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Trends in aggregate measures of Australia's corporate tax level

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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.

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

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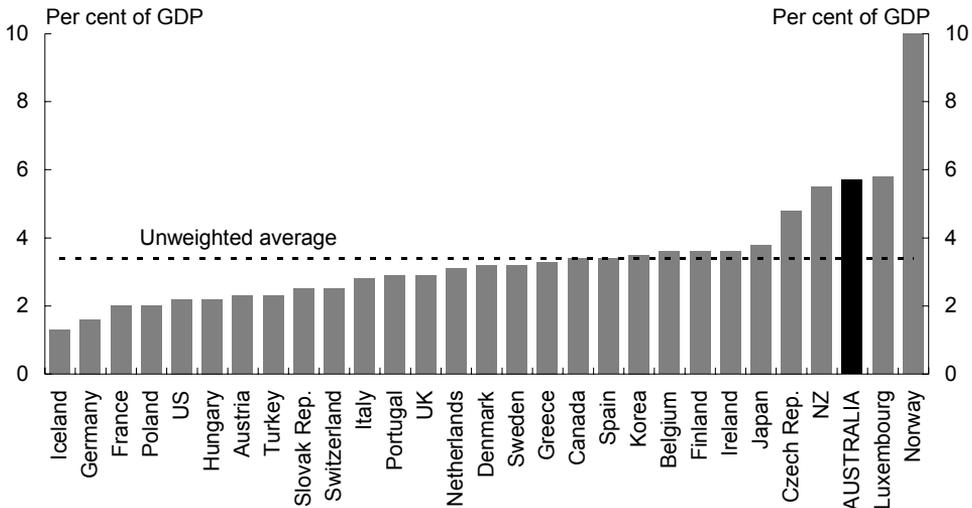
Note: The OECD also cautions that, for the purpose of international comparison, there are significant risks in disaggregating income taxation revenue, as here.
Source: *OECD Revenue Statistics* (2005).

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'.

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).

Chart 2: Statutory and effective corporate tax rates
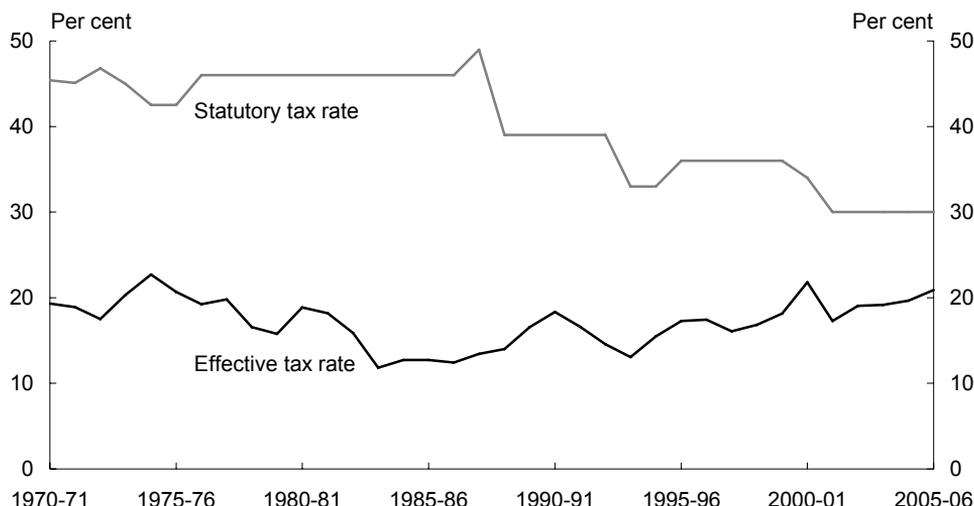
Source: Australian Treasury.

