

# Trends in aggregate measures of Australia's corporate tax level

John Clark, Brant Pridmore and Nicholas Stoney<sup>1,2</sup>

Recent public debate about Australia's company tax arrangements has drawn upon two observations. The first is that, since the 1980s, company tax collections have run ahead of gross operating surplus. The second is that company tax collections as a percentage of gross domestic product are high by international standards. These observations provide a misleading impression of developments in the corporate tax level. Research presented here shows that corporate profits have grown more quickly than corporate gross operating surplus over this period. The ratio of company tax to corporate profits — the 'effective company tax rate' — has fallen over the past 25 years. An analysis of policy decisions since the 1980s suggests this partly reflects the impact of policy changes which, in aggregate, have reduced the effective tax rate. This is mainly due to the reductions in the company tax rate, with base-broadening measures not fully compensating for these reductions. Differences in institutional arrangements mean that international comparisons of tax-to-GDP ratios provide a poor basis for comparing the corporate tax level across countries.

---

1 The authors are from Tax Analysis Division and Industry, Environment & Defence Division, the Australian Treasury. This article has benefited from comments and suggestions provided by Thomas Abhayaratna, Mike Callaghan, Paul Flanagan, Shane Johnson, Adam McKissack, Carl Obst and Nigel Ray. The views expressed in this article are those of the authors and not necessarily those of the Australian Treasury.

2 The authors would also like to thank Henry Fiora, Tony Johnson and Jeff Tyndall of the Australian Bureau of Statistics for their assistance in data construction, and Tangamani Kusa, Sidesh Naikar and Allan Partington of the Australian Taxation Office for their assistance in estimating the impact of business tax reforms on the effective corporate tax rate. Responsibility for errors remains the authors'.

## Introduction

Two aggregate measures of corporate tax levels have figured prominently in recent public debate about Australia's company tax arrangements. These measures are the ratio of corporate tax receipts to nominal gross domestic product (GDP) and the ratio of corporate tax receipts to gross operating surplus (GOS) from the *Australian System of National Accounts* (ASNA).

These measures of the company tax rate have a number of limitations. They are backward-looking in the sense that they reflect the impact of company tax arrangements on the existing capital stock, much of which is the outcome of historical investment decisions. Moreover, they are based upon cash collections of company tax and hence they may not reflect real changes in economic burdens over time, especially from changes in tax policy that affect the timing of tax payments or the timing of the recognition of income or expenses. As a consequence, these measures are not well suited for assessing the impact of company tax arrangements on current and future business decision making or international competitiveness.

Forward-looking measures – effective marginal tax rates and effective average tax rates – are available that are better suited to these tasks. The *International Comparison of Australia's Taxes* (Commonwealth of Australia 2006) found on the basis of these measures that the impact of Australia's company tax arrangements on incentives to invest is in the middle of the range internationally. Since then, changes to depreciation arrangements in the 2006-07 Budget have brought these measures of Australia's corporate tax rate closer to comparable OECD countries.

The finding that forward-looking measures of Australia's effective tax rate are in the middle of the range internationally appears inconsistent with developments in the aggregate measures of corporate tax rates, in particular, that:

- the ratio of corporate tax to GDP is high by international standards; and
- corporate tax collections have grown as a proportion of GDP and a proportion of GOS over the last 25 years.

This article explores some further limitations of these aggregate measures of the corporate tax rate and finds that developments in these measures can provide a misleading impression of Australia's corporate tax burden. In particular, it:

- discusses a range of differences in institutional arrangements that mean that international comparisons of tax-to-GDP ratios provide a poor basis for comparing the corporate tax level across countries; and

## Trends in aggregate measures of Australia's corporate tax level

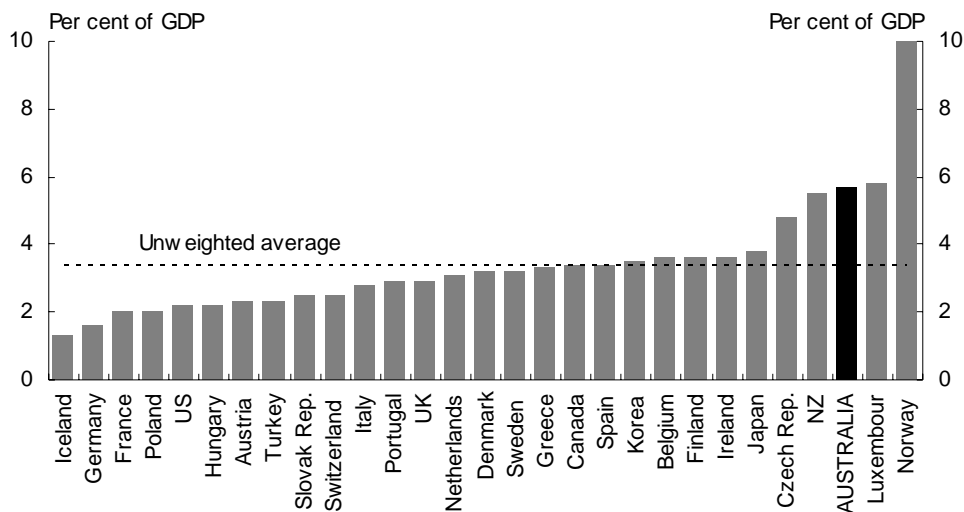
- presents analysis that shows that the increases in these aggregate ratios can be fully explained by increases in company profitability and underlying changes in economic structures.

This article also presents an alternative aggregate measure of the corporate tax burden based upon corporate profits, which provides a better conceptual measure of the economic income of the corporate sector than GOS. Lastly, it considers the net impact of business tax reforms on the effective corporate tax rate between 1980-81 and 2004-05, providing another assessment of the major driver of the corporate tax burden over time.

## Corporate tax as a percentage of GDP

The ratio of corporate tax to GDP raises a number of measurement issues, particularly when international comparisons are involved.

**Chart 1: Taxes on corporate income in the OECD as a percentage of GDP, 2004**



Note: The OECD also cautions that, for the purpose of international comparison, there are significant risks in disaggregating income taxation revenue, as here.  
Source: *OECD Revenue Statistics* (2005).

Australia's ratio of corporate tax to GDP is relatively high by comparison with other OECD countries (Chart 1), but it is important to remember the institutional factors that influence these ratios. As the *International Comparison of Australia's Taxes* notes, 'There are many classification-related reasons why a simple comparison of Australia's corporate income taxation with that of other countries is misleading'.

## Trends in aggregate measures of Australia's corporate tax level

First, the way in which the personal and company tax systems are integrated may affect the recorded level of company tax collections. Since a 'classical' system of dividend taxation fully taxes dividends twice, once as profits in the hands of the company and once as income in the hands of the shareholder, it can raise as much revenue as an integrated system with lower company tax collections. Australia's system of dividend imputation means that when resident shareholders receive dividends they effectively obtain a refund of the tax that has been paid at the corporate level.

Second, Australia's company tax revenue – unlike that of most OECD countries – includes taxes on contributions to, and the earnings of, superannuation funds. While the legal incidence of these taxes rests with incorporated superannuation funds and life assurance offices, the economic incidence – at least in relation to account-based products – rests with the individual.

Third, a tax on resource rents may be structured as a tax on the income of companies engaged in exploiting the target resource, in which case the tax collected will form part of company tax collections, or as an excise on the commodity produced, in which case it will be recorded as an indirect tax. Australia's petroleum resource rent tax is structured as a tax on corporate income.

Fourth, levels of incorporation – including the level of corporatisation and privatisation of government-owned enterprises – differ between countries. A country with a low level of incorporation will, other things being equal, record a lower level of company tax collections than a country with a high level of incorporation. For example, Germany has a relatively small proportion of businesses structured as companies and a higher proportion structured as partnerships that do not contribute to the corporate tax figures. As another example, the US has large numbers of 'S corporations' which are not included in corporate tax figures.

