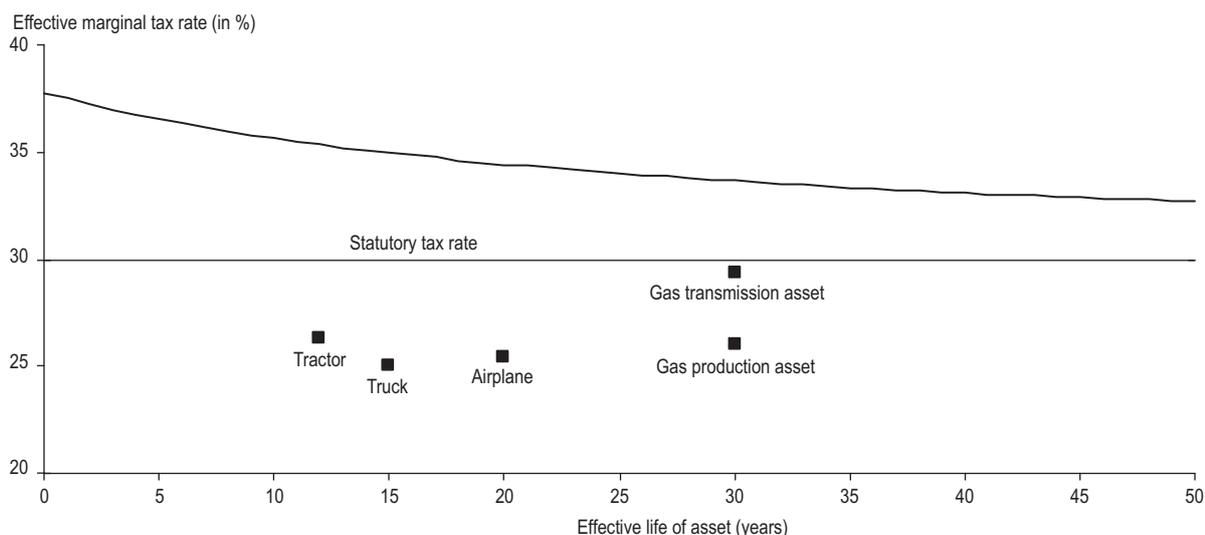
The declining balance parameter effectively measures the speed of decay of the asset over its effective life. The higher the parameter the more the asset's value is depreciated in the early part of its life. The diminishing balance method under Australia's capital allowance regime is based on this approach. With the difficulty in calculating economic depreciation rates, a uniform declining balance factor is applied for all assets (currently 200 per cent). The Commissioner of Taxation determines effective lives for a range of assets, although as discussed below these lives may be capped. As such, the rate of economic depreciation for tax purposes is calculated as:

$$\begin{aligned} \phi &= \frac{\text{Declining balance factor}}{\text{Effective life (or capped life)}} \\ &= \frac{200 \text{ per cent}}{\text{Effective life (or capped life)}} \end{aligned}$$

In the analysis presented here it is assumed that the rate of economic depreciation is appropriately measured under the current effective life tax provisions. But, with the difficulties involved in estimating effective lives, and the fact that the declining balance parameter is unlikely to be the same across all assets, there is likely to be a greater variation in METRs across assets than that presented here.

Incorrectly measuring the rate of economic depreciation for tax purposes leads to investment decisions being distorted. Two key examples of this are in relation to repairs and maintenance, and the treatment of intangibles. Under the current tax system, expenditure on repairs and maintenance is immediately expensed; this is because of difficulties in measuring its true effective life. This results in an

Figure 9.14 Comparison of METRs on Equity Financed Investments



Source: Authors' calculations.

22 There have been no extensive studies of economic depreciation in Australia.

METR of zero, which is likely to bias decisions towards fixing existing plant and equipment, over acquiring new capital.

Similar difficulties also arise in relation to calculating the change in value (both appreciation and depreciation) of intangible assets. As discussed previously, the treatment of intangibles is somewhat ad hoc. This ad hoc treatment can lead to significant variations in METRs (Table 9.8). This can be clearly seen in the case of brand equity (or goodwill). The creation of brand equity, for example through advertising, is typically immediately expensed even though the benefits may accrue over a number of years. As such creating brand equity has an METR of zero. Where brand equity is acquired, for example when an entity acquires another entity, and the acquired goodwill is not maintained it will fall in value. Under the current tax system no deduction is provided for the change in value of acquired brand equity. As such, acquired brand equity faces a very high METR, as it needs to earn a higher rate of return before-tax to compensate for not recognising the change in value. Where acquired brand equity is maintained, the expenditure incurred in maintaining it is generally deductible. As such the METR is more in line with the METR on a short-lived asset. As shown by the measures of AETRs, these distortions remain significant even for high levels of profitability. This may be particularly important for intangibles as they typically generate above normal returns.

In general, most intangible investments created within a firm receive a more favourable treatment than investments in physical capital, either because of concessions arising from difficulties in measuring the true change in value, or because of government support, such as R&D which is discussed in more detail below.

Another issue in relation to the current tax system is the treatment of capital gains. Capital gains are taxed on realisation as opposed to when the gain accrues. The rationale for the realisation-based treatment is based on difficulties associated with valuing some assets. By applying tax when the asset is realised, the taxpayer is effectively allowed to defer tax liability, which acts to lower the effective tax rate on capital gains (this is discussed in more detail in section 9.7). The benefit arising from the realisation basis CGT can be seen by comparing the METR on land (assuming land is only subject to capital gains and held for ten years) which is only 24.7 per cent, with the METR for a bank account/bond (around 38 per cent). This benefit increases the longer the asset is held, as the 'accrued tax liability' is deferred for a longer period. The tax deferral also creates a lock-in effect under which there is a disincentive for investors to dispose of an underperforming asset to purchase a more productive asset. This can lead to inefficient capital allocation.

Distortions Arising from Government Policy

In addition to distortions inherent in any income tax system due to difficulties in measuring economic income, distortions also arise from concessionary arrangements introduced by governments to achieve particular policy objectives.

In this regard, the current tax system allows a number of assets to be depreciated at accelerated rates through statutory caps on effective lives. These accelerated depreciation provisions are shown to introduce significant distortions in METRs across asset types. The caps, which apply to tractors, trucks, airplanes, gas transmission and production assets, result in significantly lower METRs for eligible investments, relative to other assets whose depreciation rates are based on effective life.²³ For example, the METR for a tractor, which has an effective life of twelve

Table 9.8 Effective Marginal and Effective Average Tax Rates on Selected Investments, Financed by Equity (%)

Asset	METR	AETR 10% rent	AETR 40% rent
Bank account/bonds	37.8	33.8	31.5
Land (capital gains)	24.7	21.4	19.8
4-year effective life asset	36.8	33.3	31.3
15-year effective life asset	35.0	32.4	30.9
100-year effective life asset	31.6	30.8	30.3
Tractors	26.3	28.4	29.4
Trucks	25.0	27.8	29.2
Airplanes	25.4	28.0	29.2
Gas transmission assets	29.4	29.7	29.9
Gas production assets	26.0	28.2	29.3
Mineral exploration expenditure	0.0	18.8	26.1
Repairs and maintenance	0.0	18.8	26.1
Building (40-year)	30.3	30.1	30.1
Building (25-year)	26.2	28.3	29.4
R&D (125 per cent concession)—equipment	18.6	25.2	28.2
Brand equity (new)	0.0	18.8	26.1
Brand equity (acquired, maintained)	36.9	33.4	31.3
Brand equity (acquired, not maintained)	82.5	70.6	54.2
Standard patent (new)	0.0	18.8	26.1
Standard patent (acquired)	34.4	32.1	30.8
Firm-specific resources	0.0	18.8	26.1

Note: Estimates assume 6 per cent real return and 2.5 per cent inflation.

²³ One argument for statutory caps on effective lives is that the current depreciation arrangements based on a uniform declining balance factor are inappropriate for some assets, and this can be addressed by capping the effective life.

years and a statutory cap of six and two-thirds years, is around 26 per cent, compared to the statutory rate of thirty years and an METR of around 35 per cent for a similarly durable asset (Figure 9.14).

Investments in R&D have one of the most favourable tax treatments. This is because for investment in R&D, companies can deduct more than 100 per cent of the R&D expenses—125 per cent for general R&D and 175 per cent for incremental R&D. For expenditure eligible for the 125 per cent concession this can result in an METR of around 18 per cent (ten-year life), and AETRs of close to 25 per cent for investments generating economic rents of 10 percentage points, and 28 per cent for investments generating economic rents of 40 percentage points. While not shown in Tables 9.8 and 9.9, this uplift will tend to provide a greater benefit for shorter-lived projects due to the effective front loading of the concession. Under current arrangements, the concession can be taken as a refundable credit so companies are able to fully utilise the concession even if they are in a loss situation.

Distortions in the Choice of Finance

Firms can raise finance in one of three ways: debt, new equity and/or retaining profits. As the current analysis excludes personal level capital taxes, the effective tax rates for new equity and retained earnings will be equivalent.

Like all tax systems based on the full return to equity, the Australian tax system favours debt over equity at the corporate level and therefore may encourage companies to rely excessively on debt finance. This is because nominal interest payments are deductible but returns to equity (corporate profit) are taxed. This bias towards debt as a means of financing can be seen by comparing effective tax rates in Table 9.8 for equity financing and Table 9.9 for debt financing. For example, for an asset with an effective life of four years, the METR when financed by equity is around 37 per cent, whereas the METR for the same investment financed by debt is around -3 per cent. The small negative

METR for debt financing is because the full nominal interest expense is deductible, which is only partly offset by depreciation based on historical cost.

The implications of this bias towards debt as a source of finance are uncertain; however, a high debt-to-asset ratio may increase the probability of bankruptcy and therefore create a cost of financial distress. In addition, the IMF recently suggested that the bias towards higher leverage increases the vulnerability of the private sector to shocks (IMF 2009).

Debt financing also exacerbates distortions arising from accelerated depreciation and other tax preferences. This can be clearly seen in the case of expenditure on repairs and maintenance, which is immediately expensed. When debt financed, this expenditure has an METR of around -155 per cent, compared to zero under equity financing.

The reasoning behind this can be explained by firstly considering an investment financed totally by debt, for which tax depreciation is equal to nominal economic depreciation. Nominal economic depreciation (A) is equal to real economic depreciation with an inflation adjustment ($\delta - \pi$), thus the present value of depreciation allowances is:

$$(10) \quad A = \frac{\delta - \pi}{\rho + \delta}$$

Assuming a marginal investment, the user cost of capital, or minimum required return, will equal the real borrowing rate, which is equal to the worldwide cost of capital r . This can be seen by substituting (10) into (9), given that the debt-to-asset ratio (β) is unity. The cost of capital equation for a break-even project (where $\rho = r$) would be:

$$(11) \quad c = \frac{(1 - \frac{\tau(\delta - \pi)}{r + \delta})(r + \delta) - \tau(r + \pi)}{1 - \tau} - \delta$$

$$= \frac{r - \tau r}{1 - \tau} = r$$

As such the METR for such a project would be zero.

Table 9.9 Effective Marginal and Effective Average Tax Rates on Selected Investments, Financed by Debt (%)

Asset	METR	AETR 10% rent	AETR 40% rent
Bank account/bonds	0.0	18.8	26.1
Land (capital gains)	-24.3	4.8	14.2
4-year effective life asset	-2.7	18.0	25.8
15-year effective life asset	-7.5	16.6	25.4
100-year effective life asset	-16.9	14.1	24.7
Tractors	-33.3	10.4	23.6
Trucks	-37.6	9.5	23.4
Airplanes	-36.3	9.7	23.4
Gas transmission assets	-23.7	12.5	24.2
Gas production assets	-34.2	10.2	23.5
Mineral exploration expenditure	-154.5	-5.2	19.7
Repairs and maintenance	-154.5	-5.2	19.7
Building (40-year)	-20.9	13.1	24.4
Building (25-year)	-33.6	10.3	23.6
R&D (125%)—equipment	-93.2	0.8	21.1
Brand equity (new)	-154.5	-5.2	19.7
Brand equity (acquired, maintained)	-2.3	18.1	25.9
Brand equity (acquired, not maintained)	80.4	68.0	52.9
Standard patent (new)	-154.5	-5.2	19.7
Standard patent (acquired)	-8.9	16.2	25.3
Firm-specific resources	-154.5	-5.2	19.7

Note: Estimates assume 6 per cent real return and 2.5 per cent inflation, capital gains tax assets held for ten years as per Table 9.8.

Where an asset is written off at an accelerated rate the required return will therefore fall below r and the METR will be negative. Consider the case of a debt-financed project with costs that are immediately expensed, such as through a managed investment scheme or a new investment in intangibles. Where the firm can claim the tax value of the cost immediately and where the project is fully debt financed, the present value of depreciation allowances (A) and the debt-to-asset ratio (β) would be unity. Using (9) again, the cost of capital equation for a break-even project would be:

$$(12) \quad c = r - \frac{\tau(r + \pi)}{1 - \tau}$$

The cost of capital in (12) is less than the discount rate for positive values of r and $r + \pi$, thus yielding a negative METR.

The different treatment of debt and equity is also a major source of complexity in the income tax system. For example, it requires complex rules to classify instruments as debt or equity and thin capitalisation rules to prevent profits from being shifted from Australia. These complexities can be expected to grow as financial innovation continues to blur the distinction between debt and equity.

Implications of the Current System for Mobile Capital

The AETR, which measures the proportion of the value of an investment project which is paid in tax, can be used to examine projects that earn a pure rent, that is a return above the normal return. Tables 9.8 and 9.9 present AETRs for investments generating economic rents of 10 and 40 percentage points, for both equity and debt financing respectively.

The variation in AETRs is less pronounced than that for METRs as inflation and depreciation provisions are less relevant. As the share of the rent to the total return increases AETRs converge to the statutory rate. This suggests that accelerated tax depreciation provisions are likely to be less effective as a means of attracting internationally mobile inframarginal investments.

In addition, AETRs for debt-financed investments are higher than METRs as company tax is paid on the rent.

(c) Savings

Consistent with the analysis presented in section 9.3, the effective tax rates faced by personal capital income taxpayers²⁴, presented in Tables 9.10 and 9.11, assume a small open economy. Personal capital income taxes are levied on a residence basis and the required rate of return is exogenously determined from abroad. Personal capital income taxes will lead to lower domestic savings and increased capital imports while having no effect on domestic investment.

There are large variations in the treatment of different forms of household savings, with METRs ranging from –153 per cent for superannuation contributions eligible for the co-contribution (government matches the contribution)

Table 9.10 Effective Marginal Tax Rates on Selected Savings Vehicles, Top Marginal Tax Rate (46.5%)

Savings vehicle	METR (%)
Bank/bonds	65.9
Rental property (residential)	34.9
Owner-occupied home	0.0
Superannuation—salary sacrifice	–63.4 (–108.0)
Superannuation—after-tax contribution	21.3 (–21.3)
CGT asset	22.6
Listed shares—franked dividend	23.4
Listed shares—unfranked dividend	65.9
Listed shares—capital gains	22.6

Notes: For superannuation, two estimates are presented: the first assumes the superannuation fund invests in shares paying unfranked dividends; the second, in parentheses, assumes the fund invests in shares paying franked dividends. Estimates assume 6 per cent real return and 2.5 per cent inflation.

Table 9.11 Effective Marginal Tax Rates on Selected Savings Vehicles, 15 Per Cent Marginal Tax Rate

Savings vehicle	METR (%)
Bank/bonds	21.3
Rental property (residential)	10.3
Owner-occupied home	0.0
Superannuation—salary sacrifice	21.3 (–21.3)
Superannuation—after-tax contribution (co-contribution)	–107.0 (–152.6)
Superannuation—after-tax contribution	21.3 (–21.3)
CGT asset	6.2
Listed shares—franked dividend	–21.3
Listed shares—unfranked dividend	21.3
Listed shares—capital gains	6.2

Notes: For superannuation, two estimates are presented: the first assumes the superannuation fund invests in shares paying unfranked dividends; the second, in parentheses, assumes the fund invests in shares paying franked dividends. Estimates assume 6 per cent real return and 2.5 per cent inflation.

to 66 per cent for bank accounts and bonds. As higher METRs imply lower returns to saving after tax, these variations would likely lead to large distortions in the portfolio choices of the resident saver and would also have implications on fairness and equity.

Distortions in Saving Choices Caused by Difficulties in Measuring Economic Income

Even at low rates of inflation there can be large differences between statutory and effective rates of tax.

This effect can be seen most clearly in the METRs faced by taxpayers saving through a bank deposit or a bond (Tables 9.10 and 9.11). The entire nominal return on interest-bearing bank deposits and bonds in the hands of a resident investor is taxed on an annual receipts basis at the full personal income statutory tax rate. With no adjustment for inflation for tax purposes, a position adopted by most countries for simplicity reasons, a reduction in purchasing power further reduces the after-tax rate of return on savings received by an Australian resident for an exogenous pre-tax return.

²⁴ Effective tax rate calculations exclude the effect of means tests in the transfer system and income splitting. The current arrangements also provide incentives for income splitting, whereby capital income is directed towards individuals with lower tax rates. Income splitting is made easier through the use of discretionary trusts, which allow trust income to be distributed to beneficiaries without regard for their interest in the trust.

As such, when financed out of equity, the effective tax rate is set at a rate above the taxpayer's statutory rate. The size of this rate differential is positively related to the rate of inflation. That is, as inflation increases, the real tax burden increases. When financed out of debt, the taxpayer is able to deduct nominal interest expenses. For a break-even investment, the taxpayer's nominal interest expenses are exactly offset by the nominal interest receipts leading to an METR of zero.

Apart from the difficulties in measuring changes in asset values for calculating depreciation charges and the realisation treatment of capital gains, the other main difficulty in measuring economic income for housing and other personal use assets relates to the valuation of housing and other consumption services provided to the owner of the asset—commonly referred to as 'imputed rent'. The non-taxation of imputed rent and of capital gains yields a zero METR ignoring the effects of stamp duty and rates.²⁵

Distortions in Saving Choices Caused by Government Policies

By far, the greatest tax distortions to the savings choices of households are caused by explicit decisions made by government in two areas—superannuation and capital gains taxation.

Investing in superannuation out of pre-tax income through Superannuation Guarantee contributions or salary sacrifice arrangements means that superannuation is afforded one of the most favourable tax treatments available. That is, the taxpayer effectively obtains a tax deduction for saving, at the personal statutory rate, which is only partly clawed back by the 15 per cent contributions tax. Such a concession favours high income earners over low income earners.

From Table 9.10, the top marginal taxpayer faces an effective marginal tax rate of around –63 per cent to –108 per cent (where the superannuation fund invests in shares paying unfranked and franked dividends respectively).²⁶ Focusing on the case of unfranked dividends, this means that for a given pre-tax real rate of return, the tax system subsidises the top marginal taxpayer such that the after-tax real return received is 63 per cent higher due to the superannuation concessions. However, for a low income earner facing a 15 per cent statutory income tax rate, the tax value of the deduction for saving is fully clawed back by the 15 per cent contributions tax. Thus, in the absence of other subsidies, the lowest marginal taxpayer saving through superannuation faces an METR that is equivalent to saving through a bank deposit. This is because earnings within the superannuation fund are also taxed at 15 per cent. Low income earners do, however, have access to the superannuation co-contribution, under which the government matches after-tax contributions up to \$1,000. This scheme results in an effective tax rate of around –107 per cent to –153 per cent (for investments paying unfranked and franked dividends respectively).

This is because the government matches the low income individual's contribution dollar for dollar.