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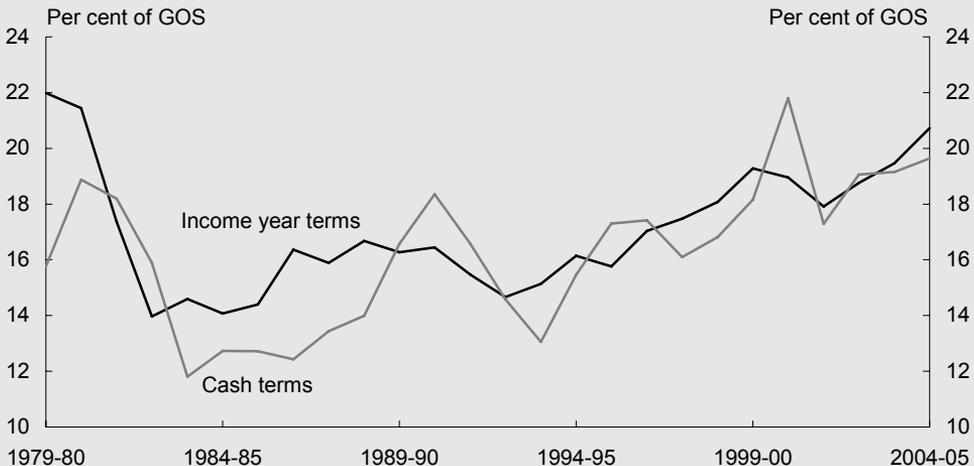
Source: Treasury estimates using ATO *Taxation Statistics* and ABS cat. no. 5206.

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.[3] 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.

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

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.[4]

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.[5] 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).[6] 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.

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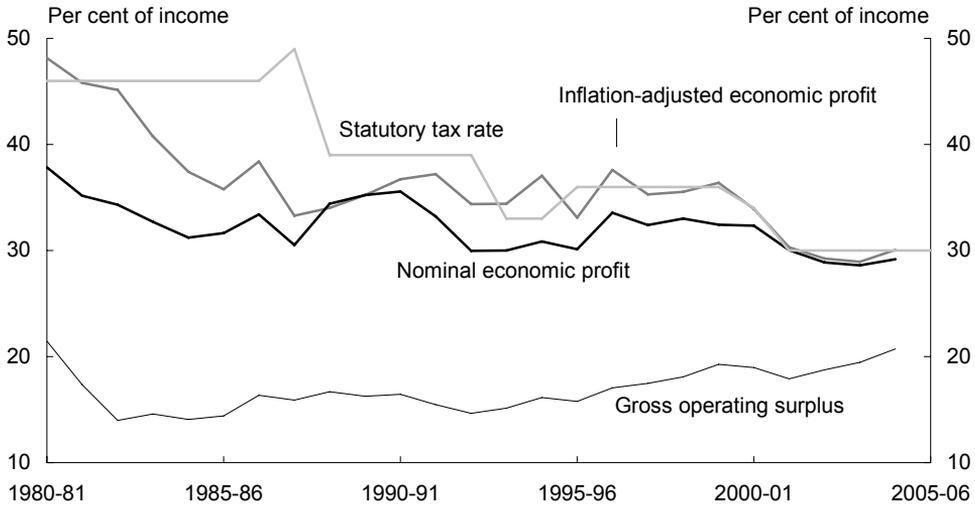
Note: Data to construct some series in 2005-06 is not yet available.
Source: Treasury estimates.

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.

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.[7]

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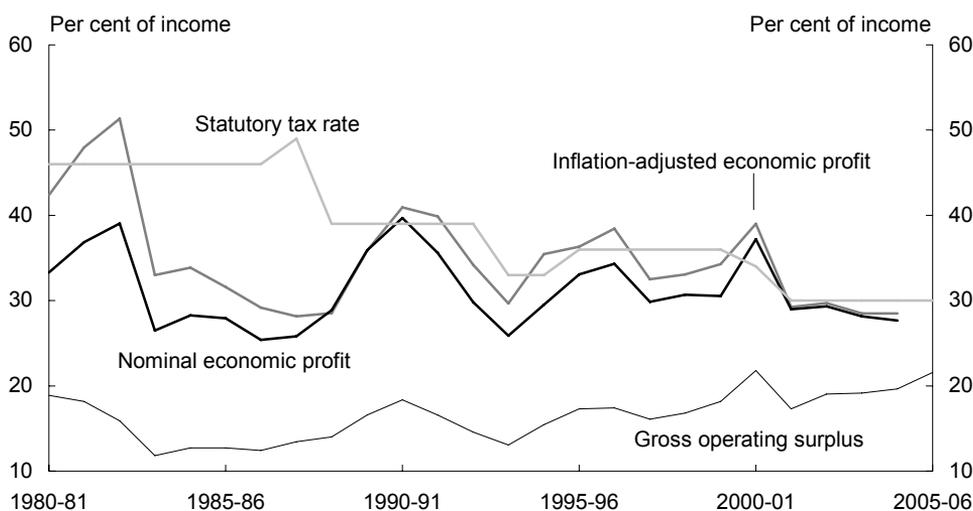
Note: Data to construct some series in 2005-06 is not yet available.
Source: Treasury estimates.