Fifth, the amount of income tax that cannot be attributed to either individuals or companies – mostly tax on the income of sole traders or small family businesses – differs from country to country. For example, New Zealand, Denmark and Iceland all have income tax revenues amounting to around 1.5 per cent of GDP that cannot be allocated between companies and individuals. Australia has no such revenues.

In addition to these classification issues, developments over time in the company tax-to-GDP ratio may not give an accurate picture of changes in the corporate tax burden. Movements in the tax-to-GDP ratio can reflect trends in the factor share of the corporate sector (the ratio of GOS to GDP) rather than in the corporate tax level. This is certainly true in Australia. The factor share of the corporate sector is currently at its highest level since at least 1959-60 and has increased from 16.6 per cent in 1980-81 to 23.9 per cent in 2005-06 (Chart 6).

## The effective corporate tax rate based upon GOS

The ratio of corporate tax to corporate income (the 'effective tax rate') is a better aggregate measure of the corporate tax burden than the corporate tax-to-GDP ratio because it takes into account variation in the factor share (wages plus profits) of the corporate sector. It can provide insight into changes in the corporate tax burden within a country through time *provided* the measure of corporate income is conceptually consistent with the measure of corporate tax. However, the variation in the structure and definition of measures of corporate income across countries makes international comparisons more problematic than the ratio of corporate tax to GDP.

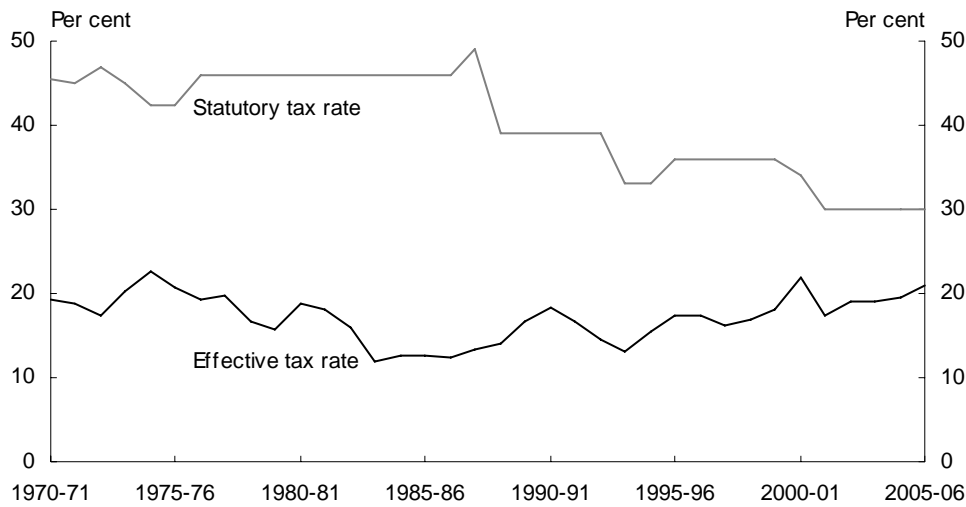
The effective corporate tax rate can differ from the statutory corporate tax rate because taxable income can vary from economic income due to features of the tax system, such as accelerated depreciation, industry-specific concessions or non-compliance. Comparing the statutory rate with an effective tax rate measure provides an indication of how closely the definition of income for tax purposes matches with economic income.

Data are readily available on the amount of corporate income tax paid, although some thought needs to be given as to whether company tax is measured on receipt (in 'cash' terms) or when the relevant economic activity occurred (in 'income year' terms) (see Box 1, below). However, there is no readily available measure of the economic income of the corporate sector that is conceptually consistent with company income tax collections.

It is common practice to estimate the effective corporate tax rate by expressing company tax collections as a percentage of GOS, in large part because GOS is readily and publicly available. This measure of the effective tax rate fell in the 1970s and early 1980s, but since the trough in the effective tax rate in 1983-84, company tax collections have run ahead of GOS, with company tax collections growing on average by 11.6 per cent per annum and GOS growing on average by 8.4 per cent per annum. In turn, the effective corporate tax rate, using GOS as the measure of corporate income, has risen from 11.8 per cent in 1983-84 to 21.6 per cent in 2005-06 (Chart 2).

Trends in aggregate measures of Australia's corporate tax level

**Chart 2: Statutory and effective corporate tax rates**



Source: Australian Treasury.

Presenting the trend rise in the data since the trough in 1983-84 is potentially misleading, since it chooses as its starting point the lowest point in the history of the series, which in part reflects the impact of the deep recession in 1982-83. The losses incurred during the recession were carried forward and utilised against income generated as the economy recovered, reducing the effective company tax rate in these years. Nevertheless, the trend rise in the effective tax rate remains, albeit at a slower rate of increase, even if the starting point is adjusted for the impact of recession.

The rise in this measure of the effective tax rate over the past 20 years appears surprising against the backdrop of the significant falls in the statutory company tax rate from 46 per cent to 30 per cent over this period, even though the reductions in rates have often been associated with some broadening of the corporate income tax base (Chart 2).

Implicit in the discussion of this measure of the effective tax rate is the assumption that GOS can be used to estimate the economic income of the corporate sector. The next section will show that this is a poor assumption for the purposes of measuring the corporate tax burden because GOS differs from the economic income of the corporate sector: for example, it is measured before depreciation and interest expenses. These differences render effective corporate tax rates based upon GOS of 'questionable relevance' (OECD 2000, page 10). And, as argued above, it can mean that trends in the effective tax rate based upon GOS are misleading.

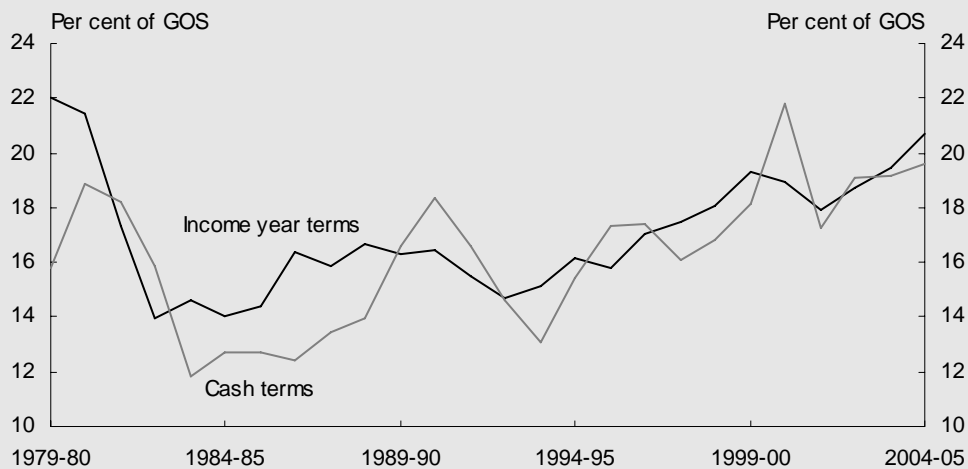
**Box 1: The impact of payment arrangements on the effective tax rate**

Until the late 1980s, a company's taxation liability was due for payment entirely in the year following the year of income, providing companies with a taxation deferral advantage relative to other taxpayers. Consequently, in an environment of profit growth, the effective tax rate measured one year's tax liability over the next year's higher income, lowering its measured level.

Major reforms of payment arrangements have brought forward the timing of the payment of company tax in 1989-90, 1994-95 and 2000-01, leaving them now, broadly speaking, contemporaneous with the year of income.

The effect of payment arrangements on the effective tax rate can be observed by expressing the effective tax rate based upon GOS in income year terms, in other words, by comparing the tax payable with income from the same income year (Chart 3). The rise in the effective tax rate in income year terms since the early 1980s is less pronounced because it abstracts from the bring-forward of company tax payment arrangements over time.

**Chart 3: The effective company tax rate**  
Cash terms and income year terms



Source: Treasury estimates using ATO *Taxation Statistics* and ABS cat. no. 5206.