The effective tax rate for salary sacrifice superannuation contributions or contributions eligible for the co-contribution falls as the holding period is reduced. This is because a large part of the concession is front loaded, as it applies to the initial contribution, and locked in until the individual reaches preservation age. As such, the benefits increase for contributions that are made the closer to an individual's retirement to the extent the individual cannot access their superannuation. This provides a significant incentive for individuals to back load their contributions to the years immediately leading up to retirement.

The concessional treatment of capital gains, particularly the 50 per cent discount, is another one of the large distortions in the current tax system. Where gains are taxed at the time of realisation, the taxation tends to lock-in investors, discouraging them from disposing of the asset to purchase an alternative, more productive asset. The lock-in effect therefore prevents the efficient allocation of capital within the economy.

The lock-in effect is exacerbated where an individual can escape capital gains (such as the pre-1985 asset exemption). Roll-over provisions are often used to reduce the lock-in effect. For example, the scrip for scrip roll-over reduces the lock-in effect of investors holding shares in an underperforming target company. However, roll-over provisions also reduce the effective rate on accrued capital gains and hence increase the extent of any distortions that arise from the differential treatment of capital gains and other income.

The concessional treatment also applies to capital gains on rental properties, however, rental income is taxed on an annual receipts basis at the individual's marginal tax rate. This tax treatment leads to effective tax rates of around 35 per cent for an individual on the top personal tax rate. The concessional treatment of property, through the CGT concessions, is likely to lead to a misallocation of resources in the economy, with over-investment in real property. In addition, Fane and Richardson (2005) argue the treatment of rental property, whereby interest is deductible at the full marginal tax rate, while only half the capital gain is subject to tax, is likely to exacerbate asset price cycles.

Distortions in Saving Choices Caused by the Imputation System

Most foreign income earned by Australian companies is not taxed at the Australian company level. For resident owners, it is at the shareholder level that Australian tax is typically collected. The exemption for most foreign income derived by Australian companies means that the company income tax does not generally operate as a withholding tax on foreign income. Rather, resident shareholders are effectively taxed on foreign income, net of foreign taxes, when they receive the income as an (unfranked) dividend or realise a capital gain by selling their shares. The Australian tax system

25 Where rates are broadly applied, it is plausible that rates are fully capitalised into asset prices. Therefore, they do not distort marginal decisions or affect the METR.

26 The difference between investments paying franked and unfranked distributions is discussed in the next sub-section.

only provides imputation credits for Australian company taxes paid, not foreign taxes paid.

This is consistent with the so-called 'national neutrality' benchmark, which aims for neutrality in resident savings decisions on the gross return to their country of residence—with pre-tax returns on savings allocated domestically matching post-foreign tax returns on domestic savings allocated offshore.

It is often argued that this favours domestic investment and gives Australian multinationals fewer incentives to shift profits offshore. As discussed in section 9.3, this argument is based on the assumption that shareholder-level taxes are relevant to a company's investment decisions. But in a small open economy, under capital mobility, domestic investment decisions and profit-shifting motives are determined by source-basis taxation, not resident shareholder taxation arrangements.

As such, the full dividend imputation is effectively a subsidy on domestically-owned share capital invested in domestic companies. The magnitude of this subsidy is quantified in Tables 9.10 and 9.11. A top marginal taxpayer receiving franked dividends faces an METR of 23 per cent as full dividend imputation provides a subsidy for real pre-tax returns in the order of 43 per cent. On the other hand, the full nominal returns to savings allocated offshore, distributed as unfranked dividends, are taxed at the personal statutory rate—leading to an equivalent METR as that faced by a resident saving through a bank account.

The subsidy effect of full dividend imputation is very clearly seen in the case of a low income earner. As there is a full refund for the corporate tax value of franking credits distributed in excess of personal taxes paid, a taxpayer in the lowest tax bracket faces an METR of –21 per cent. The lowest marginal taxpayer who receives franked dividends is effectively receiving a cash refund for the income tax paid by the company, levied at a statutory rate of 30 per cent, which he or she did not actually pay. In other words, the individual is receiving a cash subsidy from the government for earning normal returns to saving, where the size of the cash subsidy is linked to the size of the Australian company's income tax liabilities.

Effective Tax Rates on Small Businesses

Domestic savings can also be undertaken through small businesses. While excluding personal level taxes from the cost of finance may be appropriate for multinational corporations, as discussed previously, smaller domestic companies may not have easy access to international capital markets. These companies largely obtain finance from domestic investors and the domestic capital market. The finance and investment decisions of smaller entities are therefore more accurately modelled by allowing for personal income taxes. The following section presents METRs for investments in a number of assets held under different organisational types.

Businesses and investors can use a variety of organisational forms, which have significantly different tax arrangements. One of the main sources of difference in tax arrangements is the degree of integration between the business and the investor.

In relation to personal level capital taxes, Australia operates a full imputation system for companies, while sole proprietors and partnerships are subject to flow through treatment. Imputation systems, which were discussed in more detail in section 9.3.4(b), aim to remove distortions between debt and equity at the personal level.

Table 9.12 presents METRs for a variety of investments made through incorporated and unincorporated businesses. Again, there are significant differences in METRs for investments in different assets and across financing choice. In addition, Table 9.12 also highlights distortions between different organisational structures.

Investment distortions arising from difficulties with respect to calculating economic income are also apparent for small business. Assuming the businesses are owned by an individual on the top marginal tax rate (46.5 per cent), interest income from investments in bonds or holding funds in a bank account has an effective tax rate of 65.9 per cent, for both unincorporated and incorporated entities, reflecting the taxation of nominal income.

Differences in METRs for companies and unincorporated enterprises are also apparent. In the case of new equity, this is because of the way that the imputation system claws back the benefits of tax preferences available to companies. The imputation system was modelled assuming businesses pass out all profits to domestic resident shareholders and all franking credits (taxes paid on those profits) are passed out to shareholders. Under these assumptions the shareholder is effectively taxed on their economic income. As such all tax preferences at the company level, such as accelerated depreciation provisions, or punitive arrangements arising from errors in measuring economic depreciation, are washed out at the shareholder level. As shown in Table 9.12, the effect of the imputation system is that where an investment is financed by new equity, the effective tax rate on all investments is equal to 65.9 per cent, equal to the tax rate on bonds.

Where an incorporated entity finances investment through retained earnings—which is not possible for unincorporated entities due to their flow through tax

Table 9.12 Effective Marginal Tax Rates on Selected Assets by Holding Entity (Small Business)

Asset	METR: new equity	METR: retained earnings
Unincorporated		
Bank/bond	65.9	n.a.
Land (capital gain)	29.7	n.a.
Computer	64.8	n.a.
Machinery (10-year effective life)	63.4	n.a.
Truck	48.7	n.a.
Building	51.0	n.a.
Incorporated		
Bank/bond	65.9	60.9
Land (capital gain)	65.9	50.9
Computer	65.9	60.1
Machinery (10-year effective life)	65.9	59.1
Truck	65.9	49.9
Building	65.9	60.9

Notes: n.a. = not applicable. Estimates assume 6 per cent real return and 2.5 per cent inflation.

treatment—dividend taxes, and therefore the imputation system are irrelevant. As such, tax preferences are not clawed back. Furthermore, the CGT discount provided to individuals, in addition to the benefit received from tax deferral, reduces the firm's cost of capital. This results in lower METRs on investments financed by retained earnings relative to new equity.

Unincorporated entities, such as sole proprietors and partnerships, are fully integrated through flow through. Under this approach, a sole proprietor or partner is taxed on their share of the business income; in addition, any losses from the entity can be used to offset other taxable income the sole proprietor or partner may have. As a result of this tax treatment, any tax preferences provided at the entity level, will not be washed out at the investor level. For example, the accelerated write off for trucks results in an METR of 48.7 per cent for an equity-financed investment through an unincorporated entity compared to 65.9 per cent for bonds, or had the investment taken place within an incorporated entity financed by new equity.

9.4.5 Summary of the Distortions Caused by the Present System of Capital Income Taxation

This section has presented estimates of effective tax rates as a way of summarising and quantifying the distortions caused by the current tax system. The results indicate that the current tax system may distort many dimensions of investment and savings decisions. In many cases, effective tax rates are higher than statutory rates as nominal income is taxed, while in other cases selective tax concessions create effective tax rates that are negative. As a result, the current tax system is likely to distort the level and pattern of investment in the economy. Concessions for different forms of savings are also likely to distort portfolio choice and may also have implications for the equity of the tax system.

The asymmetric tax treatment of debt and equity tends to distort corporate financial policies, which for small businesses are also distorted by differences in the tax treatment of dividends and capital gains. The results highlight that debt is the preferred source of finance for multinational companies. It is possible this may lead to excessive levels of debt which could increase the vulnerability of companies to shocks and therefore may have implications for macroeconomic stability.

There are also a significant number of concessions provided to particular types of saving. The results indicated these concessions lead to large variations in effective tax rates across savings vehicles. This is likely to distort the portfolio choice of resident savers and may also have implications for equity. Key examples of this are the concessional treatment of superannuation which, excluding the means testing of the Aged Pension, provides a significant benefit to high income individuals, and the concessional treatment of capital gains. There are also differences in the tax treatment of small incorporated and unincorporated domestic entities, which are likely to distort the choice of organisational form.

The analysis in this section has highlighted a number of distortions created by the current tax system. The magnitude of these distortions suggests the current system is ripe for

reform. The following sections will outline some guiding principles for company and capital tax reform and review a number of alternatives for fundamental reform.

9.5 Capital Taxation: Principles for Reform

The previous section revealed significant tax distortions to investment and saving, suggesting that the Australian system of capital income taxation is ripe for reform. This section discusses principles for reform of both company tax and personal capital income tax for a small open economy such as Australia.

9.5.1 Company Income Tax

In relation to corporate tax, one might start by asking why the government should levy a company tax instead of taxing individuals directly? The main reason given for taxing companies is that company taxation is a backstop to the personal income tax (OECD 2001). In the absence of a corporate income tax and of an accruals-based personal capital gains tax, income retained by the company would not be subject to taxation until it is eventually paid out as a dividend or realised as a capital gain. Moreover, taxing companies may expand the possible tax base, in particular by providing a way of taxing non-resident shareholders (Auerbach et al. 2009). It is also argued that is easier to tax companies than individuals directly particularly in relation to entities with different shareholder types, while the income tax base may also be more easily measured at the corporate level.

The current Australian company tax is a source-based tax on the full return to corporate equity. As discussed in section 9.3, the literature on the optimal taxation of capital suggests that small open economies should reduce or even eliminate source-based taxes on the normal return to capital. Where capital is perfectly mobile, the supply of capital from abroad is perfectly elastic, so the burden of source-based capital taxes on the normal return is shifted on to immobile factors such as labour and land. In this scenario, none of the burden of the tax is shifted on to non-residents, and the deadweight loss of the tax is greater than it would have been had the domestic factors borne the tax directly.

In contrast, the taxation of domestic savings has no effect on the aggregate level of capital invested in Australia as any reduction in Australian-owned capital invested domestically is offset by an increase in imported capital. These observations lead to:

Principle 1: Reduce or eliminate source-based taxes on the normal return to capital

This principle does not mean that source-based capital taxes should be eliminated altogether. While it is clear source taxation of the normal return should be reduced, the taxation of rents is more complicated. Rents, or pure profits, are the return in excess of the going market rate of return (for the relevant risk class) for the asset. In a closed economy, a tax on rents is non-distortionary. But in an open economy firm-specific rents are mobile, so a source-based tax on such rents will reduce domestic investment. This suggests that source-based taxes should be targeted towards immobile or location-specific rents insofar as this is feasible.

Australia has a number of potential sources of location-specific rents, including extensive non-renewable natural resources, rents created by government regulation, and rents created by barriers to entry into the Australian market due to geographic isolation. We are therefore led to:

Principle 2: Avoid increases in source-based capital income taxes on mobile rents

Principle 3: Increase source-based taxes on immobile rents

Under a conventional business income tax system difficulties arise in relation to accounting for inflation and appropriately measuring the change in value of assets (depreciation arrangements and capital gains). Where economic income is measured incorrectly for tax purposes, resource allocation can be distorted. For example, accelerated depreciation (where tax depreciation allows for a faster rate of write off compared to true economic depreciation) subsidises eligible investment by effectively allowing deferral of tax. This can encourage low-productive investment that would not have been viable in the absence of the tax concession.

Similarly, where income and losses are treated asymmetrically, (e.g. where full loss offset is not provided) the tax system can lead to a bias against risky investments, and the asymmetric tax treatment of debt and equity may encourage companies to rely excessively on debt finance, as discussed in section 9.3. Hence we propose:

Principle 4: Reduce or eliminate inter-asset tax distortions to investment allocation

Principle 5: Reduce or eliminate tax distortions on financing decisions

9.5.2 Personal Capital Income Taxes

We turn next to principles for reforming personal capital income taxes. A key policy choice in this context is whether to stick to the principle of comprehensive income taxation under which incomes from capital and labour are taxed at the same marginal rate, or whether income from capital and labour should be taxed at separate rates. As noted by Diamond and Banks (2008), there is no support in the literature on optimal taxation for the Haig-Simons idea that the personal tax base should be total income, the sum of labour income and capital income. At the same time, the theoretical literature does not indicate very clearly whether capital income should be taxed at a higher or at a lower marginal rate than income from labour.

However, a number of practical considerations (discussed at length by Sørensen 1994) speak in favour of taxing capital income at a relatively low rate. First, since the capital income tax is levied on the nominal return to capital, including the inflation premium, the effective tax rate on the real rate of return will exceed the effective tax rate on labour income when the two types of income are subject to the same marginal tax rate. Thus a lower tax rate on nominal capital income is needed just to ensure that capital income is not overtaxed relative to labour income. Second, as the international mobility of capital increases, there is a growing risk that a high domestic capital income tax rate will induce taxpayers to move their wealth abroad, particularly to foreign low-tax jurisdictions, making it very

difficult to bring that income into the domestic tax net. Setting a low domestic capital income tax rate reduces the risk of capital flight. Third, capital income accrues in many forms, some of which are hard to tax for practical or political reasons. Lowering the tax rate on those types of capital income that can be taxed reduces the distortions arising when certain types of capital income cannot be included in the tax base. A low tax rate also makes it easier to broaden the tax base, for instance by including capital gains without causing severe lock-in effects. For these reasons we propose:

Principle 6: The residence-based personal capital income tax should be levied at a relatively low rate well below the top marginal tax rate on labour income

The analysis in section 9.4.4 showed that Australian capital income taxes are highly discriminatory, implying large differences in effective marginal tax rates on different forms of saving. This is likely to cause substantial distortions to the pattern of saving. A lower overall level of capital income taxation will tend to reduce this problem, but further policy action seems warranted. Hence we suggest:

Principle 7: Reduce tax-induced distortions to savings vehicles and aim at the highest possible degree of uniformity in capital income taxation

In section 9.3.4 we saw that while an imputation system such as Australia's may succeed in lowering the cost of equity finance for smaller companies without access to the international stockmarket, it does not lower the cost of capital and does not remove the tax bias against equity finance for the larger domestic corporations whose shares are traded internationally, because tax relief is granted at the resident shareholder level. To be fully effective, corporate double tax relief should instead be granted at the company level, as spelled out in:

Principle 8: Relief for the double taxation of corporate income should be granted to companies operating in the domestic economy rather than to domestic resident shareholders

As already mentioned, there are significant questions as to whether residence-based taxation can be effectively implemented in practice since it requires the revenue collection agency to be able to effectively monitor foreign source income. While a lower capital income tax rate would reduce the incentive for tax evasion through capital exports, and though there has been significant progress in international cooperation on information exchange (e.g. through the OECD harmful tax practices initiative), capital flight remains a significant issue.

Principle 9: Limit tax avoidance through capital flight

9.5.3 Complexity and Tax Operating Costs

A significant driver for tax reform is the complexity and high operating costs of the current system. Operating costs can be split into two components. The first, compliance costs, includes private sector costs associated with compiling and keeping records, acquiring and maintaining accounting systems, acquiring the necessary knowledge of relevant aspects of the tax system, and costs associated with tax planning activities. The second component, tax administration

costs, relates to the costs of the public sector including costs for implementing tax policy, revenue collection and providing assistance and guidance to taxpayers. Due to the difficulty in measuring capital income, debt-equity distinctions, and opportunities for tax avoidance/minimisation due to the mobility of capital income, one could expect that the operating costs of the current system may be disproportionately high. While somewhat dated, Evans et al. (1997) found compliance costs for business income tax are relatively high as a percentage of business income tax collected and as a share of GDP, with a disproportionately higher burden on smaller business. While a certain level of complexity, and operating costs, is required to raise revenue, such costs reduce the efficiency of the tax system and lead to a misallocation of resources. We therefore propose:

Principle 10: Minimise complexity and tax operating costs

While we consider all of the above principles to be worthy goals for tax policy, we are aware that tax design involves many difficult tradeoffs, so no single reform proposal could be expected to fully satisfy all of our principles. Moreover, though our principles do not explicitly refer to notions of equity among taxpayers, we acknowledge that equity concerns are an important and legitimate constraint on tax policy: no tax reform proposal has any chance of surviving at the ballot if it is widely perceived as being unfair. The challenge for tax economists is to help policy-makers explain when popular beliefs about tax incidence may be widely off the mark and may cause the adoption of policies that go against the very distributional goals that voters and policy-makers are trying to achieve. The analysis in sections 9.3 and 9.4 and in the sections below attempts to meet this challenge.

9.6 Options for Capital Income Tax Reform

We are now ready to consider a number of options for fundamental capital income tax reform that have received widespread attention in the international tax policy debate and which would be consistent with at least some of the principles for sound tax reform outlined in the previous section. Most of the discussion in this section focuses on some high-profile proposals for reforms of the corporation tax, since these proposals depart significantly from current practices. At the end of the section we lay out a blueprint for reform of the personal capital income tax that would also imply a significant break with current tax practices in Australia.

The first three reform proposals discussed in this section have the common feature that they all exempt the normal return to capital from tax, involving only taxation of rents. The last two reform options considered both involve taxation of the full return to capital, but at a low flat rate. Our discussion draws substantially on the surveys by Devereux and Sørensen (2006), Sørensen (2007a), OECD (2007) and Auerbach et al. (2009). To give a concise description of the similarities and differences between the tax bases under the alternative tax systems, it will be useful to introduce the following notation:

R = net cash flow from 'real' transactions, excluding net capital spending (sales of goods and services minus purchases of goods and services minus labour costs)

I = net capital spending (purchases of capital goods minus sales of capital goods)

K = stock of business assets invested

δ = rate of depreciation

B = net financial debt

i = interest rate on debt

τ = corporate income tax rate

T = corporate tax bill

In applying the above notation, we consider a domestic parent company earning income from domestic operations as well as from affiliates operating abroad. Variables relating to the domestic economy are indicated by a superscript d while variables relating to the foreign economy are denoted by the superscript f . For simplicity, we assume that the parent company and its affiliates do not earn financial income from non-debt instruments.