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7   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).[8]

Chart 6: Relationships between aggregate measures of income
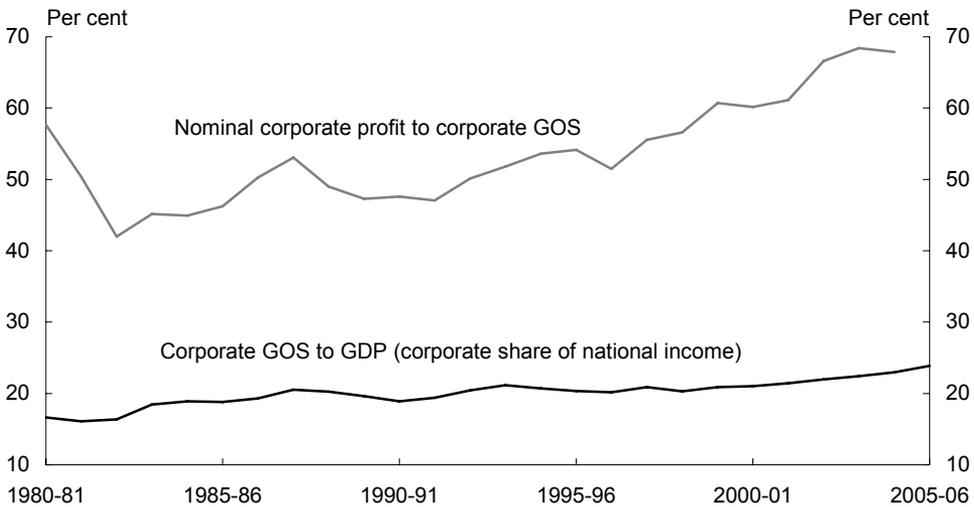
Note: Data to construct some series in 2005-06 is not yet available.
Source: ABS cat. no. 5206.0 and Treasury estimates.

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 became 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

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8   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.

- 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**
Gross operating surplus	**100.0**	**100.0**	**0.0**
add Adjust income from financial intermediation	4.5	15.4	11.0
Stock valuation adjustment	7.7	1.9	-5.8
less 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
Nominal corporate profit	**56.7**	**71.1**	**14.5**

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).

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.

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

Tax reform	Impact on effective corporate tax rate Per cent
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
Net impact	**-10 ½**

(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 recostings 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.[9]

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.

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9   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.

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
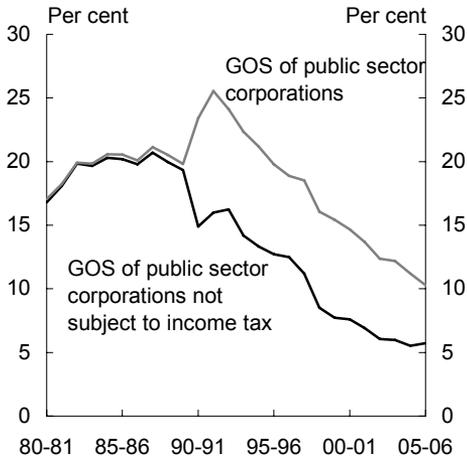
Source: Treasury estimates.