The volatility in the effective tax rate in income year terms is also less pronounced. The sharp spikes in the headline effective tax rate in 1994-95 and 2000-01 partly reflect the transitional impact of the bring-forward of company tax payment arrangements in those years. Moreover, payment arrangements that maintain a significant lag in the timing of company income tax payments will introduce a counter-cyclical element into the effective corporate tax rate, which substantially adds to its volatility (Devereux and Klemm 2002). For example, income falls in a recession, but collections respond only with a lag, since they largely reflect the income from the previous year. The opposite occurs in the upswing of a cycle.

## Constructing a better measure of the economic income of the corporate sector

Corporate profit is the relevant economic income base for measuring the effective corporate tax rate because it is the conceptual base upon which income tax is levied.<sup>3</sup> Corporate GOS is commonly understood to be a measure of the profit of the corporate sector, however, the two measures of economic income are conceptually different. There are also issues around the scope and the measurement of these two series.

GOS is a measure of the surplus from the production of goods and services available for distribution to those who hold a claim on corporations. GOS excludes income unrelated to production such as property income, for example, net land and natural resource rents or net interest receipts, and capital gains or losses in the corporate sector's assets or liabilities. GOS is calculated before an allowance is made for distributions to the owners of corporations. It is also calculated before depreciation charges. GOS is the appropriate measure of the contribution of the corporate sector to economic production for the calculation of a nation's nominal GDP.

In contrast, corporate profit includes all the income and expenses relevant to the operation of the corporation. In addition to GOS, the profit of the corporate sector includes net property income and an allowance for depreciation charges, but similarly it is measured before distributions to the owners of corporations. It is the relevant measure of the overall financial performance of a corporation and is the basis upon which companies report their financial position. Corporate profit is also the relevant economic income base for measuring the corporate tax burden because it is the conceptual base upon which income tax is levied.

In addition to these conceptual differences, there are also issues of scope and measurement. GOS has a broader scope than corporate profits upon which income tax is levied as it includes the income of Australian Government and state and local business enterprises. Many of these businesses have only become liable for income tax over the last two decades, as a result of either corporatisation or privatisation. This is a significant issue as until the late 1980s around 20 per cent of corporate GOS was estimated to be exempt from Commonwealth income tax because it accrued to the public sector. This figure fell to around 5 per cent by the end of 2005-06, largely as a result of the corporatisation and privatisation of public sector business enterprises. The Appendix provides some more detail on this issue.

---

3 OECD (2000) discusses the issues surrounding the construction of an appropriate measure of the economic income of the corporate sector.



## Trends in aggregate measures of Australia's corporate tax level

A further difference relates to the measurement of the income of the financial sector, in particular, the income of banks and other lending institutions. In order to measure the income from financial intermediation, the ASNA decomposes interest payments and receipts into the payment of a pure interest flow and the payment of an imputed service charge. The imputed service charge is included in the calculation of GOS, along with any explicit charges imposed by lending institutions. In contrast, the full amounts of the net interest payments are generally treated as income according to accounting principles and taxation law. The Appendix provides some more detail on this issue.

The main differences between corporate GOS and corporate profit are that GOS:

- is measured before deducting depreciation charges;
- excludes the net property income of the corporate sector, in particular, debt-servicing interest expenses, but also interest receipts and net land and natural resource rents;
- excludes holding gains or losses in trading stock and realised capital gains or losses in the assets and liabilities of the corporate sector;
- includes income not subject to Commonwealth income tax, such as some income of public business enterprises; and
- considers only part of the income from financial intermediation to be income from production.

As a consequence of these differences, it is misleading to compare trends in company tax collections to trends in GOS, unless corporate profit holds constant as a proportion of GOS. It will be shown below that this is not a good description of the data because of structural change in the factors listed above.

A true economic measure of corporate income would also adjust corporate profit for the effects of inflation. Inflation distorts the measurement of economic income in three major ways: it reduces the real value of depreciation allowances based upon historical cost accounting, creates artificial holding gains in trading stock and other assets, and causes the overstatement of the cost of debt financing under a nominal-interest accounting system. The first two of these effects tend to overstate economic income, while the third works in the opposite direction.

The most significant distortionary effect of inflation is on the real value of depreciation allowances under historical cost accounting. The tax systems of most countries allow companies to deduct a percentage of the original purchase price of an asset each year to shelter the return of the initial investment from taxation. In a period of rising prices,

the replacement cost of the asset will increase, but as the depreciation charges are a function of the historical cost of the asset, their real value will decline over time. As a consequence, corporate profits will be overstated and the corporate tax burden will rise.<sup>4</sup>

A comprehensive and relevant measure of the economic profit of the corporate sector would take into account the conceptual, scope and measurement differences between corporate GOS and corporate profit and also adjust for the effects of inflation. In the following section we present estimates of the effective tax rate based upon measures of corporate profit.

## The effective corporate tax rate based upon corporate profit

An estimate of nominal corporate profit has been constructed by adjusting GOS for its major conceptual, scope and measurement differences from corporate profit, which were outlined above. An estimate of inflation-adjusted corporate profit has also been constructed by removing the net income from the nominal series that reflects the interaction of inflation and the nominal treatment of depreciation, net interest payments and holding gains in trading stock.<sup>5</sup> The construction of these estimates is described in more detail in the Appendix.

Measures of the effective corporate tax rate based upon these estimates of corporate profits are presented first on an income year basis, in order to abstract from the effects of payment arrangements, which introduce significant volatility into the cash-based estimates (see Box 1). Both the measures based upon corporate profit have fallen since 1980-81, in contrast to the simple measure based upon GOS (Chart 4).<sup>6</sup> On an income year basis, the measure based upon inflation-adjusted corporate profit has fallen by around 40 per cent since 1980-81 and the measure using nominal corporate profit has fallen by around 25 per cent. Estimates of the impact of the bring-forward of payment arrangements on the effective tax rate in cash terms, presented below, suggest they account for around 10 percentage points of the fall.

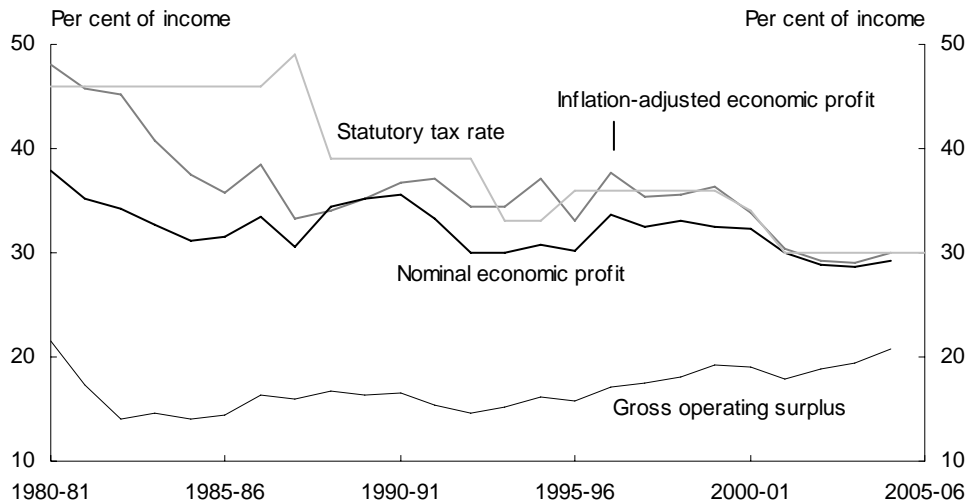
---

4 This article is not drawing conclusions about the appropriateness of the existing corporate income tax base as against alternative bases.

5 Previous studies of the impact on inflation on corporate tax levels in Australia include Pagan and Trivedi (1982), the Treasury (1987) and Willmann (1990). Auerbach (2006) constructs an inflation-adjusted measure of corporate profits for the United States and Devereux, Griffith and Klemm (2004) for the United Kingdom that are similar to the measure presented in this paper.