9.6.1 Taxing Rents through a Source-Based Cash Flow Tax

As discussed in section 9.3, a source-based tax on rents is non-distortionary insofar as it falls on location-specific rents, and it ensures that foreign owners of capital operating in the domestic economy contribute to the public budget. Such a tax system can be implemented through a source-based cash flow business tax of the so-called R -type (in the terminology proposed by the Meade Committee 1978) where tax is levied on the net cash inflow from the firm's 'real' transactions. Under such a business tax there would be no domestic tax on a multinational firm's earnings from foreign affiliates, so the total domestic tax liability would depend only on the cash flow from domestic production. In the notation above, the domestic tax bill would therefore be:

$$(13) \quad T^d = \tau^d (R^d - I^d)$$

The cash flow tax thus allows full expensing of investment in the year when capital goods are acquired. In this way the government effectively finances a fraction of investment expenditure equal to the tax rate. At the same time the government receives a similar fraction of all the future net cash inflows from the investment. In effect, the government therefore participates as a silent partner in all real investment projects with a share equal to the tax rate. If the net present value of a project is NPV in the absence of tax, its present value to the private investor will be $(1 - \tau^d) NPV$ in the presence of tax, since the government participates in all cash flows with a share equal to the tax rate τ^d . As long as that tax rate is below 100 per cent, it follows that all projects with a positive NPV in the absence of tax will still be worth undertaking in the presence of tax, since $NPV > 0$ implies that $(1 - \tau^d) NPV > 0$. Hence the cash flow tax will not distort investment at the intensive margin, that is, it will not affect the optimal level and pattern of investment in a given country, once a decision has been made to locate production within that country. The reason is that the cash flow tax does not impose any tax burden on

the marginal investment with a zero net present value; it only transfers a fraction τ^d of the rents on the intramarginal projects (where $NPV > 0$) to the government. Further, since the tax bill in (13) is independent of how the investment is financed, the cash flow tax is neutral towards the debt-equity choice and the choice between retained earnings and new equity.

But while the source-based cash flow tax does not distort financing decisions and real investment decisions at the intensive margin, it does affect the location decisions of multinational firms earning firm-specific (and hence mobile) rents. If the tax rate becomes too high, it will become more profitable for many such firms to locate their production elsewhere, so the source-based cash flow tax does not avoid investment distortions at the extensive margin where investment decisions have been found to be relatively sensitive to tax (see section 9.3.5).

Further, a cash flow tax of the R -base type assumed in (13) also raises three particular problems. First, since it does not allow interest deductibility, the transition to such a tax could bankrupt many heavily indebted firms. Second, the exemption of interest income under the R -base tax invites tax evasion as firms would have an incentive to lower their sales prices (and thus their taxable sales revenue) and instead make their profits by charging very high tax exempt interest rates on instalment credits extended to their customers. Third, since it includes only 'real' transactions in the tax base, the R -base tax more or less exempts the financial sector from tax.

These problems could be addressed by adopting a source-based so-called $R+F$ type cash flow tax in the terminology of the Meade Committee (1978). Under this system all net increases in debt (ΔB^d) would be added to the tax base, while all net interest expenses would be deductible from the base so that the tax liability would become:

$$(14) \quad T^d = \tau^d (R^d + \Delta B^d - iB^d - I^d)$$

Since the firm's cash flow constraint implies that the net payments to shareholders (S) are equal to:

$$(15) \quad S = R^d + \Delta B^d - iB^d - I^d - T^d \\ = (1 - \tau^d)(R^d + \Delta B^d - iB^d - I^d)$$

we see from (14) and (15) that an $R+F$ cash flow tax levied at the rate τ^d is equivalent to a tax imposed at the rate $\tau^d/(1 - \tau^d)$ on the net distributions to shareholders (i.e. a tax on the sum of dividends and share repurchases minus issues of new equity). Such a so-called S -type tax on net distributions is known to be neutral towards financing decisions and real investment decisions at the intensive margin because the government participates as a silent partner in all companies, financing (through the deduction for new equity issues) a fraction of all equity investments equal to the fraction of dividends that it taxes away.

The $R+F$ cash flow tax thus brings the financial sector into the tax net, imposing the same tax rate on net distributions to holders of shares in financial and non-financial firms. Because it retains the taxation and deductibility of

interest, the $R+F$ tax also avoids the problems with heavily indebted firms and the incentives for tax avoidance associated with the R -base tax. However, being source-based, both types of tax tend to distort international location decisions, and the $R+F$ cash flow tax has the additional weakness that it requires a distinction between debt and equity. In recent decades, financial innovations have made this line-drawing increasingly difficult as many hybrids between debt and equity have been developed.

Moreover, because they are based on the source principle, none of the two types of cash flow tax avoid the problem of international profit-shifting through transfer-pricing. To counter this problem, Bradford (2003) proposed that all cross-border real and financial cash flow transactions between related parties in a multinational group should be included in the tax base. The idea is that if, say, a parent company charges an artificially low royalty payment to its foreign subsidiary, the parent will subsequently receive a higher dividend from the subsidiary than if it had claimed an arm's-length royalty. But if the dividend from the foreign affiliate is included in the tax base of the parent, any saving in the parent's tax due to understating the royalty is offset by an equal increase in tax as a result of the consequently higher dividend. The fact that the parent's tax payment is deferred is not a problem under a cash flow tax which does not tax the normal return to capital, since the timing of tax payments does not matter under such a system.²⁷

9.6.2 Taxing Rents through a Destination-Based Cash Flow Tax

A common problem for all source-based tax systems lies in the practical (and conceptual) problems of determining the 'source' of income. The difficulty in identifying correct transfer prices in the absence of comparable arm's-length transactions is just one aspect of this problem.

In principle the 'source' of a business profit is the country where the profit was generated. But in the case of a multinational group of firms where each individual group member may rely on a range of inputs from other group members, including R&D, marketing, head office services, financial services and so on, it may be very difficult if not impossible to evaluate exactly how much of the worldwide profit of the group has been generated in each individual location. For example, how should the costs of services from the head office or the costs of other shared services and inputs be allocated across the group members? Dealing with these problems generates considerable complexity and uncertainty for taxpayers and tax administrators alike.

Because of such problems, and since a source-based cash flow tax distorts investment at the extensive margin, Auerbach, Devereux and Simpson (2009) argue that policy-makers should seriously consider the alternative of a *destination-based* cash flow tax. Under a destination-based cash flow tax of the so-called VAT type, the tax base in (13) is subject to border adjustments in that export sales (E) are tax exempt while expenses on imports (M) cannot be deducted. Hence the tax bill for our domestic parent company becomes:

27 By contrast, under a conventional income tax deferral does generate a gain to the taxpayer.

$$(16) \quad T^d = \tau^d (R^d - I^d - E + M)$$

The tax base therefore equals the base for a value-added tax minus a deduction for all labour costs. Thus the tax is levied where the final consumption of goods and services takes place and not where production is located. Such a tax will be neutral towards business decisions, including decisions on the location of production. To illustrate, suppose it takes one unit of labour to produce one unit of the good sold by the multinational firm considered. If the parent company undertakes the production of the goods sold in the domestic market, the firm's cash flow CF^d in the absence of tax would be:

$$(17) \quad CF^d = pq - wq - I^d$$

where p is the output price, w is the domestic wage rate, q is the quantity sold in the domestic market, and I^d is now interpreted as expenditure on some domestic fixed factor of production ('administration costs'). Alternatively, the multinational could choose to service the domestic market via production and sales from a foreign affiliate. In the absence of tax its cash flow CF^f would then be:

$$(18) \quad CF^f = pq - w^f q - I^d$$

where w^f is the foreign wage rate measured in domestic currency, and where the fixed administration cost I^d is still assumed to be incurred by the domestic parent company. It is easy to see from (17) and (18) that in the absence of tax the largest cash flow is obtained by locating production in the country with the lowest labour cost.

Suppose now that the domestic government introduces a destination-based cash flow tax at the rate τ^d . At unchanged prices, the tax will increase the profitability of export sales relative to domestic sales because the former are tax exempt, and imported inputs will become relatively more expensive because they cannot be deducted from the tax base. *Ceteris paribus*, a market disequilibrium will therefore arise, but if the nominal exchange rate appreciates by the factor $1/(1 - \tau^d)$, all relative prices will be restored and the initial market equilibrium will be re-established. In the case where our firm locates production at home, its after-tax cash flow CF_a^d will be:

$$(19) \quad CF_a^d = (1 - \tau^d)(pq - wq - I^d)$$

If the domestic market is instead served by production and sales from the foreign affiliate, the exchange rate appreciation means that the foreign wage rate will now only amount to $(1 - \tau^d)w^f$ when measured in domestic currency. Under the VAT-type, destination-based cash flow tax only domestic production costs are deductible, so when production is located abroad while the output is sold in the domestic market, the after-tax cash flow CF_a^f of the multinational firm becomes:

$$(20) \quad CF_a^f = \underbrace{pq - (1 - \tau^d)w^f q - I^d}_{\text{Cash flow before tax}} - \underbrace{\tau^d(pq - I^d)}_{\text{Tax bill}} = (1 - \tau^d)(pq - w^f q - I^d)$$

Comparing (19) and (20), we see that when the exchange rate has adjusted, the destination-based cash flow tax does not affect the relative profitability of domestic versus foreign

production. If $w^f < w$ so that locating production abroad was the more attractive option before the introduction of the tax, locating abroad will still be more profitable after the tax has been introduced, and vice versa. In the post-tax as well as the pre-tax situation, location at home is the preferred option if and only if $w \leq w^f$.

While this simplified example focuses on differences in labour costs as a determinant of international location decisions, it is a general property of the destination-based cash flow tax that it does not distort decisions on the location of investment and production when the (real) exchange rate has adjusted to the tax. Since expenses on investment and labour are fully deductible, the destination-based cash flow tax is effectively a tax on domestic consumption financed by non-wage income. As shown by equations (19) and (20), the tax reduces the net cash flows available to the domestic owners of firms without affecting the real wage w/p of workers.

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

On the other hand, a destination-based cash flow tax could generate destabilising anticipation effects around the time of its introduction or whenever the tax rate is expected to change. As we have seen, the introduction of the tax (or any subsequent change in the tax rate) requires an adjustment of the (real) exchange rate to restore market equilibrium and ensure that the tax is neutral. If the market anticipates these changes, expectations of a rise in the tax rate (initially from zero) will induce a capital inflow as investors anticipate a capital gain on assets denominated in domestic currency. By analogy, any expectation of a future fall in the tax rate will tend to generate a capital outflow as investors seek to avoid an exchange rate loss. Given the large volume of cross-border capital flows, such speculative movements in the foreign exchange market could potentially destabilise the macro economy. And even if changes in the tax rate are unanticipated so that speculative capital flows are avoided, the exchange rate adjustments caused by the tax rate changes will generate windfall gains and losses that might be seen as unfair.

While the above-mentioned type of anticipation effect is particular to the destination-based cash flow tax because this system requires border tax adjustments, the investment neutrality of any cash flow tax—whether destination- or source-based—breaks down whenever the tax rate is expected to change over time. If firms expect a future increase in the cash flow tax rate, they will postpone their investment to be able to deduct the investment expenditure against the higher future tax rate, and if they anticipate a future fall in the tax rate, they will bring forward investment to take advantage of the expensing of investment against the higher current tax rate. The formal

analysis by Sandmo (1979) shows that a cash flow tax with a time-varying tax rate may generate serious investment distortions in this way, and Bradford (2004) points out that the resulting investment fluctuations can destabilise the macro economy.²⁸

Three further drawbacks of the VAT-type, destination-based cash flow tax should be noted. First, since the tax base excludes financial variables, the financial sector will to a large extent be left out of the tax net. Second, we have seen that the system taxes pure rents only to the extent that they are consumed by domestic residents. Domestic source rents accruing to foreigners are left free of tax, so foreign investors do not contribute to the financing of the domestic infrastructure from which they benefit. Third, under the destination-based cash flow tax a large number of firms will be eligible for recurrent tax refunds or tax credits, that is, the government would have to pay out large amounts of money to many firms year after year. For any given tax rate, the amount of tax refunds will be significantly larger under the destination-based cash flow tax than under a VAT because the former tax allows a deduction not only for export sales but also for labour costs. The large tax refunds mean that potential problems of abuse may be bigger under the destination-based cash flow tax.

9.6.3 Taxing Rents through a Capital Cost Allowance

Adopting a cash flow tax is one way of ensuring that tax is levied only on economic rents. An alternative method of taxing rents, which avoids many of the above-mentioned problems associated with cash flow taxes, is to allow a deduction for the cost of equity as well as debt finance, thus ensuring tax exemption for the normal return to all of the firm's investment. As we shall now explain, such a capital cost allowance could be designed in two ways. In both cases it is assumed that the business income tax is levied on a source basis so that rents accruing to foreign investors are subject to domestic tax.

(a) An Allowance for Corporate Equity

The most well-known version of this form of rent tax is the Allowance for Corporate Equity (ACE) proposed by the Capital Taxes Group of the Institute for Fiscal Studies (1991). Variants of this system have previously been tested in Croatia (Rose & Wisswesser 1998; Keen & King 2002), in Brazil (Klemm 2006), in Italy (Bordignon et al. 2001), and in Austria (OECD 2007, p. 130). Moreover, an ACE system has been introduced in Belgium (Gérard 2006) and most recently in Latvia.

Under the ACE system, companies are allowed to deduct an imputed normal return on their equity from the corporate income tax base, parallel to the deduction for interest on debt. In this way, the ACE seeks to ensure neutrality between debt and equity finance. If the imputed rate of return to equity is ρ , the domestic business income tax bill under a source-based ACE system is thus given by:

$$(21) \quad T^d = \tau^d [R^d - \delta K^d - iB^d - \rho(K^d - B^d)]$$

Compared to a conventional source-based corporate income tax where the tax base would be $R^d - \delta K^d - iB^d$, we see that the ACE system simply allows the additional deduction $\rho(K^d - B^d)$ for the imputed return to the company's net equity, $K^d - B^d$. With regard to calculating the tax base, the ACE thus comes much closer to current practices than do the various cash flow taxes.

If the imputed rate of return on equity is set equal to the market interest rate ($\rho = i$), equation (21) simplifies to:

$$(22) \quad T^d = \tau^d [R^d - (i + \delta)K^d]$$

Since the term in the square bracket of equation (22) measures the net profit in excess of the normal rate of return, we see that the ACE system is in fact a tax on rents.

Despite its apparent similarity with the current corporation tax, the ACE is essentially equivalent to a source-based cash flow tax and therefore shares its neutrality properties. In particular, it follows from (22) that when the firm acquires an additional unit of capital which is subsequently written down at the annual rate δ , it becomes entitled to a future stream of depreciation and equity allowances with a present value PV equal to:

$$(23) \quad PV = \int_0^{\infty} (i + \delta) e^{-(i+\delta)t} dt = \frac{i + \delta}{i + \delta} = 1$$

where t indicates time and e is the exponential function. In other words, when investment is increased by one unit, the present value of the firm's deductions also goes up by one unit, so effectively investment can be fully expensed, as would be the case under a cash flow tax. Like a cash flow tax, the ACE is therefore neutral towards investment decisions on the intensive margin. Note from (23) that this neutrality holds regardless of the rate δ at which the firm is allowed to write down its assets in the tax accounts. If assets are written down at an accelerated pace (compared to true economic depreciation), the current tax saving from accelerated depreciation will be offset by a fall in future ACE allowances of equal present value, since accelerated depreciation reduces the book value of the assets to which future ACE allowances are imputed. Hence 'incorrect' depreciation rates for tax purposes do not distort real investment decisions. Nor would a lack of inflation adjustment of taxable annual profit cause any investment distortions, since any over- or underestimation of assets and liabilities due to inflation would likewise be automatically balanced in present value terms by offsetting adjustments in the ACE allowance.

Notice also that the results in (22) and (23) hold irrespective of whether investment is financed by debt or by equity, so the ACE is indeed neutral towards financing decisions. Another attraction of the ACE is that the symmetric treatment of debt and equity eliminates the need for thin capitalisation rules to protect the domestic tax base: since firms get a deduction for an imputed interest on their equity as well as for the interest on their debt, multinationals have no incentive to undercapitalise a subsidiary operating in a country with an ACE system.

²⁸ However, since the destination-based cash flow tax is not vulnerable to tax competition, it is reasonable to expect that governments would not want to adjust the tax rate as often as they have adjusted statutory corporate tax rates in recent decades.

It should be stressed that these neutrality properties of the ACE will only be fully realised if the imputed rate of return to equity is set at the 'right' level corresponding to the discount rate applied by the suppliers of capital to the firm (assumed to equal the market interest rate in the analysis above). In reality, such full neutrality may be difficult to achieve. In section 9.7 we shall come back to the problem of choosing an appropriate imputed rate of return and also discuss in more detail how the base for the equity allowance may be calculated in practice.

(b) An Allowance for Corporate Capital

As mentioned, since firms face different interest rates whereas tax administrators may have to apply the same imputed rate of return on equity across all firms, an ACE system may not in practice achieve full neutrality between debt and equity finance. However, such neutrality may be achieved if the deductibility of interest were abolished and firms were instead allowed to deduct an imputed rate of return on their entire asset base, regardless of the way it is financed. Under such an Allowance for Corporate Capital (ACC), originally proposed by Boadway and Bruce (1984), the tax bill under source-based taxation would be:

$$(24) \quad T^d = \tau^d [R^d - (\rho + \delta)K^d]$$

Since the tax liability in (24) is independent of the firm's debt level, we see that the ACC system is indeed fully neutral towards financing decisions even if the imputed rate of return (ρ) deviates from the market interest rate faced by the firm. This financial neutrality comes at a cost, however, for if the imputed return deviates from the market interest rate at which the firm can borrow, a debt-financed investment with a pre-tax return equal to the market interest rate will change the firm's tax bill. Hence the ACC system distorts the firm's incentive to undertake debt-financed real investment when $\rho \neq i$. By contrast, the ACE system is always neutral towards real investment financed by debt because it allows a deduction for actual interest paid.²⁹ The choice between the ACC and the ACE thus involves a tradeoff between the greater financial neutrality achieved under the ACC and the greater real investment neutrality under the ACE.

Assuming that the imputed return is in fact set at the 'right' level under both systems, the choice between the ACC and the ACE involves the same type of considerations as the choice between a cash flow tax of the R -base type and the $R+F$ -base type, respectively. The ACE allowance is calculated as the normal rate of return times the firm's equity base, defined as the difference between total investment and total borrowing. The present value of such an allowance equals investment minus borrowing. This in turn equals the net deduction to which the firm would be entitled under the source-based $R+F$ cash flow tax. Thus the ACE system may be seen as a practical way of implementing an $R+F$ tax which avoids some of the problems associated with the transition to a genuine cash flow tax.

The capital cost allowance under the ACC equals the normal rate of return times the firm's entire asset base. The present value of this allowance is simply the total asset

value which equals the deduction that could be taken as a result of the full expensing allowed under the source-based R -base cash flow tax. Hence the ACC is equivalent to an R -base tax. The ACC therefore shares the drawbacks of the R -base tax in that it hurts heavily indebted firms, more or less exempts the financial sector from tax, and provides incentives to convert taxable real flows to customers into tax exempt financial flows because interest income and expenses are left out of the business tax base. By contrast, the ACE system (like the $R+F$ tax) does not have these weaknesses.

Finally, since the ACC and the ACE are source-based tax systems, they face the same problems in an international context as their cash flow equivalents: like the R -base tax and the $R+F$ -base tax, these systems may distort international location decisions and invite international profit-shifting through transfer-pricing.

9.6.4 Taxing the Full Return to Capital through a Comprehensive Business Income Tax

Since the incentive for transfer-pricing depends on the statutory tax rate, international profit-shifting may be a greater problem under a tax on rents where the narrower tax base requires a higher tax rate to generate the same tax revenue as a conventional corporation tax on the full return to equity. Moreover, since the Average Effective Tax Rate converges on the statutory tax rate for firms earning very high rates of return, a tax on rents that requires a high statutory rate may also cause significant distortions to international location decisions because the multinational firms that earn mobile rents often earn high rates of return, as argued by Bond (2000).