Chart A2: Effective corporate tax rate
Income year basis
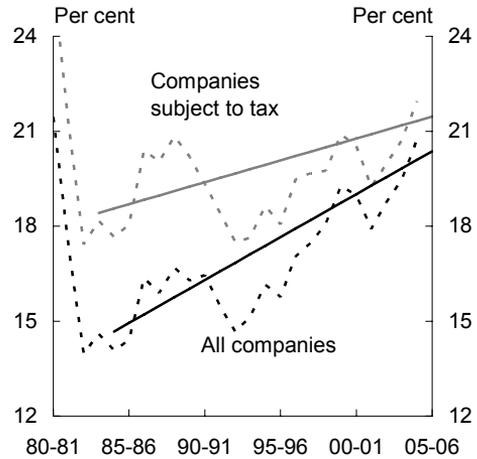
Source: Treasury estimates.

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).[10]

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

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

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
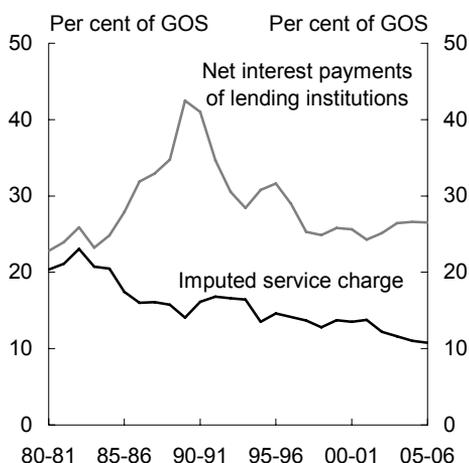
Source: ABS unpublished data.

Chart A4: Effective corporate tax rate
Income year basis
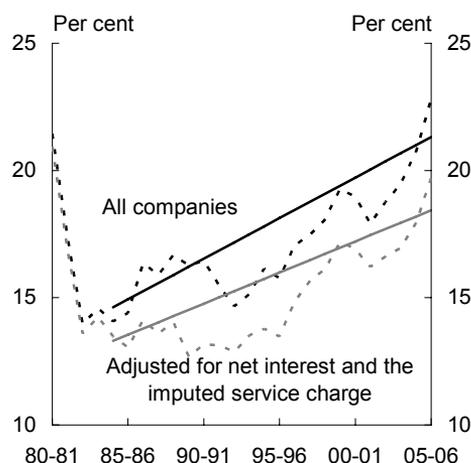
Source: Treasury estimates.

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

90-day bank bill rate

Chart A6: Corporate debt indicator

Bank-intermediated corporate debt
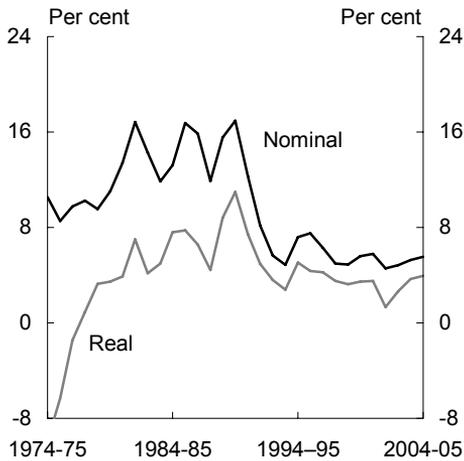
Source: RBA Bulletin and Treasury estimates.
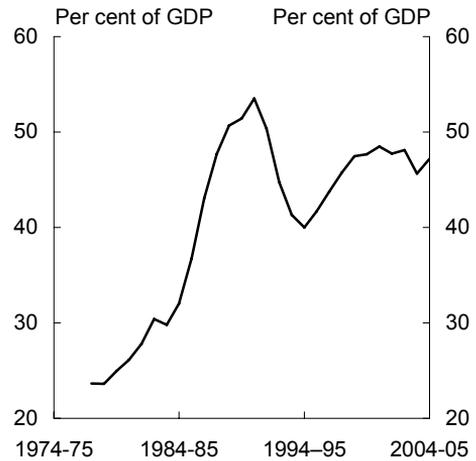
Source: RBA Bulletin and ABS cat. no. 5206.

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).