6 The choice of 1980-81 as a starting point allows the comparison of mature stages in the business cycle, although any choice contains an element of arbitrariness.

**Chart 4: Measures of the effective corporate tax rate**  
(Income year terms)



Note: Data to construct some series in 2005-06 is not yet available.  
Source: Treasury estimates.

The main drivers of the fall in the inflation-adjusted measure of the effective corporate tax rate are the resumption of low inflation in the 1990s and the cumulative impact of tax policy reforms.

- The difference between the inflation-adjusted and nominal measures of the effective tax rate provides an indication of the distortionary impact on taxable income from maintaining a nominal tax system, with historical cost depreciation, in the face of inflation. The resumption of low inflation in the 1990s lowered the effective corporate tax rate by reducing the net income subject to income tax arising out of the interaction of inflation and a nominal tax system.
- The estimate of nominal corporate profit is conceptually consistent with Australia's nominal tax system, with historical cost depreciation. Hence, the measure of the effective corporate tax rate based upon nominal corporate profit provides an indication of the stance of corporate tax policy over time against this measure of economic income. It suggests that the net impact of tax policy reforms since 1980-81 has been to reduce the corporate tax burden by around 15 per cent (net of the impact of payment arrangements).
- Analysis of the impact of the major business tax reforms on the effective corporate tax rate, covered below, supports this conclusion, and the broad order of magnitude.

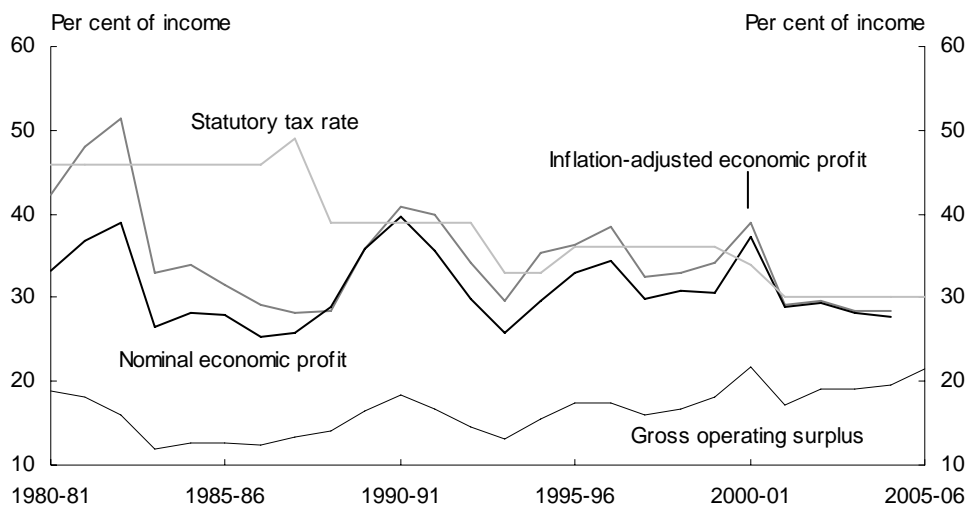
## Trends in aggregate measures of Australia's corporate tax level

The asymmetrical treatment of losses in the tax system introduces a counter-cyclical element into the effective tax rate. In particular, the effective corporate tax rate rises during recessions, as losses are set to zero in taxable income, and falls in the immediate aftermath of recessions, as these losses are recouped. The effect of these cycles can be observed in Chart 4. For this (and other) reasons, the OECD advises that the effective corporate tax rate should be analysed over a multi-year period to smooth out business cycle effects (OECD 2000).

One caveat on this analysis is that the measures of corporate profit do not include realised capital gains, although these gains have been taxed since the introduction of a broad-based capital gains tax in 1985. Realised capital gains are omitted due to the lack of suitable data over the entire period of analysis. Their inclusion would lower the average level of the effective tax rate, given capital gains tax is already included in the numerator, but it is unclear whether it would have an impact on the rate of decline in the effective corporate tax rate over the entire period of analysis.<sup>7</sup>

For completeness' sake, the more volatile measures of the effective tax rate based on cash collections of company tax are also presented (Chart 5). Over the entire period of analysis the declines in the cash and income year measures are broadly consistent, once an allowance is made for the impact of changes in payment arrangements.

**Chart 5: Measures of the effective corporate tax rate  
(Cash terms)**

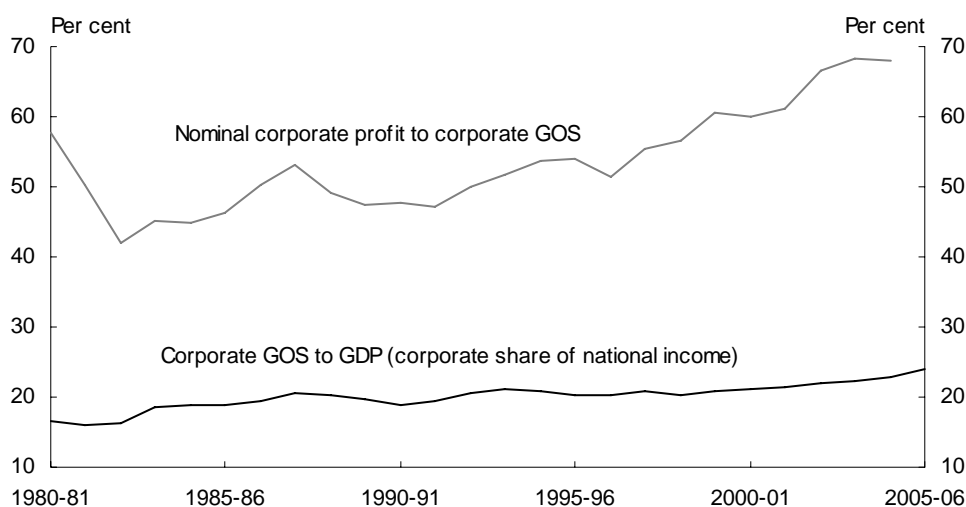


Note: Data to construct some series in 2005-06 is not yet available.  
Source: Treasury estimates.

<sup>7</sup> A similar caveat applies to foreign source income, which is not included in our measure of corporate profit, although tax collected on this income is included in the numerator. That said, the amount of tax collected on foreign source income is of a lower order of magnitude.

As noted above, measures of the effective corporate tax rate based upon corporate profits have fallen since 1980-81, while the simple measure based upon GOS has risen over the same period. This is because a range of structural changes in the Australian economy have seen nominal corporate profits grow more quickly than GOS (Chart 6). As a consequence, the measure of the effective corporate tax rate based upon GOS provides a misleading impression of developments in the corporate tax burden. The corporate sector's share of national income has also risen over time and hence company tax collections have grown more quickly than nominal GDP (Chart 6).<sup>8</sup>

**Chart 6: Relationships between aggregate measures of income**



Note: Data to construct some series in 2005-06 is not yet available.  
Source: ABS cat. no. 5206.0 and Treasury estimates.

Table 1 provides a breakdown of the reasons why nominal corporate profits have grown more quickly than corporate GOS. More detail is provided in the Appendix. In summary, they have grown more quickly because:

- many government business enterprises have become liable for income tax over the past two decades, as a result of either their corporatisation or privatisation (raising corporate profits as a percentage of GOS by 11.9 percentage points);
- the income from financial intermediation has been growing more quickly than the rest of the corporate sector and it is only partly captured in corporate GOS (raising corporate profits as a percentage of GOS by 11.0 percentage points); and

---

<sup>8</sup> Indeed, company tax collections would have risen even more quickly than nominal GDP if the effective corporate tax rate on corporate profits had not been falling.

Trends in aggregate measures of Australia's corporate tax level

- working against these factors, depreciation has become a more significant expense over the last 25 years (lowering corporate profits as a percentage of GOS by 9.1 percentage points).