Against this background, this sub-section and section 9.6.5 consider two alternative reform options that both involve taxation of the full return to capital, including the normal return as well as rents in the tax base. The main case for these reform options is that they imply a broader tax base that allows a lower tax rate. In this sub-section we focus on the so-called Comprehensive Business Income Tax (CBIT) originally proposed by the US Treasury Department (1992). Like the ACE system, the CBIT is a source-based tax, but while the ACE aims at financial neutrality by allowing a deduction for the cost of equity as well as debt, the CBIT eliminates the tax bias in favour of debt finance by abolishing the deductibility of interest. Hence the domestic income tax bill under the CBIT would be:

$$(25) \quad T^d = \tau^d (R^d - \delta K^d)$$

The goal of the original CBIT proposal was to secure a single uniform tax on all corporate source income at a rate (roughly) equal to the top marginal personal tax rate on capital income. In this way, the CBIT would in principle make personal taxes on corporate source income redundant, given the US Treasury's goal of ending the classical double taxation of such income.

Because of the practical problems of enforcing residence-based personal taxes on interest income and the prevalence

29 Of course, the ACE will distort *equity-financed* real investments when the imputed rate of return to equity is set at the 'wrong' level.

of tax-exempt institutional investors investing in debt instruments, it seems realistic to assume that a large part of total interest income currently goes untaxed in most countries. By essentially introducing an interest income tax at source, the CBIT might therefore imply a significant increase in the cost of debt finance. Clearly this could act as a strong deterrent to debt-financed inward investment. On the other hand, the broadness of the CBIT tax base would allow a relatively low corporate tax rate, for any given amount of revenue collected. The low statutory tax rate would imply a relatively low average effective tax rate on highly profitable companies. Since such companies are often high-tech multinationals generating significant positive externalities in the host country of investment, the CBIT may be an attractive option for a small open economy seeking to attract more inbound FDI with positive spill-overs on the domestic economy. Moreover, insofar as the broader business income tax base under the CBIT allows a lower statutory tax rate, domestic business tax revenue would become less vulnerable to international profit-shifting through transfer-pricing and thin capitalisation and so on. As emphasised by Haufler and Schjelderup (2000), the growing opportunities for international income-shifting strengthen the case for a policy of tax-cut-cum-base-broadening. Becker and Fuest (2005b) also show that if the more internationally mobile firms tend to earn higher rates of return than immobile domestic firms, there is a case for such a policy since it shifts the tax burden from the mobile to the immobile firms.

At the same time, it seems an important weakness of the CBIT that it involves a source-based tax on the normal return to capital, since we have seen that such a tax is likely to generate significant distortions by deterring foreign portfolio investors.

9.6.5 Taxing the Full Return to Capital through a Dual Income Tax

Another blueprint for taxing the full return to capital is the so-called Dual Income Tax (DIT). This tax system exists in its purest form in the Nordic countries but has also been introduced in rudimentary form in several other European countries (see the survey by Eggert & Genser 2005).³⁰

The DIT is mainly a design for a residence-based personal income tax which may be combined with various types of corporation tax. As described by Sørensen (1994), the DIT combines progressive taxation of labour income with a low flat uniform tax rate on capital income. In its most streamlined form, the system aligns the personal capital income tax rate with the corporate income tax rate and with the marginal tax rate in the lowest bracket of the labour income tax schedule. In this version, the DIT may be described as a combination of a flat tax on all income combined with a progressive surtax on labour income. Alternatively, the DIT may be seen as a particular form of schedular tax where the crucial distinction is that between capital income and other income.³¹

Although certain theoretical arguments have been made in favour of the DIT (see Nielsen & Sørensen 1997), the case for combining progressive labour income taxation with a low flat tax on capital income rests mainly on pragmatic practical considerations. In section 9.5 we already noted that adopting a relatively *low* tax rate on capital income would: go some way towards accounting for inflation; reduce incentives to move savings to lower tax jurisdictions (given that the residence principle cannot be perfectly enforced); and also allow a significant base broadening to improve tax neutrality.

As discussed by Sørensen (2009), a case for also adopting a *flat* tax rate on capital can be given on the following grounds. First, the lock-in effects of a realisation-based capital gains tax are more serious under progressive taxation where the taxpayer may be pushed into a much higher tax bracket in the years when gains accumulated over a long time interval are realised. Second, by equalising marginal capital income tax rates across taxpayers, policy-makers eliminate the scope for tax arbitrage (e.g. through transactions between related persons) that seeks to exploit differences in individual marginal tax rates. Third, under a progressive capital income tax investors in high-income brackets may choose to specialise in holding tax-favoured assets. Since the productivity of assets may depend on who owns them, such ownership clientele effects caused by the tax system may be inefficient. Fourth, a flat tax rate on capital income simplifies tax administration by allowing taxes on interest and dividends to be collected as a final withholding tax.

When the DIT was first introduced in the Nordic countries in the late 1980s and early 1990s, advocates of the system stressed that the capital income tax base should be as broad as possible, in part to ensure the greatest possible degree of tax neutrality, and partly for equity reasons. A significant base broadening did in fact take place when the DIT was implemented (e.g. by moving towards a more consistent taxation of capital gains).

Being mostly a blueprint for the personal income tax, the DIT has been combined with different corporate tax systems. When they introduced the DIT, Finland and Norway took significant measures to alleviate the double taxation of corporate income whereas Sweden maintained a classical corporate tax system.

Under the Norwegian DIT introduced in 1992, the double taxation of corporate equity income was fully alleviated. For dividends this was done through an imputation system, and for capital gains it was achieved through the so-called RISK system which allowed the shareholder to write up the basis of his or her shares with (his or her proportionate amount of) the retained profit that had already been subjected to corporation tax. Thus the personal capital gains tax was imposed only on (realised) income that had not already been taxed at the corporate level. Because all capital income was taxed uniformly and business income was

³⁰ Variants of a DIT for Germany have been proposed by Sinn (2003) and by the German Sachverständigenrat (see Spengel & Wiegard 2004), while Keuschnigg and Dietz (2007) have suggested a version of the DIT for Switzerland. More recently, Griffith, Hines and Sørensen (2009) have advocated a DIT for the United Kingdom. Boadway (2004) also takes a favourable view of the DIT.

³¹ Section 9.7 lays out in detail how capital income could be delineated under a DIT. In this sub-section we only discuss the main features of the DIT system.

taxed only once, the Norwegian DIT was in principle neutral towards investment and financing decisions.

All of the Nordic DIT countries levy a conventional source-based corporation tax on the full return to corporate equity, allowing a deduction for interest. Under such a system the company tax bill is:

$$(26) \quad T^d = \tau^d (R^d - \delta K^d - iB^d)$$

To make the enforcement of tax on interest income more effective in an open economy context, Cnossen (2000) has proposed that the DIT be combined with a withholding tax on interest income paid out to foreign (personal and corporate) investors, levied at the same rate as that applying to all other domestic-source capital income. Specifically, Cnossen proposes to supplement the company level tax in (26) by a final source-based withholding tax on interest levied at the general capital income tax rate (assumed to equal the corporate tax rate τ^d , as is roughly the case in the Nordic DIT countries) so that:

$$(27) \quad T^{wd} = \tau^d iB^d$$

where is T^{wd} the total withholding tax collected on interest paid by domestic firms, including tax on interest paid to foreign as well as domestic residents. Adding the withholding tax in (27) to the firm level tax in (26), one easily sees that the total amount of source tax collected under Cnossen's preferred version of the DIT is identical to the revenue collected under the CBIT described by (25). Thus the CBIT may be seen as a pure source-based version of a DIT.

While this version of the DIT would reduce the current tax advantage to debt finance (arising from ineffective enforcement of tax on interest income and from the prevalence of tax exempt institutional investors), it would for the same reason increase the cost of debt finance and could potentially lead to a capital flight if implemented unilaterally by a small open economy, as we discussed in the context of the CBIT. In practice, the Nordic countries reduce or abstain from withholding taxes on interest and dividends paid to foreign residents in accordance with bilateral double tax treaties.

A main challenge under the DIT is to separate capital income from other income. This requires that the income from self-employment be split into a labour income component and a capital income component. There are alternative ways of doing so, and we shall discuss the main options in more detail in section 9.7. In the Nordic countries, income splitting is done by imputing a rate of return to the business assets (or business equity) of the self-employed. This imputed return is then treated as capital income, while the residual business income is taxed as labour income.³²

A particular problem under the DIT is the tax treatment of controlling shareholders who work (e.g. as managers) in their own company. If there is no double taxation of corporate income, these taxpayers could reduce their tax bill by converting labour income (in the form of

management salaries) into capital income (in the form of dividends or capital gains on shares), since the latter type of income is subject to a lower marginal tax rate under a DIT. To prevent such income-shifting, the previous Norwegian tax rules required that the income of 'active' owners of corporations be split into a capital income component and a labour income component in accordance with the rules also applied to the owners of non-corporate firms. A shareholder was deemed to be 'active' and hence liable to income splitting if he carried out some minimum amount of work in the company and controlled at least two-thirds of the shares (alone or together with his closest relatives). However, by inviting 'passive' owners into the company, many Norwegian owner-managers were able to avoid mandatory income splitting and to have all of their income taxed at the low capital income tax rate even when a substantial part of the income was in fact labour income. Indeed, the number of small companies subject to mandatory income splitting was steadily falling since the introduction of the DIT in 1992, so this part of the Norwegian tax system turned out to be its Achilles heel.

Because of these problems, the Norwegian parliament recently replaced the problematic income splitting system for 'active' shareholders by an Allowance for Shareholder Equity (ASE, in Norwegian *aksjonærmodellen*). This system allows personal resident shareholders to deduct from their taxable dividends and capital gains an imputed rate of return to the basis value of their shares. Shareholder income in excess of this imputed normal return is taxed as ordinary capital income. At the margin, the total corporate and personal tax burden on corporate equity income is roughly equal to the top marginal tax rate on labour income. Hence corporate owner-managers can gain nothing by transforming labour income into dividends and capital gains, and consequently the mandatory income splitting system for active shareholders has been abolished.

As demonstrated by Sørensen (2005a), the new Norwegian ASE is in principle equivalent to a neutral cash flow tax. Sørensen (2005a) also shows that the ASE system satisfies the properties of the retrospective capital gains tax proposed by Auerbach (1991) and the generalised cash flow tax described by Auerbach and Bradford (2001); that is, tax designs that are known to be neutral towards realisation decisions even though they do not involve taxation of unrealised gains. However, although in itself the ASE system does not add any distortions, it does not remove the distortion caused by the taxation of the normal return to equity under the source-based Norwegian corporation tax, since the ASE allowance is granted at the resident shareholder level.

9.6.6 Comparing Alternative Options for Reform

To sum up our discussion of reform options, the various cash flow taxes have several attractive neutrality properties. This is particularly true for the destination-based cash flow tax which is neutral towards all financing and investment decisions and does not give rise to transfer-pricing problems.

32 For a detailed review of the taxation of small businesses under a dual income tax, see Hagen and Sørensen (1998) and Sørensen (2005b).

Nevertheless, for a number of reasons we hesitate to recommend the destination-based cash flow tax as a replacement for the current corporation tax. First of all, this variant of a cash flow tax is particularly vulnerable to anticipation effects, since expectations of future tax rate changes will not only distort real investment decisions but will also trigger speculative capital flows in anticipation of exchange rate changes. Further, the destination-based cash flow tax does not tax rents accruing to foreign capital owners and leaves the financial sector out of the tax net. Finally, to ensure full neutrality the destination-based cash flow tax will require large permanent tax refunds to many exporting firms (larger than would be the case under a VAT).

The source-based Comprehensive Business Income Tax involves a less radical departure from current tax practice and has a broad base that allows a low statutory tax rate. However, because the CBIT abolishes the deductibility of interest, it raises a significant transition problem and creates a permanent risk of capital flight. We therefore also hesitate to recommend the CBIT.

This leaves us with the ACE/ACC and the Dual Income Tax as the more realistic options for reform. In principle, the ACC and the ACE have the same neutrality properties as the *R*-base cash flow tax and the *R+F*-base cash flow tax, respectively. However, a system with a capital cost allowance (ACC or ACE) comes closer in form to the present corporation tax and involves smaller transition problems than a switch to a cash flow tax. Further, because it avoids the full immediate expensing of investment and asset purchases, a system with a capital cost allowance is much less vulnerable to the strong non-neutralities that could arise under a cash flow tax with a time-varying tax rate.

When choosing between the ACE and the ACC, we tend to favour the former system, because the ACC more or less exempts financial services and generates a serious transition problem for heavily indebted firms. Like any rent tax, the ACE (and the ACC) exempts the normal return to capital from tax. In principle, such a system therefore requires a higher statutory tax rate to generate the same revenue as a conventional corporation tax on the full return to equity. However, as we shall argue in the next section, even if the statutory tax rate is not raised, there are ways of limiting the revenue loss from an ACE, in part because such a system makes double tax relief at the shareholder level redundant. Moreover, by combining an ACE with a broadly-based Dual Income Tax, it may be possible to design a revenue-neutral capital income tax reform that significantly reduces the distortions caused by the current tax system. In particular, introducing an ACE and abolishing the current imputation system would imply a shift from source-based to residence-based taxation, although a source tax on rents would be maintained. The analysis in section 9.3 strongly suggests that such a shift would reduce the distortionary impact of capital income taxes.³³

Both the ACE and the DIT are tax systems that have been tested in practice and that involve less radical breaks

with current tax practice than the other reform options discussed above. Moreover, a reform based on a combination of an ACE and a DIT would be in line with the principles for a capital income tax reform laid out in section 9.5. In the next section we therefore present such a blueprint for reform in more detail.

9.7 Combining a Dual Personal Income Tax with a Source-Based Business Tax on Rents —a Capital Income Tax Reform for Australia?

Following the conclusion reached in section 9.6, this section lays out a proposal for a capital income tax reform for Australia which combines an ACE-type corporation tax with a personal capital income tax based on the principles of the Dual Income Tax. These two components of the reform proposal are closely linked and are designed to shift taxation of the normal return to capital from a source to a residence basis and to avoid double taxation of the normal return. The proposals are intended to reduce tax distortions to investment and savings decisions, including financing and portfolio choices. Section 9.7.1 describes how an ACE could be implemented, and section 9.7.2 presents a detailed proposal for a dual personal income tax for Australia. In section 9.7.3 we estimate how our reform proposals would affect the effective tax wedges on saving and investment in Australia.

9.7.1 Designing an ACE for Australia

(a) Calculating the Base for the ACE

The Allowance for Corporate Equity is the product of the imputed rate of return (discussed below) and the company's equity base. Table 9.13 outlines how the equity base for the ACE allowance would be calculated under an operational system.

The change in the equity base from one year to the next is effectively due to new equity issues and equity created through retained earnings less return of equity. Several important points regarding the calculation of the equity base should be noted:

- » First, since the equity base for the current year includes the *taxable* profit made in the previous year,

Table 9.13 Calculating the Base for the ACE Allowance

Equity base in previous year
+ taxable profits in previous year (gross of the ACE allowance)
+ exempt dividend received
+ net new equity issues
– tax payable on taxable profits in previous year
– dividends paid
– net new acquisitions of shares in other companies
– net new equity provided to foreign branches
= Equity base for current year

³³ Indeed, when applied in an open economy context, the famous Production Efficiency Theorem devised by Diamond and Mirrlees (1970) implies that capital income taxes on the normal return should be levied on a residence rather than a source basis, since a source-based tax on the normal return distorts the input choices of firms.

accelerated depreciation and other tax preferences will reduce the base for the ACE allowance, while any failure to allow full deduction for the true economic cost of production will increase the recorded equity base. In present value terms any miscalculation of the company's true annual profit is thereby automatically neutralised by an offsetting adjustment in future ACE allowances. This is key to ensuring the neutrality of the ACE system towards investment decisions.

- » Second, to avoid double counting of the equity base, the purchase of shares in other Australian companies is subtracted from the equity base of the acquiring company, since the purchase price of these shares will be included in the equity base of the company that issued the shares. However, dividends would be added to the base of the acquiring company, as they reflect an increase in equity. Similarly, the revenue (and hence the capital gains) from the sale of an interest in a domestic company would add to the base.
- » Third, the net purchase of shares in foreign companies is also deducted from the equity base. Under the dividend exemption system applied in Australia, this treatment of foreign share purchases ensures that investments in foreign assets which do not attract Australian tax will not erode the Australian tax base. At the same time, dividends received from foreign companies add to the equity base insofar as they are reinvested in Australia. This ensures that all domestic investments are included in the base for the ACE allowance irrespective of the source of (equity) finance.
- » Fourth, when a holding company finances investment in subsidiary companies by debt (or by a combination of debt and equity), its equity base calculated in the above manner will become negative, generating a *negative* ACE allowance and a corresponding *addition* to taxable profit. In this way, the ACE system guarantees tax neutrality between debt and equity also for holding companies, since the negative ACE allowance offsets the amount of interest that the holding company is allowed to deduct from taxable profits. This ensures that holding companies have no tax incentive to finance acquisitions by debt rather than equity (provided the interest rate used to calculate the ACE allowance corresponds to the interest rate on the debt).

If dividends are paid out during the year or shares are redeemed, the equity used within the company decreases. Conversely, new share issues may increase the company's equity during the year. If no adjustments were made, the above rules for calculating the ACE allowance would imply an incentive to issue new equity only on the last day of the tax year and to pay out dividends or redeem shares only on the first day of the tax year. In particular, companies could increase their base for the ACE allowance for the current year by issuing shares on 31 December of the previous year and redeeming the entire amount (or paying out the revenue as a dividend) on 1 January of the current year. In this way the company could benefit from the full ACE allowance for the current year even though the actual equity in the

company had only increased for a single day. By repeating the same operation around each successive New Year, the company could ensure permanent tax relief without actually increasing its equity-financed investment.

A simple means of preventing such tax avoidance would be to adjust the size of the ACE allowance to account for the timing of dividend payments and new equity issues. If E is the company's equity base calculated according to the rules described earlier, N is the revenue from new shares issued on day n^N of the current tax year, D is the dividend (or share redemption) paid out on day n^D of the current year, and ρ is the imputed rate of return on the company's equity base, the adjusted ACE allowance for the current year would be computed as:

$$\text{Adjusted ACE allowance} = \rho \left[E + N \left(\frac{365 - n^N}{365} \right) - D \left(\frac{365 - n^D}{365} \right) \right]$$

This adjustment to the allowance is a straightforward calculation and should be necessary only on very few transactions in any one year. The adjustment would eliminate the scope for the type of tax avoidance mentioned above. For example, if new shares were issued on 30 June of the previous income tax year only to be redeemed to shareholders on 1 July of the current year, the revenue from the share issue would be fully included in E in the above formula, but the adjustment for the subsequent redemption would ensure that the base for the ACE allowance would only increase by $1/365$ of the revenue from the share issue, corresponding to the single day during which the company's equity was actually increased above its previous level.

(b) Setting the Imputed Rate of Return and Allowing for Tax Losses

A tax is neutral for investment and financing decisions if it falls only on the net cash flow to shareholders, since any investment behaviour that maximises the present value of cash flows before tax will then also maximise the present value of after-tax cash flows.

The ACE system is in principle equivalent to such a neutral cash flow tax when the imputed rate of return equals the rate at which shareholders discount future ACE allowances: the system taxes cash returns to shareholders, but any injection of equity triggers a deduction of the same present value. For example, if shareholders inject an additional amount of equity E into the company, the company's ACE allowance will rise by the amount ρE in all future years, where ρ is the imputed rate of return to equity. If shareholders also discount the value of the future deductions at the rate ρ , the present value of the additional deductions under the ACE will be $\rho E / \rho = E$. In present value terms taxpayers thus receive exactly the same deduction as under an $R+F$ -base cash flow tax that allows them to deduct the amount E up front.