Chart A7: Corporate debt servicing ratio

Ratio of net interest payments of non-financial corporations to GOS
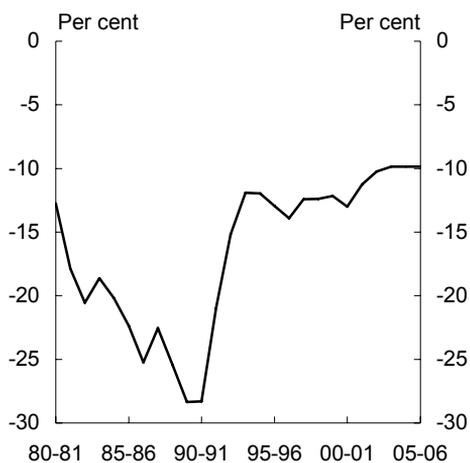
Chart A8: Effective corporate tax rate

Income year basis

Source: Treasury estimates.
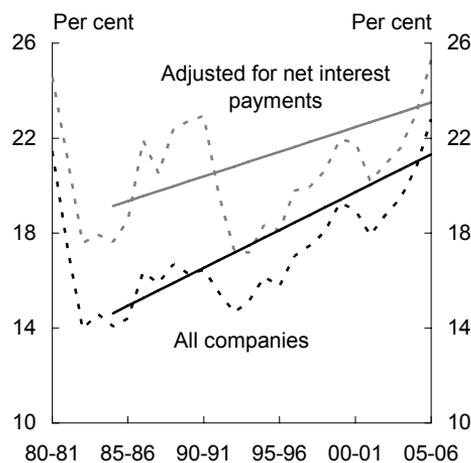
Source: Treasury estimates.

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).[11] 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

Per cent of GOS
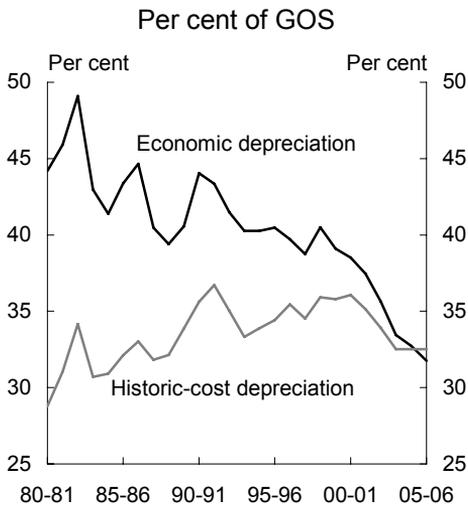
Source: Treasury and ABS cat. no. 5204.0.

Chart A10: Business investment by asset

Per cent of GOS
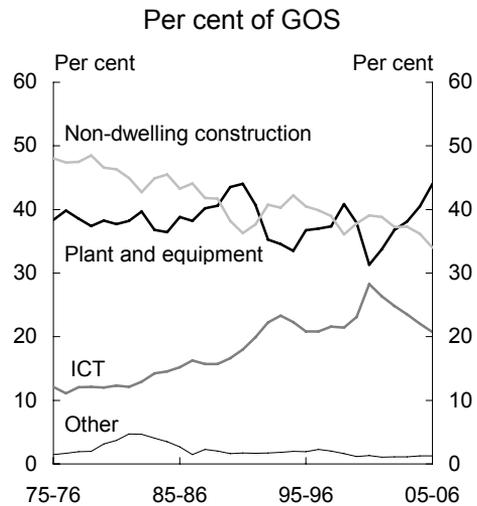
Source: ABS cat. no. 5204.0.

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

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11 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).

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
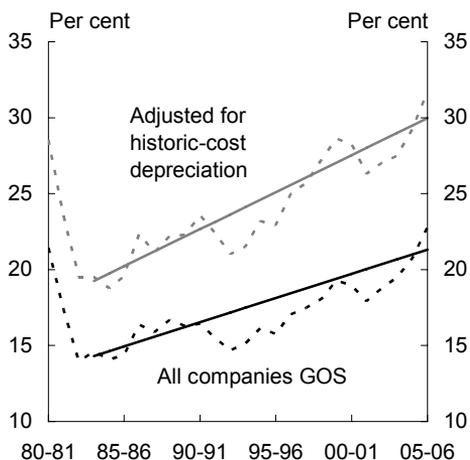
Source: Treasury estimates.