**Table 1: The determinants of the ratio of nominal corporate profit to GOS**

Measure of company profits	Per cent of GOS		
	1980-81	2004-05	Change
<b>Gross operating surplus</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>
<b>add</b> Adjust income from financial intermediation	4.5	15.4	11.0
Stock valuation adjustment	7.7	1.9	-5.8
<b>less</b> Public companies not subject to income tax	-18.3	-6.3	11.9
Net interest paid (non-financial sector)	-13.2	-9.5	3.7
Depreciation (historical cost)	-19.2	-28.3	-9.1
Net rents and royalties paid	-4.8	-2.0	2.8
<b>Nominal corporate profit</b>	<b>56.7</b>	<b>71.1</b>	<b>14.5</b>

## The impact of tax policy reforms on the effective corporate tax rate

Analysis presented above suggests that the corporate tax burden has fallen against an estimate of the nominal profit of the corporate sector (which is conceptually consistent with Australia's nominal tax system, with historical cost depreciation). This section will consider whether estimates of the broad impact of the major changes to company tax arrangements on the effective corporate tax rate since the early 1980s are consistent with this finding.

A significant influence on the direction of business tax reform in Australia, and indeed in many industrialised countries, has been the desire to lower the company tax rate and broaden the corporate income base to reduce tax-induced distortions in respect of the investment decisions of companies (Devereux, Griffith and Klemm 2002).

In Australia, the statutory company tax rate has been reduced from 46 per cent in the early 1980s to its current rate of 30 per cent (Chart 2). In addition, companies have also benefited over this period from:

- the introduction of a special allowance for research and development expenditure (1985-86 income year);
- access to certain company grouping provisions (1984-85) and then full consolidation (2001-02); and
- the concessional treatment of the tax arrangements of small business (2000-01).

## Trends in aggregate measures of Australia's corporate tax level

Working in the other direction, a number of base-broadening reforms have been enacted that have partly offset these changes. Some of these reforms include:

- the broadening of the corporate income base to include capital gains (1985-86), income from the life insurance industry, income from the gold mining industry (1990-91) and foreign source income;
- changes in depreciation arrangements, with accelerated depreciation replaced with a regime based upon effective life (1999-2000);
- the removal of the general investment allowance (1988-89);
- the removal of the inter-corporate dividend rebate, with the effect that companies now pay tax on the unfranked portion of dividends received from domestic companies (1999-2000); and
- payment system reforms that have brought forward the timing of company tax payments since the late 1980s so that they are now broadly contemporaneous with the year of income.

A number of integrity measures have also been enacted over this period to head off emerging risks in the company tax base. Among the most important of these was the introduction of thin capitalisation and transfer pricing rules, which were designed to prevent multinational companies from shifting domestic profits to lower taxed countries. In general, these integrity measures were not designed to raise revenue but instead can be characterised as revenue protection measures.

The impact of the Australian Taxation Office's (ATO) compliance programmes on the behaviour of taxpayers (both directly and indirectly), including its audit programmes, together with the introduction of continuous disclosure rules in the Corporations Law, would be expected to have raised the revenue yield from a given corporate income tax base, although it is difficult to quantify the impact of these programmes, even with hindsight.

An indicative costing has been prepared that estimates the impact of business tax reforms on the effective corporate tax rate between 1980-81 and 2004-05 (Table 2). Broadly, costings of major reforms since 1980-81 that introduced new features into the tax system, such as the capital gains tax, are based on their estimated impact on cash collections in 2004-05, using the latest available data. Costings of major reforms that removed features of the 1980-81 tax system, such as the investment allowance, are based upon their impact on cash collections in 1980-81, with these impacts projected forward to 2004-05 as a constant proportion of collections, or another suitable base.

## Trends in aggregate measures of Australia's corporate tax level

The indicative costing suggests that the reductions in the corporate tax rate since the early 1980s have more than offset the impact of base broadening and other measures on the cash-based measure of the effective tax rate, although no allowance has been made for the impact of the ATO's compliance programme. It finds tax policy reforms have reduced the corporate tax burden by around 10 per cent over the past 25 years (Table 2). The challenging nature of this task means that there are large error bounds around the point estimate.

**Table 2: Indicative net impact of quantifiable business tax reforms on the effective corporate tax rate between 1980-81 and 2004-05**

<b>Tax reform</b>	<b>Impact on effective corporate tax rate Per cent</b>
Reductions in the corporate income tax rate(a)	-35 ½
Tax concessions(b)	-1 ¼
Introduction of grouping measures and consolidation	- ½
Reduction in capital allowances(c)	9 ½
Bring-forward of company tax payment arrangements(d)	9 ¾
Taxation of capital gains	3 ¾
Other base-broadening measures(e)	2
Removal of inter-corporate dividend rebate	¾
Other changes to policy(f)	1
<b>Net impact</b>	<b>-10 ½</b>

- (a) This estimate captures the interactions of the reductions in the corporate tax rate with the impact of other business tax reforms.
- (b) This estimate includes the research and development allowance and the concessional treatment of the tax arrangements of small business.
- (c) This estimate includes the removal of the general investment allowance and changes to depreciation arrangements.
- (d) This estimate captures the interactions of changes to payment arrangements with the impact of other business tax reforms.
- (e) This estimate includes the changed taxation arrangements of foreign source income, the insurance industry and the gold mining industry.
- (f) This estimate was constructed by summing the estimated impacts of all other policy itemised in budget papers since 1980-81 that are assessed to have had an impact on the corporate tax base. Some recastings of these measures have been undertaken. Otherwise, the original budget estimate is used and projected forward to 2004-05 by assuming that it holds constant as a proportion of corporate tax collections over time (except where the measure is deemed to have had a transitional impact). First, the budget estimates had to be allocated between revenue heads as they present the impact of policy on aggregate tax collections.

This Government's major business tax reform, The New Business Tax System, introduced in 1999, had the aim of broadening the tax base, whilst reducing tax rates, with a revenue-neutral outcome. The revenue neutral outcome means that this reform package would not have materially affected the effective corporate tax rate. Since then, the Government has announced a further significant reform of depreciation arrangements in the 2006-07 Budget to bring tax depreciation rates more closely into line with the way assets decline in value. It is expected to cost the revenue \$3.7 billion over the four years to 2009-10 and will reduce the effective tax rate on corporate profits over this period.



A caveat on this analysis is the difficulty of incorporating into the estimate an allowance for the behavioural effects that the policy reforms were designed in part to bring about. These effects arise as the change in policy flows through to prices, wages and activity in other areas of the economy, which in turn may affect company tax revenue. With hindsight, some of these behavioural effects are captured, as the impact of policy is estimated using the base from the latest available data. Moreover, by expressing the costings as a percentage of the effective corporate tax rate, we also admit the possibility that the behavioural impact of reforms could change the size of the corporate tax base, while leaving the effective corporate tax rate unchanged.

Other policy reforms have also had an impact on the level of corporate income tax. These policies include bringing government business enterprises into the corporate income tax net (discussed in more detail above) and the superannuation reforms of the late 1980s, which saw incorporated superannuation funds and the superannuation businesses of life assurance companies remit superannuation contributions tax to the ATO. Although these policies have raised company tax collections, they have not been included in Table 2 as they do not reflect a tightening of company tax policy.<sup>9</sup>

## Conclusion

Company tax as a percentage of GDP in Australia is high by international standards, generating debate about the appropriateness of Australia's company tax arrangements. In this context, international comparisons of broad aggregate ratios, such as the ratio of company tax to GDP, can be strongly influenced by institutional arrangements that differ across countries. Several of these factors – the level of incorporation, the interaction of the company and personal tax systems, the taxation of resource rents and the treatment of retirement savings – tend to increase Australia's ratio.

Another observation that has drawn comment in the media is that company tax collections have run ahead of GOS recently, and indeed over a period extending back into the 1980s. This observation provides a misleading impression of developments in the corporate tax burden because it reflects a number of structural changes in the Australian economy that have shifted the relationship between company profits and GOS, rather than a rise in the effective corporate tax rate.