Thus, to obtain full tax neutrality under the ACE, the imputed rate of return must be equal to the rate at which shareholders discount the tax savings from the company's future ACE allowances. This discount rate will depend on the degree of riskiness attached to these tax savings. As a

benchmark, consider a hypothetical case in which the tax law allows full loss offsets, meaning that companies can carry their losses forward indefinitely with an interest rate added, and that shareholders receive a tax credit for any remaining unutilised loss deduction in case the company goes bankrupt. In this case, shareholders will receive the tax benefit from the ACE allowance with full certainty even if the company goes out of business, and so they will discount the tax savings from the ACE system at the risk-free rate of interest. To ensure tax neutrality, it is then sufficient to set the imputed rate of return equal to the risk-free rate proxied, say, by the interest rate on short-term government bonds.³⁴

In practice, Australian tax law does not allow full loss offsets. Although losses can be carried forward indefinitely they are not indexed, and unutilised losses existing when a firm goes out of business cannot always be offset against other taxable income. Hence there will be some risk attached to the deductions for ACE allowances. The risk will differ across companies depending on how much they are affected by the restrictions on loss offsets. A substantial part of the risk is likely to stem from the probability that the company goes bankrupt. This risk will be reflected in the rate of interest at which the firm can borrow, so setting the imputed rate of return equal to the interest on the company's long-term debt would presumably ensure rough neutrality of the ACE.

However, for administrative reasons it is necessary to use a common imputed rate of return for all companies rather than applying firm-specific rates (even if this involves some sacrifice of neutrality). Assuming a well-functioning and liquid market for corporate bonds, the discussion above suggests that the average interest rate on such bonds would be a natural benchmark for choosing the imputed rate of return to equity under the ACE.

Allowing for Tax Losses

As discussed in section 9.3, the asymmetric treatment of losses distorts risk-taking behaviour. In addition, rules that restrict loss utilisation add significant complexity to the tax system. The asymmetric treatment of losses arises under the current system because losses are not fully refundable. While they can be carried forward indefinitely, they are not indexed and hence lose their real value over time. In addition, some losses are effectively wasted when they fail the utilisation tests.

Under the ACE, the first issue is addressed as losses are effectively indexed at the imputed rate of return. In order to address the second issue one option could be to abolish the current loss utilisation rules and instead allow losses incurred in a given year to offset other tax liabilities, such as goods and services tax, pay-as-you-go income tax and fringe benefits tax. This would increase the utilisation of losses in the year they are incurred, while still capping the amount of losses that can be used in any year to somewhat limit incentives to artificially create losses.

This approach would provide many of the benefits of full refundability, albeit to a lesser degree. For example, it would

provide some benefit to businesses without income to absorb start-up or closing-down expenditure. Consequently, this would limit the amount of losses that are wasted. As discussed in the previous sub-section, where losses can be used with certainty the appropriate imputed rate of return under the ACE would be closer to the risk-free rate.

(c) The Transition to an ACE

As indicated in Table 9.13, the calculation of the ACE allowance can proceed on the basis of information available in the tax accounts that are already submitted to the tax authorities. From an administrative perspective, it should therefore be possible to introduce a full-blown ACE system from one year to the next. The transition to the ACE only requires that a decision be made on the determination of the initial equity base of companies to be used during the first year after the reform. We propose that the initial equity base be set equal to zero in order to maximise the boost to equity-financed investment per unit of revenue lost.

Could a corporate taxpayer get around this transition rule and benefit from allowances on the existing equity by liquidating an existing company and starting up a new company in the same line of business? To evaluate this risk, it is useful to consider a simple example: suppose a company holds assets with a current market value of 100 when the ACE is introduced. Suppose further that the company earns a constant 10 per cent rate of return on these assets; that it has no debt, and that the corporate income tax rate is 30 per cent. If the company does not add to its equity base after the introduction of the ACE, it will receive no equity allowance under the proposed transition rule. It will then earn a constant after-tax profit of $(1 - 0.3) \cdot 10 = 7$ after the reform.

Suppose instead that the owners liquidate the existing company only to start up a new identical company right after in order to transform 'old' equity into 'new' equity that will attract the ACE allowance. Suppose in addition that the assets of the old company have already been fully written off in the tax accounts. Liquidation is normally treated as a realisation of assets, so the old company will have to report a capital gain of 100 during its last year in business. This will be taxed at 30 per cent, leaving 70 units of assets to be injected as equity into the new company. Given the assumed 10 per cent rate of return on the business activity considered, the new company will thus earn a profit of 7. If the normal return imputed to equity is also 10 per cent, the company's ACE allowance will be $0.1 \cdot 70 = 7$. Hence taxable profit will be zero, so the shareholders will end up with the same net profit (=7) as in the case where the old company stays in business.

If the business activity in this example earned a return above the imputed return under the ACE, the net return to shareholders would be smaller if the activity were carried out by a newly established company entitled to ACE allowance instead of an old one without such entitlement. On the other hand, if the assets have not been fully written down in the tax accounts, the capital gains tax in the case of liquidation will be smaller than indicated in our example,

³⁴ This argument was made by Bond and Devereux (1995).

leaving some room for tax avoidance through the transformation of old into new companies after the introduction of the ACE. However, the scope for such behaviour will be limited by the transactions costs involved. There may nevertheless be a need for special anti-avoidance rules to ensure taxation of the revenue from liquidation in cases where an old company is wound up and replaced by a new one in the same line of business. In designing such rules, policy-makers may draw on the experience of Austria and Italy. Both of these countries have experimented with an ACE-type system where an imputed normal return to equity was taxed at a reduced corporate tax rate and both countries introduced the system without offering any tax benefit to existing equity.³⁵

Granting the ACE allowance only for new equity will go a long way towards limiting the revenue loss from the allowance. To reduce the loss even further and in the interests of simplification, we propose to abolish the existing imputation system when the ACE is introduced. This would imply that accumulated franking account balances existing at the time of reform would be cancelled and hence would not trigger any future dividend tax credits. We believe our proposal can be defended on efficiency grounds as well as equity grounds. As we saw in section 9.3, the imputation system is an inefficient means of granting double tax relief since it only lowers the cost of capital for small companies without access to the international stockmarket. For these companies the ACE will ensure that the abolition of dividend tax credits will not increase the cost of capital since the ACE avoids double taxation of the normal return earned on the marginal corporate investments. From an equity perspective, the increased tax burden on 'old' capital implied by the abolition of franking account balances will be more or less offset by our proposal in section 9.7.2 to lower the marginal tax rate on capital income substantially.

(d) Revenue Effects and the Choice of Tax Rate

It is often argued that since an ACE narrows the corporate tax base, the statutory corporate tax rate should be raised to ensure an unchanged corporate tax revenue. On this basis, the ACE system is sometimes criticised for exacerbating the problem of tax avoidance through transfer-pricing, since the incentive to distort transfer prices increases with the statutory tax rate (see Bond 2000).

The analysis in section 9.3.2 provides no economic rationale for the view that the introduction of an ACE should be combined with a rise in the statutory tax rate. Since the ACE exempts the normal return from tax, it is equivalent to abolishing the source tax t_f in Figure 9.9. But even if taxes on the immobile domestic production factors were raised by the full amount of the revenue loss B caused by the ACE, Figure 9.9 shows that the owners of the

immobile factors would still enjoy a net income gain corresponding to area D , because of the productivity-enhancing effects of higher domestic investment. In other words, since the domestic immobile factors carry *more* than the full burden of a source-based tax on the normal return, it does not seem unfair that they should make up for the revenue loss from an ACE through a rise in other less distortionary taxes. To avoid problems with increased transfer-pricing, we therefore propose that the statutory corporate tax rate in Australia should remain at its current level of 30 per cent after the introduction of the ACE.

This suggestion is supported by the work of de Mooij and Devereux (2008) who use a computable general equilibrium model to examine the introduction of an ACE in EU countries. They find that where an ACE is introduced and funded by an increase in consumption taxes, GDP increases across EU countries on average by 2.4 per cent.³⁶ However, they find where an ACE is funded by an increase in the company tax rate, GDP is found to only increase by 0.8 per cent and welfare is found to fall as the higher company tax rate causes a significant erosion of the tax base due to profit-shifting and a reduction in profitable investment by foreign investors.

For Australia, there are a number of options that could be used to fund the introduction of an ACE. For example, many efficient tax bases, including land and natural resources, are not effectively taxed at present, so reform in these areas could be used to at least partially fund the introduction of an ACE (see section 9.8). This could be combined with an increase in the GST, either through base broadening and/or increasing the rate, although such a recommendation is beyond the Australia's Future Tax System Review's terms of reference.

To obtain a rough estimate of the revenue loss from introducing an ACE system in Australia, we start from the fact that the average effective tax rate on corporate income (*AETR*) under an ACE system is given by the formula:

$$(28) \quad AETR = \tau \left(\frac{p - c}{p} \right)$$

where τ is the statutory corporate tax rate, p is the average real pre-tax rate of return on corporate equity, and c is the minimum real required rate of return (the cost of capital) for equity-financed investment. Equation (28) reflects that under an ACE the corporation tax falls only on the pure rent $p - c$. Assuming that over the long run the real imputed return on equity and the real discount rate applied when discounting the ACE allowance will both average 6 per cent, the ACE system will imply $c = 0.06$, as shown by Sørensen (2009). Current Australian tax law sets $\tau = 0.3$, and the average real rate of return from Australian equities (p) was around 10.6 per cent over the period 1999–2007.³⁷

35 Austria operated this system from 2000 through 2004, while Italy used the ACE-type system from 1997 to 2003. In their extensive evaluation of the Italian ACE, Bordignon et al. (2001) concluded that it achieved its goal of reducing the cost of capital for equity-financed investment without losing too much revenue. However, both Austria and Italy abandoned the ACE system when they moved towards a lower corporate tax rate on all profits, including above-normal returns.

36 Similar results are found by Keuschnigg and Dietz (2007) who examined the introduction of an ACE/DIT for Switzerland and by Radulescu and Stimmelmayer (2007) who studied the introduction of an ACE for Germany.

37 The estimated average rate of return from Australian equities was calculated as the average rate of return from the ASX All Ords Accumulation Index over the period January 1999 to January 2007.

With these numbers, it follows from (28) that the AETR for an average Australian company would be 0.12 under an ACE system. For comparison, the AETR under the current company tax is 0.303, estimated as total tax paid (excluding capital gains tax) relative to total economic profit as measured by Clark, Pridmore and Stoney (2007). We may therefore estimate the long-run revenue loss from the ACE relative to GDP as follows:

$$(29) \quad \frac{\text{Long run revenue loss}}{\text{GDP}} = (0.303 - 0.12) \frac{P}{\text{GDP}}$$

where P is the 'true' economic profit (net of losses). The fraction P/GDP was approximately 0.15 over the period 1999–00 to 2005–06, implying an estimated long-run revenue loss from the ACE of around 2.8 per cent of GDP.

In the short and medium term the revenue loss will be considerably lower when the ACE allowance is granted only for equity formed after the time of reform. Specifically, if the corporate equity base grows at the same annual rate g as nominal GDP, the fraction X_t of the equity base which will attract the ACE allowance in year t after the reform will be:

$$(30) \quad X_t = \frac{(1+g)^t - 1}{(1+g)^t} = 1 - \frac{1}{(1+g)^t}$$

The expected revenue loss from the ACE incurred t years after its introduction will therefore amount to the fraction X_t of the long-run revenue loss. For example, if annual nominal GDP grows at an average rate of 5 per cent, equation (30) implies that the revenue loss in the fifth year after the reform will be about 22 per cent of the long-run revenue loss. From (30) the sum of the present values of the base for the ACE allowance in all future years can be shown to be:

$$PVX = \frac{1}{i} - \frac{1}{g+i(1+g)}$$

where i is the nominal discount rate. If the base for the ACE were simply set equal to a constant fraction b of the actual equity base, the sum of the present values of the future bases would instead be:

$$PVB = \frac{b}{i}$$

Setting $PVX = PVB$, we find:

$$(31) \quad b = 1 - \left(\frac{i}{g+i(1+g)} \right)$$

The fraction b in (31) gives the present value of the revenue loss from an ACE where the allowance is granted only for new equity relative to the revenue loss from an ACE granted to old (existing) as well as new equity. For

example, if $g=0.05$ and $i=0.085$, we get $b=0.39$, so in this case the long-run revenue loss from the proposed ACE system would only be around 40 per cent of the number implied by equation (29), that is around 1 per cent of GDP, measured in appropriate present value terms. More generally, equation (31) suggests that the long-run revenue loss could be cut almost in half by disallowing a deduction for an imputed return to old equity. Since an allowance for old equity is equivalent to a pure lump sum transfer to existing shareholders that does not generate any additional investment, we see a strong case for setting the initial equity base at the time of reform to zero, given our proposal below to cut the personal marginal tax rate on capital income.

In summary, if the ACE allowance is granted only for additional equity formed after the reform, and if existing franking account balances are eliminated at the time of reform, the net revenue loss from the ACE should be limited.³⁸

(e) Areas for Potential Simplification

As seen from Table 9.13, the proposed ACE system does not in principle require any information in addition to that needed to calculate the tax liability under the current corporation tax. Indeed, we see considerable potential for simplification under our ACE proposal. As noted, the imputation system (including franking credit trading and streaming rules) could be abolished.³⁹ Further, thin capitalisation rules for domestic companies would in principle become redundant, since the ACE treats equity on par with debt. Note also that although the existence of hybrid financial instruments sometimes complicates the distinction between debt and equity for tax purposes, the ACE should cause no additional complications. The general rule would be that any (new) corporate liability that does not count as debt under current rules (and hence does not give rise to deductible interest payments) would be treated as (new) equity. This would limit the need for the complex Taxation of Financial Arrangements rules.

Some simplification could also be reaped from the fact that the timing of depreciation allowances does not affect the present value of the tax burden under the ACE, provided the imputed rate of return is (roughly) equal to the firm's discount rate. This should allow some simplification of depreciation schedules. For example, the current system which is based on effective lives for each asset could be replaced with a simple pooling system, under which assets are pooled into groups according to durability (i.e. short-, medium- and long-lived) with a set depreciation rate for each pool.⁴⁰ Alternatively, depreciation rates could be based on accounting standards, reducing the need to maintain two sets of accounts.

38 Incorporating the removal of dividend imputation, the introduction of the ACE could be broadly revenue neutral. For example, company tax as a share of GDP has been on average around 4.5 per cent (although growing). Typically around 60 per cent of taxable income is passed out as dividends, assuming 40 per cent of dividends go to non-residents (who do not benefit from the credits) the revenue gain from the abolition of imputation relative to GDP is around 1 per cent.

39 The dividend streaming (or anti-streaming rules) prevent strategies aimed at directing franked dividends to shareholders who are able to gain the most benefit from the imputation credit.

40 For assets made up of multiple assets, such as buildings (which include the structure and fittings), all assets could be pooled together and depreciated at the same rate.

9.7.2 Designing a Dual Income Tax for Australia

We turn now to a description of our blueprint for reform of the residence-based personal capital income tax, based on a variant of the Dual Income Tax (DIT). The general rationale for the DIT was outlined in section 9.6.5. Below we propose a definition of the tax base under an Australian DIT and discuss how the individual components of the base could be measured. We also describe how the tax base and the capital income tax rate can be chosen so as to ensure an appropriate coordination of the ACE-type corporation tax with the personal capital income tax.

(a) Defining Capital Income

An important goal of the DIT is that the capital income tax base should be broad to ensure the greatest possible degree of tax neutrality. In the Australian context, we propose that the personal capital income tax base should include the types of income listed in Table 9.14.

As argued above, there is no case for maintaining the imputation system for dividend taxation when an ACE system is introduced along with a low flat personal tax rate on capital income. Hence there will be no dividend tax credits to be set against the capital income tax liability under the DIT.

If imputed rents on owner-occupied housing are included in the tax base, there is a case for allowing full deductibility of interest expenses. If imputed rents cannot be included in the tax base (for practical or political reasons), mortgage interest payments should not be deductible. In a later sub-section we shall discuss the taxation of owner-occupied housing in more detail.

When the capital income tax base is negative, the taxpayer should receive a tax credit equal to the capital income tax rate times the negative base, to be deducted from his or her tax liability on other income. If the capital income tax credit exceeds the tax liability on other income, the remaining credit should be refunded or carried forward to future years with the addition of a risk-free after-tax interest rate.

The next sub-section discusses how to calculate the capital income of the owners of unincorporated firms.

(b) Taxing Income from Self-Employment

The self-employed work in their own business, so part of their business income must be seen as labour income. At the same time, the self-employed have also invested (part of) their wealth in their business, so another part of their income is a return to their business assets which is clearly a

form of income from capital. If all of the business income of the self-employed were taxed as labour income at progressive rates, their capital income would be overtaxed relative to other types of capital income under a DIT. On the other hand, if all income from self-employment were taxed at the low flat rate applying to capital and corporate income, the self-employed would escape tax progressivity altogether, even though part of their income stems from their work effort.

To avoid such unequal tax treatment, it is necessary to split the income of the self-employed into a labour income component and a capital income component. Since the working hours and efforts of the self-employed cannot be observed by the tax authorities, whereas the stock of business assets can in principle be observed, it is natural to split the income of the self-employed by first imputing a rate of return to their business assets, which is categorised as capital income, and then treating the residual business profit as labour income.

The imputed rate of return to business assets may be computed on a 'gross assets' or on a 'net assets' basis. Under the 'gross assets' method, the net financial liabilities of the firm are not deducted from the asset base. The labour income of the entrepreneur is thus calculated by deducting an imputed return to 'gross' business assets (the assets recorded in the firm's balance sheet) from the 'gross' profits of the firm (defined as profits *before* interest), and taxable net capital income is calculated by deducting interest expenses from the imputed return to the gross assets. To illustrate, let Y denote business income before deduction for interest, let A indicate the stock of business assets recorded in the firm's balance sheet, and let D denote the stock of business debt. If ρ is the rate of return imputed to business assets, and i is the actual interest rate paid on business debt, the imputed capital income (C_G) and the imputed labour income (W_G) under the gross assets method is calculated as follows:

Income splitting under the gross assets method

$$(32) \quad C_G = \rho A - iD$$

$$(33) \quad W_G = Y - \rho A$$

By contrast, under the 'net assets' method, capital income is determined by imputing a return to the net assets of the firm (business assets minus business debt), and labour income is found by deducting this imputed return from net profits (profits *after* deduction for interest). If C_N and W_N denote the imputed capital income and labour income under the net assets method, we thus have:

Income splitting under the net assets method

$$(34) \quad C_N = \rho(A - D)$$

$$(35) \quad W_N = Y - iD - C_N = Y - iD - \rho(A - D)$$

From these equations it follows that:

$$(36) \quad C_G - C_N = (\rho - i)D$$

$$(37) \quad W_G - W_N = (i - \rho)D$$

Table 9.14 The Personal Capital Income Tax Base under the Dual Income Tax

Interest
+ dividends
+ capital gains
+ rental income
+ royalties from acquired intangible assets
+ imputed returns on capital invested in unincorporated firms
+ imputed returns on owner-occupied housing
= Capital income

If the imputed rate of return equals the rate of interest paid on business debt ($\rho = i$), the two methods will thus be equivalent, generating exactly the same split of total business income into capital income and labour income. But if the imputed return exceeds the interest rate, a larger fraction of business income will be categorised as capital income (and a correspondingly lower fraction will be taxed as labour income) under the gross assets method than under the net assets method. The opposite will hold if the imputed return is lower than the interest rate.