Chart A12: Effective corporate tax rate economic depreciation
Income year basis
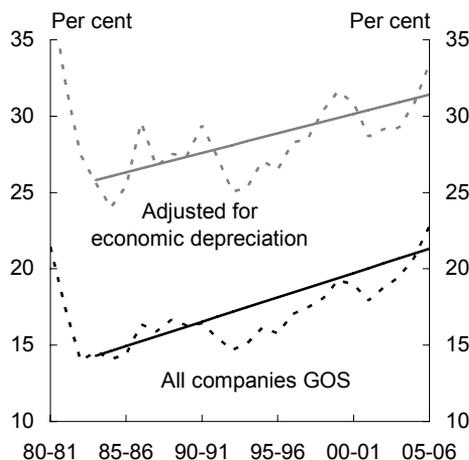
Source: Treasury estimates.

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 deprecation 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

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
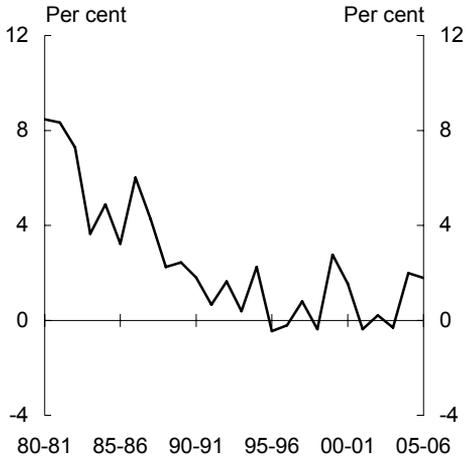
Source: ABS cat. no. 5204.0.

Chart A14: Effective company tax rate

Income-year basis
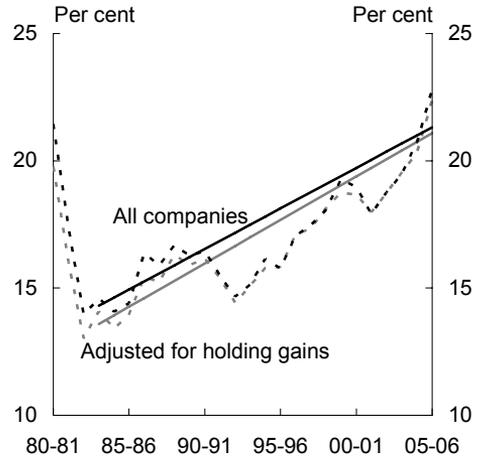
Source: Treasury estimates.

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.

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Treasury costings of taxation policy

Colin Brown[1]

The Treasury is responsible for costings of new policy proposals involving taxation revenue and for costings of tax expenditures. This paper outlines the general approach to costing new policy proposals and tax expenditures and examines a range of issues that arise in the costing process, the types of analysis that may be undertaken and the significance of the benchmarks used in interpreting published estimates.

Introduction

The Treasury is accountable for estimates of *taxation revenue*, including estimates of the impact on taxation revenue of new policy proposals. The 'costing' of new policy proposals plays an important role in contributing to the Government's evaluation of different policy options, informing the policy development process, updating the budget revenue estimates and informing the Parliament and the public.

This paper examines Treasury's approach to estimating the impact or 'cost' to revenue of tax measures, the impact of behavioural responses on the estimates and the effect of using different costing benchmarks. The effects are examined by comparing budget costings, which are prepared against the forward estimates, with tax expenditure estimates, which are prepared against a hypothetical non-concessional benchmark.

Budget revenue — costings against the forward estimates

Budget revenue costings measure the difference in expected revenue collections under a new policy proposal and the expected revenue collections already included in the 'forward estimates' of revenue. The forward estimates are the revenue that the government expects to receive in the budget year and the projected revenue for each of the next three fiscal years. Table 1 shows the aggregate forward estimates of revenue from the 2007-08 Budget. These estimates are the benchmark for assessing the financial impact of new policy proposals on the Budget. The 'cost' of a measure may be either a loss of revenue compared with the forward estimates or a gain to revenue.