---

<sup>9</sup> As discussed above, the estimates of corporate profits in this article are adjusted for the gradual process by which many government business enterprises have been made liable for Commonwealth income tax and therefore measures of the effective tax rate based upon corporate profit are invariant to this development.

## Trends in aggregate measures of Australia's corporate tax level

Against a better conceptual measure of the economic income of the corporate sector, or corporate profit, the effective corporate tax rate has fallen over the last 25 years. This partly reflects the cumulative impact of tax policy reforms, with base-broadening reforms not fully compensating for the significant reduction in the company tax rate from 46 to 30 per cent. It also reflects the resumption of a low-inflation environment in the 1990s, which has reduced the overstatement of corporate income under tax law in the 1980s, as a result of the interaction of high rates of inflation with Australia's nominal tax system.

## APPENDIX

This Appendix analyses structural trends in the five main differences between corporate GOS and corporate profit, and their impact on the effective tax rate based upon GOS. Data sources and some technical details on data construction are included where relevant.

The factors described below feature in the calculation of corporate profit as shown in Chart 4. A summary of the construction of nominal profit is shown in Table A1. The construction of inflation-adjusted profit follows the same calculation, with inflation-adjusted data substituted for net interest and depreciation, and the stock valuation adjustment eliminated.

**Table A1: Construction of nominal corporate economic profit**

Item	Data source
Total corporations gross operating surplus(GOS)	ASNA
less GOS of enterprises not subject to income tax	Treasury
less Depreciation (historical cost)	Treasury
less Financial intermediation service charge	ABS unpublished
add Net interest received	ABS unpublished
add Net land and natural resource rents	Taxation statistics
add Stock valuation adjustment	ASNA
= nominal corporate profit	

Data sourced from *Taxation Statistics* needs to be adjusted in some years to account for the incomplete enumeration of income tax returns in *Taxation Statistics*. This includes the data in Table A1 and the tax liability used to construct the effective tax rate in income year terms. In the absence of this adjustment, a structural break could be introduced into this data in some years, reflecting the receipt of varying levels of tax returns. In recent years, some of the historical data in *Taxation Statistics* has been revised as more returns have been submitted. In general, data from the last 10 years is fully up to date. For previous years the data has been scaled to reflect the historical patterns of revisions from recent years.

Analysis of effective tax rates is made more complicated by the volatility introduced by the various systems of payment arrangements for corporate income tax that have existed since the over this period. This analysis in the appendix abstracts from this volatility by using an effective tax rate calculated on an income year basis (see Box 1).

## Corporatisation and privatisation of public business enterprises

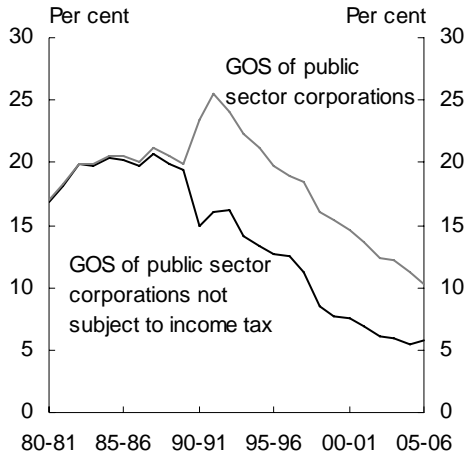
Gross operating surplus includes the income of Australian Government and state and local business enterprises. However, many of these businesses have only become liable for Commonwealth income tax over the last two decades, as a result of either corporatisation or privatisation, raising the effective company tax rate over this period.

Many Australian Government business enterprises became liable for income tax through the 1980s and early 1990s as they were corporatised. These corporatised entities remained under public ownership, but could be required to meet commercial performance benchmarks, pay tax, borrow funds without a government guarantee and operate without regulatory advantages.

Many state and local business enterprises also became liable for income tax in the 1990s as they were privatised. The most important of these privatised entities were the state banks and insurance offices and the Victorian electricity assets. While many state enterprises were corporatised in the 1990s for income tax purposes, the Australian Taxation Office returns the income tax payments of these corporations directly to the relevant State government and therefore these payments are not included in Commonwealth company tax collections.

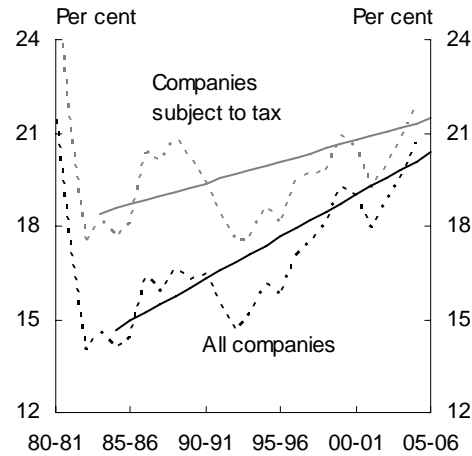
Until the late 1980s, around 20 per cent of corporate GOS was exempt from Commonwealth income tax because it accrued to the public sector (Chart A1). This figure had fallen to around 5 per cent by the end of 2005-06, largely as a result of the corporatisation and privatisation of public sector business enterprises.

**Chart A1: Public sector corporations**  
Per cent of GOS



Source: Treasury estimates.

**Chart A2: Effective corporate tax rate**  
Income year basis



Source: Treasury estimates.

The process of corporatisation of Australian Government business enterprises and privatisation of state and local business enterprises has raised the average level of the effective company tax rate and has reduced the increase in its level since 1983-84 by around 3 percentage points (Chart A2).<sup>10</sup>

## Measurement of the income of the finance sector

Gross operating surplus considers only part of the income from financial intermediation to be the surplus accruing to the financial sector from these services.

The ASNA faces a difficulty in measuring the income from financial intermediation as lending institutions, largely banks, generate a significant proportion of the charge for this service indirectly, by borrowing at a low rate of interest and lending these funds at a high rate. The difference between the two interest rates results in lending institutions receiving net interest receipts. This income reduces the fees lending institutions charge directly for the services they provide in intermediating between borrowers and lenders.

To measure the income from financial intermediation, the ASNA decomposes interest payments and receipts into the payment of a pure interest flow and the payment of an imputed service charge. The imputed service charge is included in the calculation of GOS, along with any explicit charges imposed by lending institutions. In contrast, the

---

<sup>10</sup> Note that the impacts of the five factors on the effective corporate tax rate are not additive.

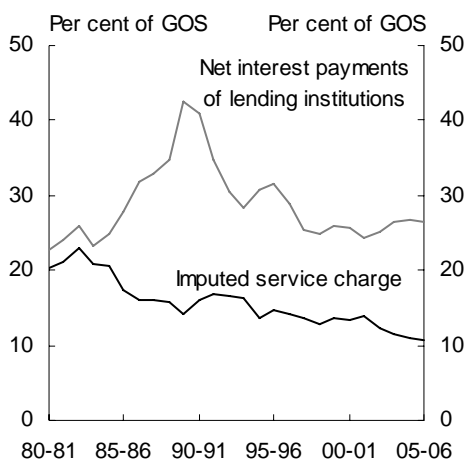
## Trends in aggregate measures of Australia's corporate tax level

full amounts of the net interest payments are generally treated as income according to accounting principles and tax law.

Similar issues arise in the measurement of the income of insurance companies and superannuation funds, although the amounts of income involved are of a lower order of magnitude.

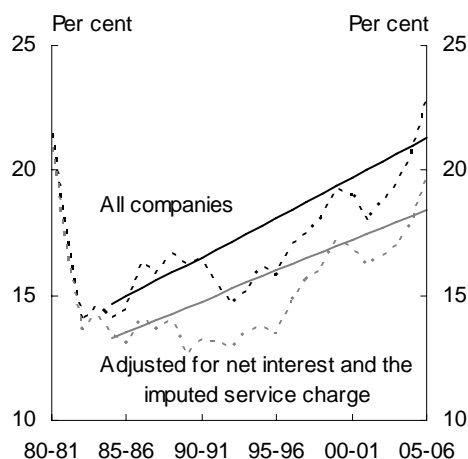
As a consequence of the different approaches to measuring the income from financial services, there is a wedge between the level of the GOS and the level of corporate profit of the financial sector and, indeed, the level of income defined under tax law (Chart A3). Interestingly, in recent years the wedge has widened, with the consequence that some of the increase in profits accruing to financial intermediaries associated with the sharp rise in household debt levels is not fully reflected in the GOS of the finance sector.