Moreover, deviations between the imputed return and the interest rate on debt will tend to distort business investment under the gross assets method. To see this, let t denote the flat capital income tax rate, and let the function $T(W)$ indicate the progressive tax schedule for labour income. From (32) and (33) we then find that the entrepreneur's total tax bill under the gross assets method (T_G) will be:

$$(38) \quad T_G = tC_G + T(W_G) = t(\rho A - iD) + T(Y - rA)$$

Now, suppose the entrepreneur undertakes an additional debt-financed investment of \$1. Suppose further that this additional investment raises business income by the amount $\Delta Y = i$. In the absence of tax, this investment would just be worth undertaking since it generates a pre-tax return which is just sufficient to cover the interest on the additional debt. With $m \equiv T'(W)$ denoting the marginal tax rate on labour income, and with A and D both increasing by one unit, we see from (38) that the change in the entrepreneur's total tax bill (ΔT_G) will be equal to:

$$(39) \quad \Delta T_G = t(\rho - i) + m(i - \rho) = (t - m)(\rho - i)$$

If the imputed rate of return exceeds the rate of interest ($\rho > i$) and if the marginal labour income tax rate exceeds the capital income tax rate ($m > t$), we see from (39) that the extra investment reduces the entrepreneur's tax bill. The reason is that a larger share of total profit gets taxed at the low capital income tax rate rather than at the high marginal labour income tax rate. Hence an investment that would not yield any net profit in the absence of tax actually becomes profitable in the presence of tax. Thus taxation under the gross assets method artificially stimulates investment when the imputed return exceeds the interest rate. On the other hand, if the imputed return falls short of the interest rate at which the entrepreneur can borrow, the gross assets method of taxation artificially discourages investment.

By contrast, under the net assets method of income splitting, the entrepreneur's total tax bill (T_N) is given as:

$$(40) \quad T_N = tC_N + T(W_N) = t\rho(A - D) + T(Y - iD - \rho(A - D))$$

Since the recorded net assets of the firm ($A - D$) are unaffected by an additional unit of debt-financed investment, and since profits net of interest are likewise unaffected in our example where $\Delta Y = i$, we see from (40) that the entrepreneur's total tax bill is unchanged, since neither the imputed capital income nor the imputed labour income will change. Hence the net assets method of income splitting ensures that the DIT remains neutral towards marginal investment decisions even if the imputed

rate of return on equity deviates from the interest rate paid by the entrepreneur.

This analysis would seem to imply a preference for the net assets method on tax neutrality grounds, but unfortunately this method also allows greater scope for tax arbitrage. To see how, note from (40) that under the net assets method interest expenses become deductible against the high marginal tax rate on labour income because they reduce the residual net profit which is taxed as labour income. This provides an incentive for entrepreneurs with high earnings to record private debt (debt incurred for non-business purposes, say, to finance the purchase of a consumer durable or a piece of real estate) as business debt in order to benefit from interest deductibility.

To limit the scope for such transactions, the self-declared business income should be adjusted in cases where the declared net assets of the firm become negative, since negative net business assets indicate that private debt has been transferred to the business sphere. Specifically, taxable business income should be raised by the imputed return times the recorded negative net worth of the firm to (roughly) offset the fact that reported business income has been artificially lowered by allocating non-business interest expenses to the firm. To the extent that the tax law allows deduction for non-business interest expenses, the upward adjustment of taxable business income should of course be accompanied by a corresponding downward adjustment of the entrepreneur's non-business capital income (which might well be negative, in which case the entrepreneur would receive a tax credit equal to the capital income tax rate times the negative capital income).

The net assets method may also require a similar adjustment of taxable business income in certain other cases in order to prevent tax arbitrage, as explained in Sørensen (2007a, pp. 570–1). Thus the choice between the gross and the net assets method involves a tradeoff between the superior neutrality properties of the net assets method and the greater simplicity and lower vulnerability to tax arbitrage offered by the gross assets method.

Another avoidance problem arising under both methods of income splitting is that entrepreneurs may gain by transferring low-yielding non-business assets (e.g. a piece of real estate or a motor vehicle used for private consumption) from the private sphere to the business sphere. By adding to the recorded stock of business assets an asset with little or zero (taxable) yield, the entrepreneur will have a higher proportion of his or her business income taxed as capital income, since the base for calculating the imputed return goes up, while total business income stays (almost) unchanged. To prevent such transformation of labour income into capital income, the tax law must include clauses limiting the scope for transferring non-business assets to the business sphere.

When determining the rate of return imputed to business assets, policy-makers must decide whether to include a risk premium in the imputed return. The case for doing so depends critically on the tax treatment of losses. If the tax code allows full loss offsets⁴¹ and the marginal tax

41 This would involve unlimited carry-forward of losses with interest to preserve the present value of the deduction.

rate on business income is constant over time, it is not necessary to include a risk premium in the imputed return to avoid discouraging investment and risk-taking, as shown by Sørensen (2007a, pp. 572–3). Indeed, in this case the DIT will actually *stimulate* risk-taking even when the imputed return contains no risk premium. The reason for this is that, with full loss offsets, the high labour income tax rate imposed on residual business income works as an insurance device which reduces the variability (and hence the riskiness) of after-tax business income.

However, because of the risk of abuse, the Australian tax code does not allow full loss offset. Moreover, if marginal business income is taxed progressively as labour income, losses incurred in bad years will often be deducted against a lower tax rate than the marginal tax imposed on profits accruing in good years. If these tax asymmetries are strong, the tax system will tend to discourage risk-taking. In that situation there is a case for including a risk premium in the imputed return on business assets, which is taxed as capital income. Ideally, the imputed risk premium should vary with the risk characteristics of each individual investment project, but since the tax authorities lack the information and the administrative capacity to undertake a detailed differentiation of risk premia, they may choose to apply the same risk premium across the board. Inevitably, this premium will be too high for some investment projects and too low for others, implying some distortion to the pattern of risk-taking.

We end this discussion of the taxation of income from self-employment with two observations. First, because it requires fewer anti-avoidance measures and does not require a distinction between business debt and private debt, the gross assets method is administratively simpler than the net assets method, for the revenue authorities as well as for taxpayers. If priority is given to simplicity and low compliance costs, there is thus a case for choosing the gross assets method of income splitting.

Second, income splitting should be an *option* but not a requirement for the taxpayer, since it offers an opportunity for entrepreneurs to avoid over-taxation of the capital income component of their business income. If an entrepreneur does not opt for income splitting, his or her business income will automatically be taxed as labour income. Income splitting requires that taxpayers keep proper accounts of their assets and liabilities, so a taxpayer wishing to benefit from the low tax rate on capital income will have an incentive to keep proper books rather than relying on simplified accounting. Switching to a dual income tax may therefore help to promote modern business record-keeping in small enterprises, which may be desirable in itself.

Setting Tax Rates to Prevent Income-Shifting

The taxation of small corporations with active owners working in their own business raises a similar issue to the problem inherent in the taxation of the self-employed: part of the income from the company must be seen as a return to the capital invested in the firm, whereas another part is the reward for the work effort and skills of the owner(s). Under the DIT proposed here the dividends and capital gains

on shares would be treated as capital income. Insofar as such income from shares does not exceed the normal return to equity, it will only be subject to personal capital income tax since the proposed ACE system exempts the normal return from tax at the company level. Dividends and capital gains exceeding the normal return would bear corporation tax as well as personal capital income tax. If the *sum* of the company tax and the personal tax on dividends and/or capital gains is less than the marginal tax rate on labour income, an 'active' controlling shareholder working in his or her own company has an obvious incentive to pay himself dividends or to realise a capital gain on (part of) his or her shares rather than paying himself a realistic salary.

To eliminate the scope for such income-shifting, we suggest that tax rates under the DIT should be set so as to roughly satisfy the equality:

$$(41) \quad (1-\tau)(1-t) = 1-m \quad \Leftrightarrow \quad \tau + t(1-\tau) = m$$

where τ is the corporate income tax rate, t is the flat personal capital income tax rate, and m is the top marginal tax rate on labour income. The sum $\tau + t(1-\tau)$ is the total corporate and personal tax burden on labour income which is withdrawn from the company in the form of dividends or capital gains on shares. When this is roughly equal to the top marginal personal tax rate on labour income, a controlling shareholder can never gain (significantly) by, say, paying him or herself dividends rather than wages or salaries. Further, if controlling active shareholders wish to take advantage of the low marginal tax rates at the bottom of the progressive labour income tax schedule, they can do so in a perfectly legitimate manner by paying themselves wages or salaries up to the point where they enter the top income bracket in the labour income tax schedule.

Given the current 30 per cent corporate tax rate that we propose to maintain, a 20 per cent capital income tax rate would imply a 44 per cent total corporate and personal tax burden on dividends and capital gains above the normal return ($0.3 + 0.2 \cdot (1 - 0.3) = 0.44$). This is very close to the current 46.5 per cent top marginal personal tax rate on labour income and thus roughly satisfies equation (41). Moreover, for a taxpayer investing his or her savings in a relatively safe asset yielding a 2 per cent real interest rate, and assuming an average annual inflation rate of 2.5 per cent corresponding to Australia's average inflation target, the effective marginal tax rate on the real interest income would be $0.2 \cdot (2 + 2.5)/2 = 0.45$. This example suggests that a capital income tax rate of 20 per cent levied on nominal capital income would in many cases imply an effective tax rate on real capital income quite close to the top marginal tax rate on labour income. A capital income tax rate in the neighbourhood of 20 per cent would thus seem well in line with the so-called inflation argument for the DIT (whereby a lower tax rate on nominal capital income than on labour income is needed to prevent over-taxation of capital income) and would also roughly eliminate the possibilities for tax avoidance through income-shifting in closely held companies.

Taxing Capital Gains on Shares and Other Financial Assets Capital gains and losses constitute an important form of capital income and should be included in the tax base for

equity as well as neutrality reasons. However, throughout the world this has turned out to be 'easier said than done'. The problems of taxing capital gains on owner-occupied housing, rental properties and general CGT assets will be discussed in the following sub-sections. The present sub-section focuses on the taxation of capital gains on financial assets, mainly shares.

Under current Australian tax law, capital gains are taxed on a realisation basis, and generally only 50 per cent of the gain is included in taxable income. One of the arguments for the discount is that it provides a rough way of adjusting for inflation.⁴² But since a key justification for setting a low capital income tax rate under a DIT is that the tax is levied on the full nominal return to capital, we propose that the full nominal capital gain should indeed be included in the capital income tax base.

The conventional justification for deferring the taxation of gains until the time of realisation is that taxing accrued unrealised gains could lead to valuation and liquidity problems. Unfortunately, deferral generates its own problems by reducing the effective tax rate on accrued gains, denoted t^g in the following. Say, a taxpayer realises a constant fraction γ of an accrued gain in each period following the accrual, if his nominal after-tax discount rate is ρ , and if the statutory tax rate on realised nominal gains is t , the effective tax rate on an accrued nominal gain of one unit will be given by:

$$(42) \quad t^g = \int_0^{\infty} t\gamma e^{-(\gamma+\rho)u} du = \frac{t\gamma}{\gamma + \rho}$$

With a constant realisation ratio γ per year, the taxation of an accrued gain will on average be deferred by $1/\gamma$ years which may also be interpreted as the average length of the holding period for the asset considered. For example, with an average holding period of ten years, we have $\gamma = 0.1$, so if the nominal after-tax discount rate is 5 per cent ($\rho = 0.05$), it follows from (42) that the effective tax rate on accrued gains will only be two-thirds of the statutory rate. Obviously, the longer the holding period (i.e. the smaller the value of γ), the lower is the effective tax rate on accrued gains, so the greater is the taxpayer's gain from deferral. This issue is also discussed in section 9.4, which examines the effective tax wedge on savings and investment in Australia.

Allowing deferral of taxation of accrued capital gains on shares could open the door to tax avoidance through income-shifting under the proposed dual income tax since active shareholders could retain labour income within the company and benefit from the deferral of tax on the resulting capital gains. For example, with $\gamma = 0.1$ and $\rho = 0.05$ and a capital income tax rate of 20 per cent plus a corporate tax rate of 30 per cent, the total effective corporate and personal tax burden on labour income from the company which is ultimately withdrawn as a (realised)

capital gain would be $t + t^g(1 - t) = 0.3 + 0.133 \cdot (1 - 0.3) = 39.33$ per cent which is somewhat below the current 45 per cent top marginal tax rate on labour income in Australia. For shareholders without the need for instant liquidity there would thus be a tax gain from accumulating labour income within the corporate sector rather distributing it, even if equation (41) is satisfied. This problem would not be solved in a satisfactory manner by simply raising the statutory capital income tax rate t in (41), since this would (partly) erode the gains flowing from a relatively low capital income tax rate.

We propose to address the problems stemming from deferral in two ways. First, we see no convincing case for deferral of tax on gains on listed shares traded on organised stock exchanges. For shares traded in a liquid stockmarket, there are no problems of valuing an accrued unrealised gain on a share, since the gain can be calculated on the basis of easily observed market prices. Further, if taxpayers lack the liquidity needed to pay the tax, they can sell off a part of their portfolio, given the existence of a market where the shares are traded on a daily basis.⁴³ Of course, the tax authorities would need information on the taxpayers' shareholdings, but this might be obtained from brokers and financial institutions through automatic reporting requirements. A benefit of this type of scheme is that it would significantly reduce the compliance costs of calculating capital gains tax on listed shares and may also increase tax compliance. One possible issue with a move to accrual taxation of capital gains for listed companies, highlighted by Bengt (1997), is that if larger shareholders can change share prices at the end of the year, they may be able to manipulate the tax system. Bengt proposes this issue could be addressed by using average closing share prices over a specified period.

When it comes to gains on shares in unlisted companies, the valuation and liquidity problems associated with accruals-based taxation are more serious. For gains on shares in unlisted *domestic* companies, we therefore propose an alternative capital gains tax regime which is designed to eliminate the deferral gains from accumulating income within the company but which also avoids valuation and liquidity problems. Our proposal is based on the idea that when a company retains some amount of profit, the value of its shares tends to rise by a similar amount, other things equal.⁴⁴ In particular, we suggest that the basis value of a share in an unlisted domestic corporation be stepped up every year by the shareholder's proportionate amount of the company's retained after-tax profit and that this amount be added to the shareholder's taxable capital income. If the shares are subsequently sold at a price exceeding the stepped-up basis value, additional capital income tax is levied on the excess gain realised at the time of sale. On the other hand, if the sales price falls short of the stepped-up basis value, the shareholder receives a

42 The 50 per cent discount replaced the previous CGT system under which the cost base was adjusted for inflation.

43 It might be reasonable to allow taxpayers to pay the tax imposed on accrued gains in several instalments over the subsequent year so that the realisations that might be needed to pay the tax do not have to take place immediately at one single point in time.

44 This follows from equation (33) in Sørensen (2009) on the assumption that the effective tax rate on capital gains equals the effective tax rate on dividends. Under the tax regime proposed here, this assumption will indeed be met.

refundable tax credit equal to the capital income tax rate times the difference between the stepped-up basis and the sales price (or is allowed a carry-forward of loss with interest added).

This tax regime will ensure that whenever the labour income of active owner-managers (or an above-normal return to equity) is retained in the company, it still gets taxed at the effective rate $\tau + t(1 - \tau)$ in our previous notation. Hence there is no gain from retaining such income rather than paying it out as a dividend. Nor is there any gain from retaining the income instead of distributing it as a management salary, provided tax rates are set in accordance with equation (41).

Further, there are no valuation problems since the step-up of the basis value of shares equals taxable retained profits after company tax and may thus be calculated from information already contained in the company's tax accounts. Moreover, liquidity problems for minority shareholders could be avoided by requiring that companies pay the flat personal tax on retained earnings on behalf of their shareholders. Finally, the realisations-based tax on gains exceeding the stepped-up basis value ensures that all capital gains—including those arising from expectations of higher future earnings—are ultimately brought into the tax net.

A capital gains tax regime like the one outlined here would bring the taxation of closely held domestic companies and their owners in line with the taxation of unincorporated firms proposed in the previous sub-section. For both types of firm the normal return to capital would only carry personal capital income tax whereas above-normal returns would be taxed as labour income. This approximation of tax rules is important to avoid tax distortions to the choice of organisational form, as argued by Hagen and Sørensen (1998).

The practice of stepping up the basis value of shares by the amount of retained after-tax profits was used as a way of avoiding double taxation of retained earnings under the Norwegian dual income tax operating from 1992 through 2005. In Norway the step-up of basis was applied to all shares in Norwegian companies held by individual as well as corporate shareholders.⁴⁵ Under the capital gains tax regime proposed here for Australia it would only be necessary to allocate retained earnings to the basis value of shares in unlisted Australian companies held by resident individual shareholders.

However, for shares in unlisted *foreign* companies the capital gains tax rules suggested above would be difficult to implement, since foreign tax authorities could not be relied on to provide the necessary information on retained profits. For such shares we suggest using the so-called Risk-Free Return Method (RFRM) proposed for certain assets by the McLeod Committee (2001) in New Zealand and discussed by Burman and White (2003, pp. 371–4). Under the RFRM, individual holders of foreign unlisted shares would be taxed on an imputed risk-free rate of return on the acquisition value of the shares, so the annual tax bill would be based on a deemed rate of return rather than on the actual rate

of return; the assumption being that the latter would be more difficult to monitor than the purchase price of the share. The economic rationale for the RFRM is that the risk premium a shareholder expects to earn on a share just compensates for the extra risk he or she incurs, so taxing a deemed risk-free return (regardless of the actual return) is equivalent ex ante to taxing the expected actual return. The attraction of the RFRM is that it avoids lock-in effects since the taxpayer's tax liability is independent of any actual gain or loss made. At the same time, the latter fact may also be seen as unfair and in some ways inefficient, since it shifts all of the marginal risk on to the taxpayer. However, if the realistic alternative is to leave foreign unlisted shares out of the tax net (because their actual return cannot be monitored), we believe that taxation according to the RFRM method is preferable.

Having discussed the taxation of capital gains on shares, let us make some brief observations on the tax treatment of gains and losses on interest-bearing instruments. When a bond is issued with a fixed coupon interest rate at a price below par, a predictable capital gain arises as the term to maturity becomes shorter and the price of the bond rises accordingly. In addition, unanticipated gains may arise due to unexpected changes in the market interest rate. If capital gains and losses on fixed-coupon instruments are left out of the tax base of the creditor as well as the debtor, the creditor will wish to receive his or her return in the form of a tax-free capital gain whereas the debtor will want the return to take the form of a deductible coupon interest rate. These offsetting incentives would tend to cancel each other, and one would therefore expect the market price of fixed-coupon bonds to adjust so that the effective after-tax interest rate becomes equal to that on otherwise comparable variable interest rate bonds. This regime would not seem to cause any significant distortion; nor would it pose any threat to government revenue, due to the symmetric treatment of gains and losses for all taxpayers. Problems arise, however, if the debtor is a (financial sector) business firm entitled to a deduction for capital losses whereas the creditor is a personal investor who is not liable to tax on his or her capital gain. Such an asymmetry opens the door for extensive tax arbitrage through the issue of low-coupon or even zero-coupon bonds to exploit the tax exemption for the creditor's gain when the bond is redeemed at par value (or sold some time after the date of issue).