Table 1: Total Australian Government general government revenue

	Actual	Estimates		Projections		
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Total taxation revenue ($b)	**206.8**	**220.5**	**231.1**	**244.1**	**256.6**	**267.3**
Real growth on previous year (%)	1.5	1.8	2.3	4.4	4.0	1.9
Per cent of GDP	21.4	21.3	21.1	21.3	21.5	21.3
Non-taxation revenue ($b)	**15.1**	**15.1**	**15.7**	**16.7**	**18.0**	**20.1**
Real growth on previous year (%)	15.5	-4.5	1.6	5.0	6.7	9.2
Per cent of GDP	1.6	1.5	1.4	1.5	1.5	1.6
Total revenue ($b)	**221.9**	**235.5**	**246.8**	**260.7**	**274.6**	**287.3**
Real growth on previous year (%)	2.4	1.4	2.2	4.5	4.2	2.4
Per cent of GDP	23.0	22.8	22.5	22.8	23.1	22.9

Table 1 shows that at the time of the 2007-08 Budget, 2005-06 was the last year for which actual revenue data was available. This estimate of 'actual' revenue forms the base for the revenue estimates and projections. The revenue estimates for 2006-07 (the incomplete year during which the 2006-07 Budget was presented) and 2007-08 (the budget reference year) are 'estimates' based on an assessment of recent activity levels and forecasts of activity up to the end of 2007-08, while the following three years are

'projections' based on growth in a range of economic parameters.[2] The estimates and projections take account of the estimated impact of new policy proposals.

A key point to note about the forward estimates is that they are based upon *actual* revenue collection data, which incorporates the existing behaviour of taxpayers, including levels of compliance with the tax laws and response effects.

A general approach to costings against the forward estimates

When new policy proposals are costed against the forward estimates, the existing forward estimates are the benchmark and the estimated cost of the new policy is the change in tax revenue which the new policy will produce. Appendix A derives a model for costing new policy proposals against the forward estimates. This model can be used to explore the factors that need to be considered in new policy costings that affect a particular tax base. The model is expressed in the following formula:

$$\Delta Rev_i = [t_{ni} - t_{bi} + (c + a + c.a).t_{ni} - a.o.t_{oth}] \times B_{b0} \times (1+g_{bi}) \qquad (12)$$

where:

- t_{bi} is the tax rate applying to the tax base in period i before the policy change;

- t_{ni} is the tax rate applying to the tax base in period i after the policy change;

- B_{b0} is the tax base for activities affected by the policy change in the base period for the costings, generally the last period for which there is actual data available;

- g_{bi} is the growth in the tax base between the base period and period i;

- c is the change in the tax base, measured as the change in the proportion of base period transactions (B_{b0}) that are taxable as a result of the policy change;

- a is the response of taxpayers to the policy change as a proportion of base period transactions (B_{b0});

- o is a factor that represents the offset to the behavioural response a to the policy change as a result of a change in activity in other tax bases ($o = 1$ represents a full offset and $o = 0$ is no offset); and

- t_{oth} is the average tax rate applying to those other transactions.

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2   A guide to the sensitivity of expenses and revenue to changes in economic parameters is provided in Appendix C of Statement 2, Fiscal Outlook in Budget Paper No. 1, *Budget Strategy and Outlook 2007-08*.

This costing model presents new tax policy proposals in terms of the change in tax rate ($t_{ni} - t_{bi}$) or in terms of the proportionate change in the tax base that arises from the new policy (c) or a combination of both. The model allows for the consideration of issues such as the behavioural response to a policy change (a), for the operation of a resource constraint in the economy (o) and for the tax rate applicable to alternative activities affected by the resource constraint (t_{oth}).

The values of variables such as the costing base (B_{b0}) and the base tax rate (t_{bi}) are usually obtained from statistical data (for example from the *Taxation Statistics* published annually by the Australian Taxation Office). The new policy tax rate (t_{ni}) and the impact of a proposal on the tax base (c) are specified as part of the new policy being costed. The growth rate between the base year and the year being costed (g) is usually based on the growth parameters used to project the forward estimates. The behavioural response to the policy (a) and the offset (o) are usually assumptions based on a variety of information sources or on judgment as to the likely magnitude of taxpayer response based on past experience.