**Chart A3: Income from financial intermediation**



Source: ABS unpublished data.

**Chart A4: Effective corporate tax rate**  
Income year basis



Source: Treasury estimates.

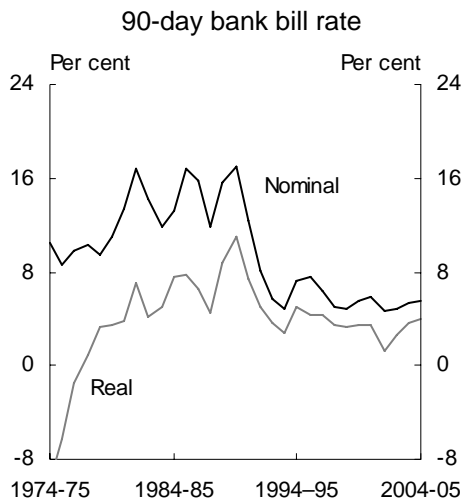
The net impact of the wedge in the income of the financial sector is to lower the average level of the effective company tax rate and to reduce the increase in its level since 1983-84 by around 1 percentage point (Chart A4).

## Corporate debt servicing ratio

Gross operating surplus is measured before transfers of property income between sectors. These net flows of income are included in corporate profits. The debt-servicing payments of corporations are the most significant of these flows and have had a significant impact on the rise in the effective company tax rate over the last 25 years.

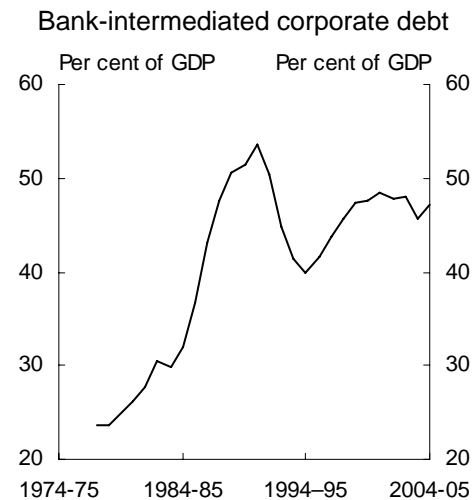
Nominal and real interest rates rose sharply in the late 1970s and remained high, by current standards, until the return to a low-inflation environment in the early 1990s (Chart A5). At the same time, corporate debt levels were also rising, with this trend accelerating sharply over the second half of the 1980s, following financial deregulation, before a period of debt reduction in the early 1990s (Chart A6). These developments saw the debt servicing ratio of corporations jump sharply in the 1980s and remain high until the early part of the 1990s (Chart A7).

**Chart A5: Nominal and real interest rates**



Source: RBA Bulletin and Treasury estimates.

**Chart A6: Corporate debt indicator**



Source: RBA Bulletin and ABS cat. no. 5206.

The high levels of the corporate debt servicing ratio in the 1980s and early 1990s had the effect of depressing the effective corporate tax rate over this period, since the interest costs of debt finance are deducted in deriving corporate profits (and, indeed, are generally deductible in calculating taxable income). As the gearing of corporations returned to more sustainable levels in the 1990s, and interest rates declined in line with the resumption of low inflation, the corporate debt servicing ratio fell, unwinding the earlier depressing effect on the effective company tax rate. In part, the reduction in corporate gearing levels in the 1990s was a response to the introduction of the imputation system (see Box 1), which removed a bias towards debt financing which existed under the previous classical system of company taxation.

The allowance for the debt servicing expense of the corporate sector has raised the average level of the effective tax rate and reduced the increase in its level since 1983-84 by around 1 percentage point (Chart A8).

Trends in aggregate measures of Australia's corporate tax level

**Chart A7: Corporate debt servicing ratio**

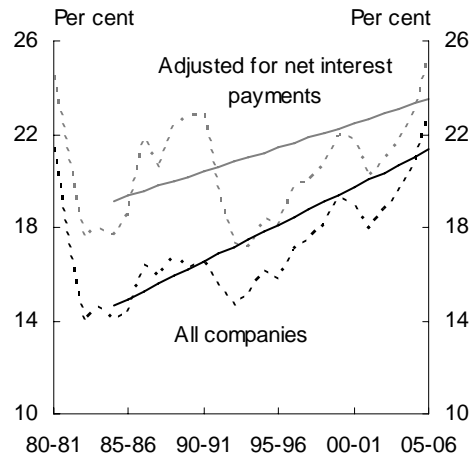
Ratio of net interest payments of non-financial corporations to GOS



Source: Treasury estimates.

**Chart A8: Effective corporate tax rate**

Income year basis



Source: Treasury estimates.

### *Adjusting net interest for inflation*

In order to remove the effects of inflation on interest payments, the amount of the interest associated with revaluing debt must be subtracted. This is calculated by applying the rate of inflation (the Gross National Expenditure implicit price deflator) to the total debt. Corporate debt levels since 1989-90 were calculated from ASNA corporate balance sheets. Prior to 1989-90, debt levels were calculated via a simple model relating debt, interest rates and interest payments.

### Depreciation

Gross operating surplus is measured gross of depreciation charges whereas corporate profits makes an allowance for these expenses.

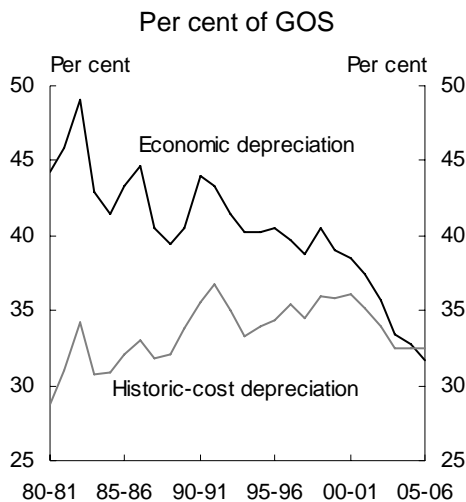
The effect of depreciation on the effective corporate tax rate varies according to the definition of depreciation. The measure used for calculating a company's taxable income is based on the purchase cost of the asset or its 'historical cost'. The flow of depreciation is a function of the asset's historical cost and the rate at which the efficiency of the asset declines. No adjustment is made for the effects of inflation. This means that in a high-inflation environment, such as during the 1980s, the real cost of depreciation is understated, as the cost of replacing the asset is increasing with inflation, but the depreciation charges are a percentage of the historical cost of the asset.



In comparison, economic depreciation is calculated by revaluing assets at the end of each year according to their replacement cost. It is the appropriate measure of depreciation for the purposes of calculating an economic measure of corporate profit.

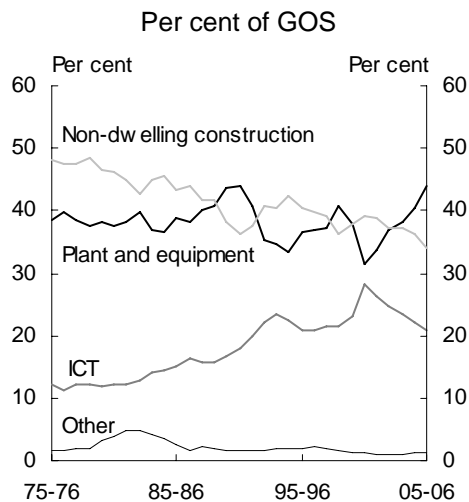
The ratio of historical cost depreciation to GOS has trended higher since the early 1980s (Chart A9). In part this reflects the shift towards assets with shorter lives such as information and communication technologies (ICT) which, by international standards, Australia has been relatively quick to adopt (OECD 2002).<sup>11</sup> ICT investment has risen from 10 to 20 per cent of business investment since the early 1980s (Chart A10). This reflects both a tendency for industries to substitute towards ICT and a rise in the share of those industries that make more intensive use of ICT, such as communication services and the finance and insurance industries.