One potential solution to such problems could be a consistent accruals-based taxation of all gains with a symmetric treatment of losses for all categories of taxpayers. However, such a regime would raise considerable administrative challenges and might cause valuation problems as well as liquidity problems for taxpayers investing in less liquid types of bonds. A pragmatic alternative aimed at limiting the scope for tax arbitrage would be a system under which personal individual taxpayers would be exempt from tax on gains (and would not be allowed to deduct losses) on bonds issued with a coupon sufficiently close to the average bond

45 This so-called RISK system—similar to the capital gains tax regime proposed in 1966 by the Canadian Carter commission, see Carter (1966)—was made redundant and hence abolished from 2006 when Norway introduced the Allowance for Shareholder Equity described in section 9.6.5.

market interest rate prevailing at the time of bond issue. This would be combined with realisations-based taxation of gains on bonds not satisfying this rule. Such a regime, which largely eliminates the scope for tax arbitrage generating predictable capital gains, has operated well in Denmark since 1986.

(c) Owner-Occupied Housing

The accumulation of wealth in the form of home equity is one of the most important forms of household saving in Australia as elsewhere. As indicated in Table 9.14, a dual income tax aiming at the highest possible degree of tax neutrality should include an imputed return to owner-occupied housing in the capital income tax base. Unfortunately, such a policy may run into well-known obstacles of a practical as well as a political nature. We return to these obstacles shortly, following a discussion of how one would like to tax owner-occupied housing in an ideal world.

Our aim is to derive the magnitude of the taxable imputed rent on owner-occupied housing that would ensure a neutral tax treatment of housing. In a hypothetical situation without taxation, a capital market equilibrium is established when the risk-adjusted expected return to investment in owner-occupied housing equals the market interest rate so that the following equilibrium condition is met:

$$(43) \quad i = \overbrace{h - \delta + g - p}^{\text{Expected risk-adjusted nominal return to housing investment}}$$

The variable i in (43) is the risk-free nominal (government bond) market interest rate, p is the risk premium required on housing investment, h is the value of the housing service, δ is the expenditure needed to maintain the house, and g is the expected rate of nominal capital gain on the house. The variables h , δ , g and p are all measured as fractions of the current market price of the house. The right-hand side of (43) measures the total expected risk-adjusted nominal rate of return on the housing investment. If this return is higher (lower) than the market interest rate, housing prices will be bid up (driven down) until equation (43) is satisfied.

Under our ideal dual income tax, the flat capital income tax rate t would be applied to interest income as well as to an imputed rent calculated as a deemed rate of return r on the current market value of the house, and interest expenses would be deductible. Abstracting from local land taxes (assuming they are fully capitalised in land prices and were thus borne by those who owned the land when the taxes were introduced), the capital market equilibrium condition under a dual income therefore changes from (43) to:

$$(44) \quad i(1-t) = h - \delta + g - p - tr$$

where the left-hand side is the nominal after-tax interest rate, and the right-hand side is the expected nominal risk-adjusted after-tax return on the housing investment. From (43) and (44) it is easy to see that if $r = i$, that is, if the imputed rate of return is set equal to the risk-free

nominal interest rate, both equations will be satisfied simultaneously. In other words, with an imputed return $r = i$ the tax system would not distort the decision to invest in owner-occupied housing, since it would reduce the expected returns to housing investments and financial investments by identical amounts.

A tax on imputed rents calculated as a risk-free interest rate times the current market value of the residential property is simply an application of the Risk-Free Return Method (RFRM) explained in the previous sub-section. Note that when $r = i$, it follows from (43) that the home-owner's tax liability is:

$$(45) \quad tr = t(h - \delta + g - p)$$

From the right-hand side of (45) one sees that the RFRM method implies taxation of the *expected* capital gain g rather than the actual gain experienced by the home-owner. We prefer the RFRM method to attempt to tax the actual capital gain, since accruals-based capital gains taxation is difficult to implement for housing, and since realisations-based taxation could generate serious lock-in effects on the housing and labour markets.

Notice also that since the dual income tax involves a flat tax rate on all capital income regardless of the taxpayer's income from other sources, a neutral taxation of owner-occupied housing could also be achieved by levying a proportional property tax at the rate $\tau = t \cdot i$ on the current market value of owner-occupied residential property. This might have pedagogical advantages insofar as home-owners and voters have difficulty understanding and accepting the notion of an imputed rent.

Under our ideal dual income tax, the capital income tax base would thus include imputed rents as calculated by the RFRM. Alternatively, it would include an equivalent property tax on owner-occupied residential property. One may hope that, under a DIT with a low tax rate on capital income, it will be possible to overcome the well-known political resistance to taxes on owner-occupiers. Indeed, since mortgage interest payments would be deductible under a DIT, it might be easier to gain acceptance for a tax on imputed rent. Compared to the present system with no mortgage interest deductibility and no taxation of imputed rents, the system proposed here would improve tax neutrality by ensuring taxation of the return to home equity (through the tax on imputed rent). Realistically, one may have to accept that assessed property values will tend to lag behind actual market prices so that at best only a rough approximation to tax neutrality can be attained. If in addition the imputed rate of return is set below the neutral level (i.e. below the risk-free interest rate) for political reasons, there may be a case for restricting the deductibility of mortgage interest expenses to protect the tax base and minimise tax subsidies to owner occupation.⁴⁶

The revenue gain from taxing owner occupation under the RFRM would allow state-based stamp duties to be abolished. Stamp duties on property are one of the most

⁴⁶ An alternative approach would be to calculate imputed rent based on the home-owners' net equity, that is, the market value of the house less any outstanding loan. Under this approach interest expenses would no longer be deductible.

inefficient taxes imposed, creating significant lock-in effects, which may affect mobility and encourage over-investment in the housing stock.

Taxing owner occupation using the RFRM will, however, have an adverse impact on existing home owners. In order to ease the transition to the proposed scheme the tax rate could be phased in over a period of time. Another issue with using the RFRM for owner-occupied housing is liquidity constraints, particularly for retirees. One way to address liquidity concerns would be to allow eligible home owners to defer payment of the tax, for example until the house is sold. To ensure neutrality, the deferred tax liability would be indexed each year to the deemed rate of return. Similar approaches are already used by councils in respect of municipal rates.

(d) Rental Properties and Other Capital Gains Assets

Investing in rental property is also an important part of wealth accumulation. One of the reasons for this is that the current system allows for a full deduction for interest expenses, while only half the capital gain is subject to tax. As shown in section 9.4.4, this tax treatment provides a significant concession for geared property investments. Rental properties can be incorporated into the proposed DIT in a number of ways, all of which reduce this bias to varying degrees.

First, rental property could continue to be taxed as under the current system, with rental income, actual gains and losses on realisation, and interest and depreciation expenses included in capital income for the purposes of the DIT. Consistent with the proposed approach for listed shares, no capital gains discount would be provided to gains arising from rental properties, as the realisation basis of capital gains tax already provides a benefit vis-à-vis other forms of capital income. Under this approach, unlike our proposed approach to owner-occupied housing, unanticipated gains or losses would be taxed. One significant problem with this approach is that the realisation-based approach to capital gains results in undertaxation which will distort investment and portfolio savings decisions. While less of an issue than under the current system with the capital gains discount, this bias is exacerbated where the investment is debt financed. As discussed previously, the tax deferral also locks investors into underperforming investments, which further distorts resource allocation.

In order to reduce the lock-in effect, a roll-over could be provided where another rental property is purchased. While this would reduce the lock-in effect, it would increase the deferral advantage, which may have implications for equity and generate additional incentives to overinvest in residential property. In particular, while the tax system would not lock an investor into a particular property, there would still be a tendency for capital to be locked into rental properties. This could be reduced by expanding the roll-over where the gain is reinvested into another asset. However, this also results in further tax deferral.

A solution to the deferral and lock-in problems of a realisation-based capital gains tax system is an accruals approximation system as proposed by Vickrey (1939).⁴⁷ Under this approach, the effective compound interest gain from tax deferral is roughly offset through an upward adjustment to the realised gain. The magnitude of the taxable capital gain would increase with the length of the holding period. In effect, under this option tax that would be attributable to an accrued gain is carried forward with interest until the asset is sold. As shown in Griffith, Hines and Sørensen (2009), the capital gain for an asset held for T periods should be adjusted by the following factor:

$$\beta = \frac{g(1+r)^T}{(1+g)^T - 1} \left[\frac{1 - \left(\frac{1+g}{1+r}\right)^{T+1}}{1 - \left(\frac{1+g}{1+r}\right)} \right]$$

where r is the after-tax interest rate and g is the average annual capital gain, calculated from the equation $A_T = (1 + g)^T A_0$, and A_T is the sale price and A_0 is the original purchase price of the asset.

Under this option, individuals would not be required to pay tax until realisation, which would address any liquidity concerns arising from full accruals taxation. The proposal would be relatively simple to administer as the ATO could publish tables on the required uplift factor for different holding periods and average annual gains, and the taxpayer would only need to know the purchase price and sale price of the asset.

An alternative approach would be to tax investment properties using the RFRM approach as suggested for owner-occupied housing. As discussed previously in relation to accrual taxation and the accruals approximation system, the RFRM would eliminate lock-in and the advantage from deferral as a taxpayer's capital gains tax liability would not depend on when the asset is sold. As mentioned previously, the RFRM method results in the 'correct' level of taxation from an ex ante perspective, although by effectively taxing the expected return all of the marginal risk is shifted to the taxpayer. On balance, however, where neutrality is given a high priority, the RFRM method would be the preferred approach.

The issues and options for the taxation of other CGT assets, such as collectables, are similar to those outlined above for listed shares and property. As such, where neutrality is given a high priority the RFRM would be the preferred approach to taxing these assets.

While the RFRM approach has many benefits it may provide arbitrage opportunities where taxpayers can finance investments in RFRM assets with debt that remains deductible. This is because the full interest cost, including compensation for risk, is deductible while only the risk-free return is included in income. In addition, arbitrage opportunities may arise where taxpayers are able to convert income that would otherwise be taxable into gains on a RFRM asset, as those gains would be exempt from tax.

⁴⁷ Fane and Richardson (2005) propose a variant of this approach for the taxation of rental properties in Australia.

(e) Superannuation

Superannuation is an important part of household savings and as highlighted in section 9.4.3 it is afforded significant concessionality under the current tax system. AFTS Review Panel (2009, p. 19) suggests that concessional tax assistance for superannuation is warranted because of the social benefits superannuation provides in overcoming myopic preferences and as a way of compensating for compulsion and preservation. However, these arguments do not appear persuasive.

In relation to compulsory superannuation, to the extent it is aimed at addressing the myopic preferences of individuals, compulsion should increase lifetime well-being without the need for providing concessional tax arrangements. There is also little justification for providing concessional tax treatment for voluntary superannuation contributions. Concessions are typically justified on the grounds that superannuation is a long-term investment. However, individuals will choose to save in different instruments and over differing periods based on their requirements, and investment in superannuation need not be long-term. As individuals close to retirement make the greatest use of the superannuation concessions, typically contributing a significantly higher proportion of their income to superannuation, concerns over preservation may be overstated.

In the absence of tax concessions, voluntary superannuation should be close to a perfect substitute for other forms of saving. Providing tax concessions for voluntary superannuation can result in savings through voluntary superannuation providing higher returns than other forms of saving. This is highlighted in section 9.4.4(c) with the low estimated METRs on superannuation savings. While such tax concessions encourage individuals to save more in superannuation, it is less clear whether they add to total saving. For example, tax concessions for voluntary superannuation reduce the cost of saving, and therefore may increase the overall level of savings (substitution effect)—this may be particularly important for households with low levels of saving before the tax concession. But for individuals who already save, they may simply substitute into superannuation, and therefore tax concessions may only distort portfolio choice. Furthermore, for individuals who already save, they may simply choose to save less, as they no longer have to save as much to achieve a given level of lifetime income (income effect). Estimates by Connolly and Kohler (2004) suggest that voluntary superannuation savings have been approximately offset by reductions in other voluntary saving, although they note that this result is likely to be affected by data quality.

It is therefore difficult to justify providing tax concessions for superannuation based on its specific characteristics relative to any other form of savings, and evidence suggests that voluntary saving may be a close to perfect substitute for other forms of voluntary saving. For that reason we would propose that consideration be given to taxing the contributions and the earnings of superannuation funds consistently with all other forms of saving. Under this approach, contributions would be made out of the individual's after-tax earnings, and earnings on superannuation accounts (or superannuation fund earnings), would be taxed

at the DIT rate. This would provide individuals with the ability to allocate their discretionary savings in accordance with their own priorities.

Another reason often given for providing tax concessions for superannuation is that this addresses the myopic behaviour of individuals who do not have access to compulsory superannuation. Such individuals include the unemployed and self-employed. For the self-employed, many save for retirement by investing in their own business. Under our proposal, such individuals would be indifferent between saving through superannuation or saving by reinvesting in their business—or any other asset. For those individuals below retirement age who are unemployed and receiving benefits, one possible solution—instead of providing a general tax concession for all superannuation contributions and earnings—would be for the government to make contributions as part of any benefit payment.

(f) Areas for Potential Simplification

The DIT provides many areas for potential simplification. A flat tax on all forms of capital income applying to all taxpayers, combined with removing capital income from means testing, would allow tax on several forms of capital income including interest, dividends and income from domestic listed companies, to be collected at source as a final withholding tax.

In addition, as discussed previously, the proposal to tax the accrued gain on listed shares would significantly reduce compliance costs of calculating capital gains on shares. For these arrangements, the individuals (or share brokers) would simply calculate taxable income as closing value of shares less opening value of shares, plus sales less any purchases.

While not direct simplification, a flat tax on all capital income would also eliminate opportunities for splitting capital income, hence improving the equity of the tax system.

(g) Avoiding Capital Flight

Like the current personal capital income tax, the DIT aims to tax the worldwide capital income of domestic residents regardless of its source. Unfortunately, there are well-known problems of enforcing domestic tax on foreign source capital income because such income may be difficult to monitor. A high personal capital income tax rate therefore provides domestic taxpayers with an incentive to hide away their wealth in foreign jurisdictions. A switch to a DIT reduces this capital flight problem by lowering the capital income tax rate, but it does not fully solve the tax problem of enforcing tax on foreign income.

The enforcement problem basically stems from the fact that foreign tax authorities have at best a very weak incentive to invest resources in gathering and transmitting information that enables the Australian tax authorities to detect international tax evasion by Australian residents. To address this incentive problem, thereby further reducing the problem of capital flight, we suggest that Australia should offer foreign governments a share in the revenue gain whenever information provided by foreign tax authorities enables domestic tax administrators to detect international tax evasion. Since such revenue sharing would still leave a net gain to the Australian tax authorities, and since effective

enforcement of residence-based taxation would strengthen tax neutrality, we see no reason why Australia should not offer revenue sharing on a unilateral basis.

(h) Revenue Effects from a Dual Income Tax

Rough estimates of the revenue effects from a Dual Income Tax can be estimated from household net worth data. Goldbloom and Craston (2008) provide estimates of household net wealth for Australia. Average household net worth over the period, 1999–00 to 2005–06 was around \$3.4 billion, or around 4.2 times GDP.

With around 12 per cent of net worth attributed to personal use assets and motor vehicles, and liabilities on such assets (ABS 2007), which are not included in the DIT, and assuming an average rate of return of around 5 per cent, remembering that property will only be taxed on a deemed risk-free return under the RFRM, the potential tax base relative to GDP would be around 0.2. With a tax rate under the DIT of 20 per cent, this would result in DIT revenue of around 4 per cent of GDP.

With the ratio of taxes on personal capital to GDP currently around 1.5 to 2 per cent, this means the revenue gain from the DIT could be in the order of 2 per cent of GDP. This estimate excludes any revenue gain from taxing superannuation contributions at marginal tax rates, but would be offset to some degree by the additional cost from increased pension payments if means testing of capital income were also removed as part of the package.

9.7.3 Impact of the Proposed Tax Reform on Effective Tax Rates

The proposed ACE/DIT tax reform would significantly reduce or eliminate many of the distortions created under the current system which were highlighted in section 9.4.

Considering the case of a multinational firm, under the ACE where the imputed return is set 'correctly', the METRs for investment typically fall to zero (see Table 9.15), as the ACE exempts the marginal return.

The ACE removes distortions arising from the incorrect measurement of economic income, including removing distortions arising from accelerated depreciation provisions. In line with this, distortions between investments in different types of intangibles and between intangibles and physical assets are also removed. The ACE also removes financing distortions with METRs and AETRs equivalent for most investments. While the examples presented here show the significant neutrality benefits of the ACE, it should be noted that where the imputed return is set 'incorrectly' this may distort real investment decisions.⁴⁸

As the ACE maintains a source-based tax on rents, AETRs on investments earning economic rents are positive. AETRs for equity-financed investment fall in line with the fall in the METR.⁴⁹ This reduction in METRs and AETRs is likely to stimulate foreign investment in Australia. While METRs and AETRs for equity-financed investments fall, METRs and AETRs for debt-financed investments increase marginally, with the removal of the bias towards debt financing.

The most significant improvement in terms of tax neutrality is in relation to the treatment of savings. Under the proposed reform, all savings face an expected effective average tax rate of 28.3 per cent. This reflects the removal of the superannuation concessions, and the concessional treatment of capital gains. This is likely to reduce distortions to portfolio choice.

METRs are also equal across taxpayers. While at first this may appear to be a reduction in fairness or equity compared to the current system, this is unlikely to be the case. Under current arrangements, many low income individuals either

Table 9.15 Effective Marginal and Effective Average Tax Rates on Selected Investments (Financed by Equity or Debt) (%)

Asset	METR	AETR 10% rent	AETR 40% rent
Bank account/bonds	0.0	18.8	26.1
Land (capital gains)	0.0	18.8	26.1
4-year effective life asset	0.0	18.8	26.1
15-year effective life asset	0.0	18.8	26.1
100-year effective life asset	0.0	18.8	26.1
Tractors	0.0	18.8	26.1
Trucks	0.0	18.8	26.1
Airplanes	0.0	18.8	26.1
Gas transmission assets	0.0	18.8	26.1
Gas production assets	0.0	18.8	26.1
Mineral exploration expenditure	0.0	18.8	26.1
Repairs and maintenance	0.0	18.8	26.1
Building (40 year)	0.0	18.8	26.1
Building (25 year)	0.0	18.8	26.1
R&D (125%)—equipment	0.0	18.8	26.1
Brand equity (new)	0.0	18.8	26.1
Brand equity (acquired, maintained)	0.0	18.8	26.1
Brand equity (acquired, not maintained)	0.0	18.8	26.1
Standard patent (new)	0.0	18.8	26.1
Standard patent (acquired)	0.0	18.8	26.1
Firm specific resources	0.0	18.8	26.1

Note: Estimates assume 6 per cent real return and 2.5 per cent inflation.

48 For example, a uniform allowance rate will not be neutral for all firms if full loss offset is not provided (see section 9.7.1(b)).

49 It can be shown that the AETR is a weighted average of the METR and the statutory rate (see Sørensen 2009).

Table 9.16 Effective Marginal Tax Rates on Selected Savings Vehicles (All Taxpayers) (%)

Savings vehicle	METR
Bank/bonds	28.3
Rental property (residential)	28.3
Owner-occupied home	28.3
Superannuation	28.3
CGT asset	28.3
Listed shares—dividend	28.3
Listed shares—capital gain	28.3

Note: Estimates assume 6 per cent real return and 2.5 per cent inflation.

Table 9.17 Effective Marginal Tax Rates on Selected Assets by Holding Entity (%)

Asset	METR: new equity	METR: retained earnings
Unincorporated		
Bank/bond	28.3	n.a.
Land (capital gain)	28.3	n.a.
Computer	28.3	n.a.
Machinery (10-year effective life)	28.3	n.a.
Truck	28.3	n.a.
Building	28.3	n.a.
Incorporated		
Bank/bond	28.3	28.3
Land (capital gain)	28.3	28.3
Computer	28.3	28.3
Machinery (10-year effective life)	28.3	28.3
Truck	28.3	28.3
Building	28.3	28.3

Notes: n.a. = not applicable. Estimates assume 6 per cent real return and 2.5 per cent inflation.

are unable to access or don't have the same capacity as high income individuals to invest in many of the savings vehicles that are tax preferred, such as rental property and capital gains assets, or have the same ability or get the same benefits from income splitting. By levelling effective marginal tax rates across asset types, the DIT may go a long way to improving equity and fairness.

The proposed reforms also provide a neutral treatment with respect to investments undertaken through different organisational structures. METRs are estimated to be 28.3 per cent for investments undertaken by both unincorporated and incorporated companies, irrespective of the choice of finance (Table 9.17). The METR is higher for these entities than for listed companies, and consistent with the analysis in section 9.4.4, the METRs incorporate taxes at the personal level.

9.8 Taxing Natural Resources and Land

As noted in section 9.1, Australia is rich in natural resources and foreign investors play a particularly large role in natural resource extraction. The analysis in section 9.3 showed that the exploitation of natural resources gives rise to location-specific rents that can be taxed without deterring international investors, and section 9.4.2 described the various ways in which the Commonwealth government and the Australian states currently tax income from natural resource extraction.

In the present section, we argue that the source-based rent tax proposed in section 9.7 as a blueprint for a general reform of the Australian corporation tax could also serve as a basis for reforming the current rather incoherent taxation of natural resources. As a background, the next sub-section briefly analyses the economic effects of alternative ways of taxing natural resource rents. In sub-section 9.8.2 we then propose some principles for an improved Australian system of natural resource taxation. This reformed system could be conveniently combined with a general corporation tax based on the ACE system, but it could also be implemented as a separate tax regime for the natural resource industries even if the general corporation tax were not reformed in accordance with the principles of an ACE.

9.8.1 Alternative Ways of Taxing Natural Resource Rents

The rents arising from the scarcity of natural resources are owned by the community. Governments, on behalf of the community, transfer these rents to the private sector in the form of rights to exploit the natural resource. In order to ensure the community receives compensation for its assets, governments will typically either sell the right through auction or licence fees, or will tax the resource—or use some combination of the two. Tax instruments are the most common, with two typical approaches:

- » profit-based royalties, which are based on the net cash flows or some other measure of profit; and
- » output-based royalties, which can be either *ad valorem* (levied on the value of production) or specific or unit-based (levied as a set charge per unit of production).

Considerable attention has been devoted to the design of an optimal resource tax (Garnaut & Clunies Ross 1975; Hogan 2007, 2008). Profit-based royalties, under which the government effectively acts as a silent partner, are typically neutral in that they will not distort industry output. Unlike profit-based royalties, output-based royalties are levied even in periods when the project does not make a profit. As such, marginal projects may become unprofitable and consequently output-based royalties may lead to lower industry output and early closures.

While output-based royalty arrangements are likely to lead to a sub-optimal use of scarce natural resources, they are widely used since output-based royalties typically have lower operating costs, as less information is required to assess the tax liability. Figure 9.15, based on Hogan (2007), illustrates the impact of profit- and output-based royalties on economic efficiency. The vertical axis measures the price/marginal cost of the resource (p) which is assumed to be set on the world market, while the horizontal axis indicates the level of production. The S -curve shows the firm's long-run supply curve, representing the long-run marginal cost of exploration, development and production before the introduction of a royalty regime. Where no royalty arrangements are imposed (Panel A), given the industry supply curve, world price equilibrium occurs at point e , with mining output of q^* . Total industry revenue is given by the area $A+B$ (price multiplied by quantity). With the area below the long-run supply curve representing the costs of

exploration, development and production it can be seen that the rent from the project is represented by the area *A*.

Next, consider a pure resource rent tax. Under this arrangement the government is a silent partner in the project, and takes a constant share of the rents shown as the area *C* in Figure 9.15 (Panel B). Under this arrangement, production decisions are not distorted with output remaining at q^* after the introduction of the tax.

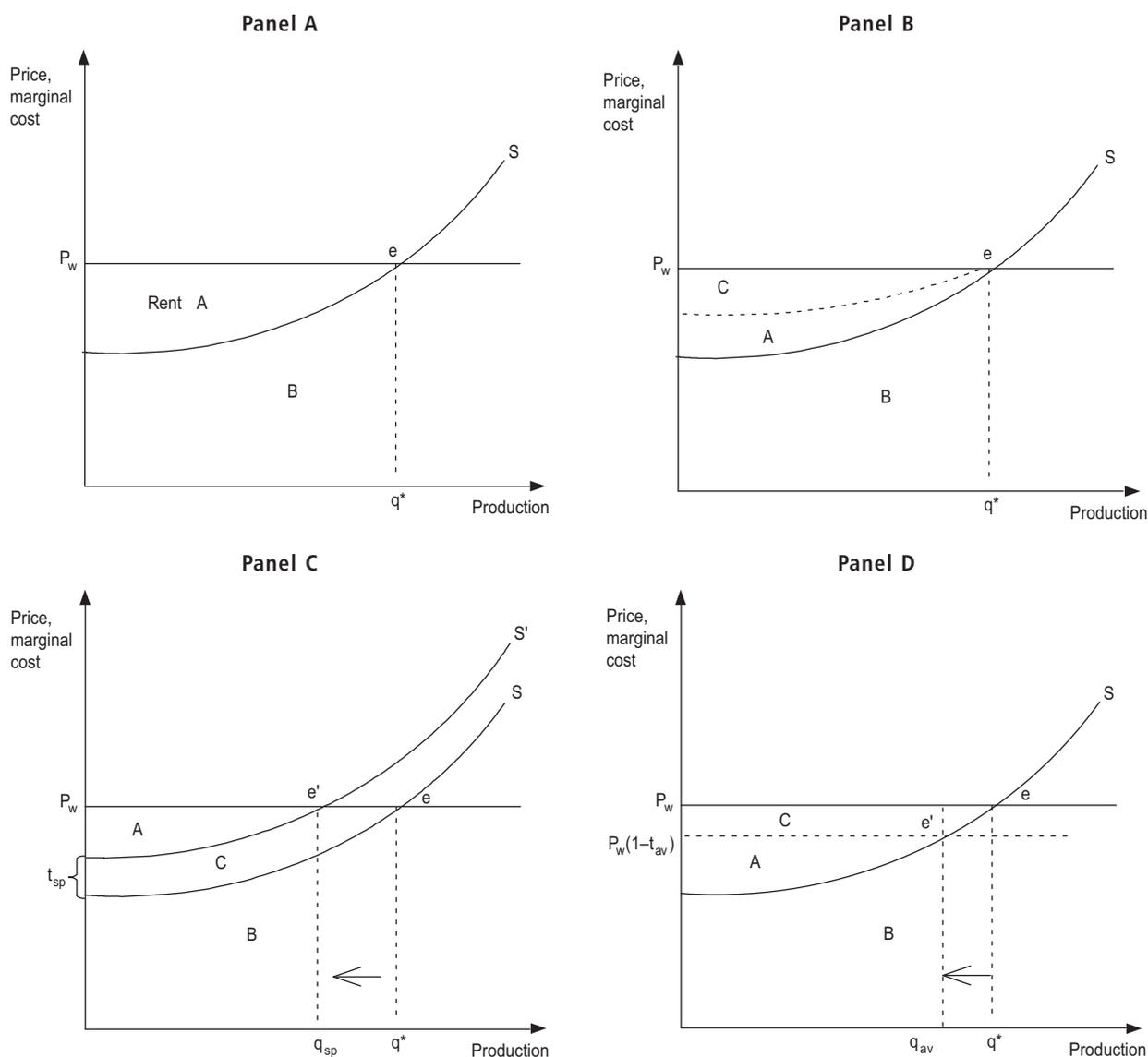
Finally, consider the output-based royalties. Under a specific royalty, the government collects a constant dollar amount per unit of output, at the rate t_{sp} (Panel C). This increases the marginal cost of production, resulting in an upward shift in the firm's long-run supply curve by the amount of the tax and results in a new equilibrium at point e' . At this new equilibrium point production falls from q^* to q^{sp} , reflecting the higher marginal cost of production. This may tend to result in some marginal mines no longer being profitable and consequently not going ahead. The government's share of the rent is measured by the area *C*.

Under an *ad valorem* royalty, the government collects a constant proportion (t_{av}) of the price received for the mine's output (Panel D). Therefore, the effective price received by a private investor is given by $p_w \cdot (1 - t_{av})$. The lower price received by the private investor leads to a lower level of production, with a new equilibrium at point e' . The imposition of an *ad valorem* rent tax will therefore lead to a lower level of production than under the no-tax case, with production falling from q^* to q^{av} . The government's share of the rent is given by the area *C*.

9.8.2 Reforming Australia's System of Natural Resource Taxation

The above analysis shows that, from the viewpoint of economic efficiency, a pure rent tax is the preferred method of taxing natural resources since it does not distort investment and production decisions. From this perspective the source-based ACE system suggested as a blueprint for a general reform of Australia's company tax system would

Figure 9.15 Impacts of Key Resource Tax Options



Source: Based on Hogan (2007).

also seem an ideal basis for reforming natural resource taxation. One issue with a source-based rent tax like the ACE is that it taxes both location-specific and mobile rents. By taxing mobile rents, there will be pressure to keep the corporate tax rate low to avoid discouraging mobile investments. But since the rents from natural resource extraction are immobile, there is a case for setting a higher rate of tax to ensure the community gets a fair return on its natural resources.

We therefore propose to tax location-specific rents, namely rents from the exploitation of natural resources directly. This would replace the ad hoc and partial treatment of natural resource taxation currently applying at both the state and Commonwealth level. While such a move is worthy of consideration irrespective of what changes are made to the company tax system, the adoption of an ACE at the corporate level would assist in facilitating the transition from output-based royalties to a more neutral profit-based system.

One of the main issues raised in relation to moving the taxation of resources to a rent-based system is the additional complexity and administration costs associated with rent-based arrangements. However, if the ACE were adopted at the corporate level, it may be possible to use the corporate tax system as the basis for the resource rent tax.⁵⁰

While the ACE is imposed at the entity level, to ensure only resource rents are taxed at a higher rate than the standard corporate tax rate, the resource activities of the company would need to be ring-fenced and the taxing point would need to be moved back as close as possible to the well head/mine gate. This would require an additional separate albeit similar tax system for non-renewable resources. In the absence of market set prices or where the mining and processing of the resources is fully integrated it is likely that transfer-pricing type rules would be required to ensure resource rents are not transferred to other parts of the company to avoid the higher resource rent tax.

Resource projects are inherently risky. Losses are generated when exploration activity is not successful and there are often significant costs upon closing down a field. Due to the potential scope for tax losses, the appropriate allowance rate is extremely important. This issue is magnified where resource rent tax arrangements are project-specific and losses are not fully refundable as under the Petroleum Resource Rent Tax. Under such an arrangement, losses incurred may not be utilised and as such a rent tax arrangement may distort investment decisions. As discussed in the previous section, to achieve full neutrality under the ACE, the imputed rate of return must be equal to the rate at which shareholders discount the savings from the project's future ACE allowances. To the extent the ability to utilise losses is lower for the mining sector and would be lower for specific projects, an imputed return based on corporate bonds may not be appropriate for resource taxation. This might suggest the imputed return for the resource rent tax should be higher, particularly if the tax is project-specific. However, we prefer an alternative approach

that would try to ensure as much as possible that losses can be utilised by companies. To facilitate this, companies could be allowed to deduct losses from one field against profits from other, and an entity leaving the sector could be allowed to sell any unutilised losses to other resource companies within the sector. With such improved opportunities for utilising losses we see no need to set the allowance rate for resource taxation any higher than the risk-free rate, for which the government bond rate is a proxy.

In order to maximise the return to the community from the exploitation of its natural resources we propose that the resource rent tax be structured so that the tax rate varies with the rate of return. This can be achieved as follows: first, resource rents could be calculated based at the allowance rate r . All such rents would be taxed at the rate τ_R . The ACE calculation would then be repeated for higher rents above the imputed return $r + \alpha$. Any additional rents above the value $r + \alpha$ would then be taxed at an additional rate, say τ_{RA} . This process could continue for higher threshold levels of rent.

The advantage of the proposed approach is that marginal projects, and those projects that generate little economic rent, would pay little to no tax, whereas those projects that are highly profitable would face higher AETRs. If future pressures lead to a continued lowering of the corporate tax rate, given the principle of taxing location-specific rents more, any reduction in company tax rates should be offset by a corresponding increase in resource rent tax rate(s).

While the proposed approach would ideally apply to new and existing projects, applying it to existing projects may create concerns over sovereign risk. The issue of sovereign risk in this regard is difficult to assess as one would expect that a uniform, neutral resource rent tax arrangement may in fact reduce the chance of future ad hoc adjustments therefore reducing sovereign risk. However, if concerns over sovereign risk remain, consideration could be given to phasing in the new regime while the current arrangements are being phased out.

9.9 Conclusion

In this chapter we have examined capital income tax policy in Australia with a particular focus on the implications of international capital mobility and international tax competition.

We started by examining key features of the Australian economy that may be important when considering any reform to the Australian capital income tax system. A number of features were identified including the relative importance of natural resources, the level of foreign ownership in the resource sector, the strong growth in inbound portfolio investment over recent decades and the growing importance of financial and business services sectors. We also highlighted the fact that the Australian tax system is relatively more reliant on revenue from capital income than other OECD countries.

⁵⁰ The Danish Hydrocarbon Tax Committee (2001) recommended an ACE for taxing rents from petroleum, while a commission appointed to examine Norway's petroleum taxation arrangements recommended an ACC (see Lund 2002 for an outline of the main features of these proposals).

Against this we examined the theoretical and empirical implications of a conventional source-based corporate income tax which may be seen as a tax on domestic equity-financed investment. A conventional corporate income tax was shown to cause distortions in many dimensions of decision-making. In particular, a source-based tax on the normal return to capital is likely to be highly distortionary and will be shifted, to a very large degree, on to less mobile factors such as domestic workers and landowners. A source-based tax on mobile rents will also tend to distort the international location of investment, and a high statutory corporate tax rate provides an incentive to shift taxable profits out of the domestic jurisdiction through transfer-pricing and thin capitalisation. Differences in the tax treatment of income from incorporated and unincorporated firms may distort the choice of organisational form. The asymmetric tax treatment of debt and equity—whereby interest on debt is deductible from the corporate tax base whereas the cost of equity finance is not—tends to distort corporate financial policies, which may also be distorted by differences in the tax treatment of dividends and capital gains on shares. Finally, where the tax valuation of business assets and liabilities deviates from the true economic values (e.g. because of accelerated depreciation and lack of inflation adjustment), the tax system will distort the level and pattern of investment.

The taxation of saving under a residence-based personal capital income tax was shown to distort the choice between present and future consumption. A positive savings tax is likely to be part of a second-best optimal tax system, given that the alternative to a savings tax would be higher distortionary taxes on labour income. Moreover, we examined how an imputation system, designed to alleviate the double taxation of dividends at the resident shareholder level, will not stimulate domestic saving nor reduce the cost of capital for companies with access to the international stockmarket, whereas it will tend to reduce the cost of equity finance for smaller companies without such access.

Against this background we evaluated and quantified some of the distortions caused by the current Australian capital income tax system. Estimates of effective tax rates for a range of investments and savings vehicles were presented. A number of distortions were highlighted, with the conclusion from the analysis being that the current system is ripe for reform.

Before considering possible reform options, we outlined a number of guiding principles for capital income tax reform for a small open economy such as Australia. In relation to company tax, these principles are: minimising or eliminating source taxation of the normal return, minimising the taxation of mobile rents, taxing immobile rents more and reducing distortions to investment and financing decisions. In relation to personal capital income tax, the principles are: to apply a relatively low tax rate (well below the top personal rate on labour income), reduce distortions to savings vehicles, provide double taxation relief at the corporate level and to limit incentives for tax avoidance through capital flight. The final unifying principle is to minimise tax system complexity and operating costs.

While all these principles are worthy goals, tax design will involve many difficult tradeoffs. Furthermore, though none of the principles explicitly refer to notions of equity and fairness among taxpayers, these are also recognised as important and legitimate constraints on tax policy design.

Taking into account these principles we examined a number of possible reform options. These included: taxing rents through a source-based cash flow tax, taxing rents through a destination-based cash flow tax, taxing rents through a capital cost allowance (such as an ACE or ACC), taxing the full return to capital through a Comprehensive Business Income Tax (CBIT), and taxing the full return to capital through a Dual Income Tax. We found that the various cash flow taxes had several attractive neutrality properties. This was particularly so for the destination-based cash flow tax which is neutral towards all financing and investment decisions and does not give rise to transfer-pricing problems. However, this variant of a cash flow tax is particularly vulnerable to anticipation effects, since expectations of future tax rate changes not only distort real investment decisions but also trigger speculative capital flows in anticipation of exchange rate changes. Further, the destination-based cash flow tax does not tax rents accruing to foreign capital owners (including resource rents) and leaves the financial sector out of the tax net. Finally, to ensure full neutrality the destination-based cash flow tax would require large permanent tax refunds to many exporting firms.

While the Comprehensive Business Income Tax (CBIT) would involve a less radical departure from current tax practices and provide an opportunity to lower the statutory tax rate, the abolition of the deductibility of interest would raise significant transitional problems and create a permanent risk of capital flight.

In this light, the ACE, ACC and DIT were identified as the more realistic options for reform. While the ACC and the ACE have the same neutrality properties as a source-based cash flow tax, a system with a capital cost allowance (ACC or ACE) is closer in form to the current corporation tax and involves smaller transition problems than a switch to a cash flow tax. Further, because it avoids full and immediate expensing, a system with a capital cost allowance is much less vulnerable to the strong non-neutralities that could arise under a cash flow tax with a time-varying tax rate. When choosing between the ACE and the ACC, we favoured the ACE. This is because the ACC more or less exempts financial services (or requires accepting some distortions to real investment decisions) and raises transitional issues for heavily indebted firms. In principle, the ACE would require a higher statutory tax rate to generate the same revenue as a conventional corporation tax on the full return to equity. However, even if the statutory tax rate is not raised, there are ways of limiting the revenue loss from an ACE, in part because such a system makes double tax relief at the shareholder level redundant. Moreover, by combining an ACE with a broadly based Dual Income Tax, it would be possible to design a revenue-neutral capital income tax reform that significantly reduces the distortions caused by the current tax system.

Extending our preferred approach we made a detailed proposal for a capital income tax reform for Australia combining an ACE-type corporation tax with a personal capital income tax based on the principles of the Dual Income Tax. The proposed approach is designed to shift taxation of the normal return to capital from a source to a residence basis and to avoid double taxation of the normal return. The proposal is intended to reduce tax distortions to investment and savings decisions, including financing and portfolio choices.

Effective tax rates presented for our proposed capital income tax reform highlight the many efficiency gains. The package is shown to reduce tax distortions to inbound investment and improve tax neutrality between asset types—particularly tangibles and intangibles, debt and equity, distributed and retained earnings, proprietors and owners of closely held businesses, and across financial assets and real property.

We concluded by discussing how the proposed ACE system could be used as a way of improving the taxation of resource rents.

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