**Chart A9: Measures of depreciation**



Source: Treasury and ABS cat. no. 5204.0.

**Chart A10: Business investment by asset**



Source: ABS cat. no. 5204.0.

However, economic depreciation has decreased as a proportion of GOS, as the high-inflation environment in the 1980s increased the real value of depreciation in that decade (Chart A9).

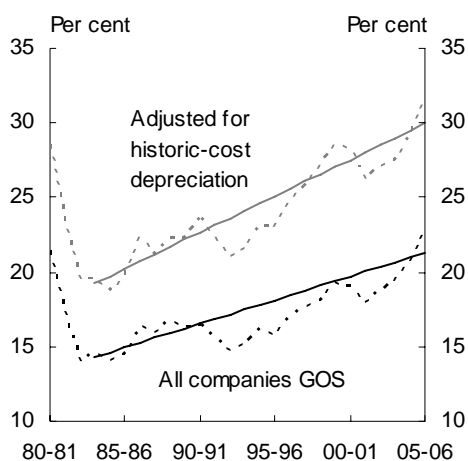
The allowance for depreciation expenses in corporate profit would increase the average level of the effective corporate tax rate, regardless of the measure of depreciation used. The allowance for historical-cost depreciation has raised the

<sup>11</sup> Computers and the means to link them in networks have been available for almost half a century. However, it was only in the 1990s that these technologies became cheap enough, and deployed widely enough in open, low-cost, Internet-based networks, to provide significant benefits to businesses and consumers (Australian Treasury 2001).

## Trends in aggregate measures of Australia's corporate tax level

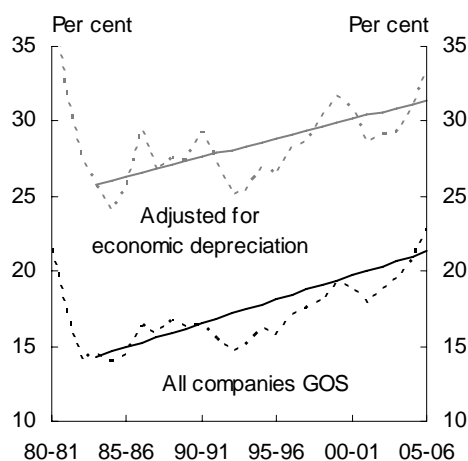
increase in the level of the effective tax rate since 1983-84 by around 5 percentage points (Chart A11), whereas the allowance for economic depreciation has left the increase in the level of the effective tax rate since 1983-84 broadly unchanged (Chart A12).

**Chart A11: Effective corporate tax rate  
historical-cost depreciation**  
Income year basis



Source: Treasury estimates.

**Chart A12: Effective corporate tax rate  
economic depreciation**  
Income year basis



Source: Treasury estimates.

### *Adjustment for inflation*

In its construction of capital stocks, the ABS follows a 'perpetual inventory model', whereby the capital stock at the end of any year is calculated by subtracting the depreciation for that year and adding new investment to the previous year's capital stock. The ABS then re-values the resultant capital stock according to inflation over the year to obtain an estimate of economic depreciation. A depreciation series on a historical cost basis has been calculated by applying the same depreciation rates to a capital stock constructed without the re-valuation step.

### **Holding gains and losses in trading stock**

Gross operating surplus excludes changes in the value of goods produced in previous years and other assets. In comparison, corporate profit includes holding gains or losses in trading stock and, broadly speaking, holding gains or losses in non-produced assets, such as land, and financial assets, upon realisation.

Holding gains or losses in trading stock have fallen sharply as a percentage of GOS in recent decades (Chart A13). In part this reflects the return to a low-inflation environment in the 1990s. It also reflects a trend decrease in the stocks-to-sales ratio as companies reduced stock levels by adopting improved inventory management systems such as 'just in time' and making more intensive use of information and

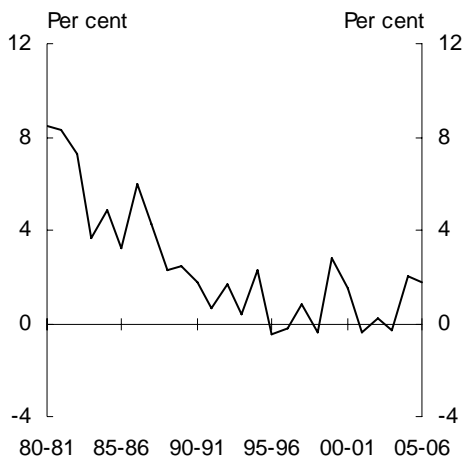
Trends in aggregate measures of Australia's corporate tax level

communication technology. It also reflects a more competitive business environment as a result of microeconomic reforms introduced in the 1980s and 1990s.

The allowance for holdings gains has lowered the average level of the effective tax rate and raised the increase in its level since 1983-84 by around 2 percentage points (Chart A14).

**Chart A13: Asset holding gains or losses**

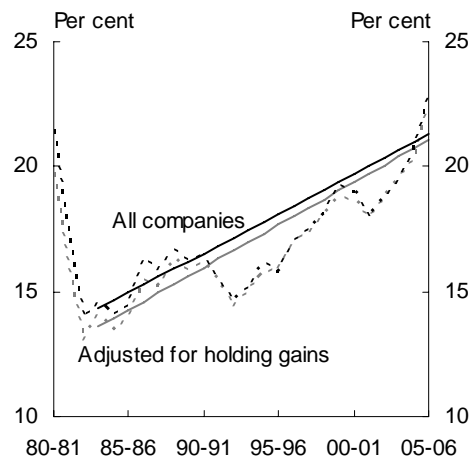
Per cent of GOS



Source: ABS cat. no. 5204.0.

**Chart A14: Effective company tax rate**

Income-year basis



Source: Treasury estimates.

The impact of realised capital gains in other assets on corporate profits, such as equities and property, has not been assessed due to the lack of suitable data.

*Adjustment for inflation*

Holding gains or losses are, by definition, the result of price changes and will therefore be eliminated on an inflation-adjusted basis.

## References

Auerbach, A J 2006, 'Why have corporate tax revenues declined? Another look', *NBER Working Paper Series*, no. 12463, August.

Commonwealth of Australia 2006, *International Comparison of Australia's Taxes*, Commonwealth of Australia, Canberra.

Devereux, M, Griffith, R and Klemm, A 2002, 'Corporate income tax reforms and international tax competition', *Economic Policy*, vol. 17, no. 35, pp 451-95.

Devereux, M and Klemm, A 2002, 'Measuring taxes from income on capital: evidence from the UK', in P B Sorensen (ed), *Measuring the Tax Burden on Capital and Labour*, Cambridge, MA: MIT Press.

Devereux, M, Griffith, R and Klemm A 2004, 'Why has the UK Corporation Tax raised so much revenue?', *Fiscal Studies*, vol. 25, no. 4, pp 367-88.

OECD 2000, 'Tax Burdens: Alternative Measures', *OECD Tax Policy Studies No. 2*, OECD, Paris.

OECD 2001, *The New Economy: Beyond the Hype*, Final report on the OECD Growth Project.

Pagan, A R and Trivedi, P K, eds 1982, *The Effects of Inflation: Theoretical Issues and Australian Evidence*, Australian National University.

The Treasury 1987, *The Corporate Income Tax Base – Trends Since the Late 1960s*, AGPS, Canberra.

Willmann, H 1990, 'Some Calculations on inflation and corporate taxation in Australia', Reserve Bank of Australia Research Discussion Paper 9012, December.