Response effects

Response effects are an important part of a new policy costing because they may have significant effects on costing outcomes. Reliable information about the magnitude of response effects is often unavailable. Consequently, taxpayer responses are the element of a costing that requires the greatest exercise of judgment.

The Treasury's approach to including response effects in policy costings is to take account of behavioural effects where it is practicable to do so. In particular, emphasis is placed on the reliability of any estimate. Where there is no reliable basis for quantifying response effects, the costing exercise may include analysis to determine the sensitivity of the estimates to the potential range of behavioural responses.

A variety of information sources can be used to estimate the magnitude of behavioural responses to a new policy, including:

- where a policy aims to achieve a particular behavioural response, that response;

- academic and other studies of behavioural responses (for instance, studies into the price elasticity of demand for particular goods, or labour market responses to changes in real wages or effective marginal tax rates);

- input from consultations or submissions;

- evidence from previous experience of similar changes or derived from analysis of taxation or other data;

- the results of econometric modelling and studies; and

- sensitivity analysis.

Where budget revenue costings take account of behavioural effects, they generally only include the direct behavioural effects of a policy change (indirect or 'second round' effects are discussed below). Direct impacts include:

- changes in the demand for the particular goods, services, investments or assets affected by a policy change;

- changes in the prices of the particular transactions affected by a policy change;

- changes in the supply of goods or services as a result of a policy change (for instance, increased production of goods by businesses in response to cost reductions); and

- any offsets that involve switching resources between the particular activity affected by the policy change and other activities, as would result from the application of a resource or budget constraint.

The last effect is important because costing analysis needs to take account of where the resources, both financial and physical, underpinning a change in a particular activity or investment come from. This is particularly important in an economy facing resource constraints where an increase in activity in one sector can only be accommodated by diverting scarce resources (such as skilled labour) from other activities, reducing the tax collected from them. Failure to take account of resource constraints is likely to result in an overestimate of impact of behavioural responses on the costing analysis.

All costing analysis makes assumptions about response effects, either explicitly or implicitly. Public commentary often implicitly assumes that a proposal will have no behavioural impact (that is $a = 0$; $o = 0$) in which case the proposal's cost is wholly a function of the change in tax rate and/or the tax base. Such an implicit behavioural assumption needs to be tested carefully. For example, when estimating the impact of a change in an excise duty, a 'no behavioural response' assumption implies that the demand for the excisable goods concerned is perfectly inelastic.

What is the likely magnitude of response effects?

The direction and magnitude of response effects are important considerations for costing analysis.

Generally, a change in the tax base or tax rate would produce an opposite change in the level of the taxed activity being undertaken, so that an increase in the tax rate or in

the tax base for an activity would produce a reduction in the level of activity (that is, in the general costing model, if $t_{ni} - t_{bi} > 0$ then $a < 0$; or if $c > 0$ then $a < 0$).

Response effects, expressed as a proportion of the tax base, are likely to be much smaller than the proportion by which tax collections change (that is, $a < c$; or $a < (t_{ni} - t_{bi})/t_{bi}$ in the general costing formula). Put another way, a 10 per cent reduction in tax is likely to produce much less than a 10 per cent increase in activity. This means that while response effects may partially offset a tax change, they are unlikely to produce a full offset such that a tax change pays for itself. Some reasons for this follow:

- Taxpayer behaviour is more likely to be related to the change in the *full* tax inclusive value of a transaction rather than just to the tax component. So it is the effect of tax on the *tax inclusive price* of the transaction or the *post tax return* from activity (depending upon whether the effects are on demand or on supply) that produces the behavioural effect, rather than the change in tax itself.

  - For instance, if the marginal tax rate paid by a taxpayer who faces a marginal tax rate of 30 per cent is cut by 10 per cent (that is to 27 per cent), the taxpayer will receive an increase in marginal disposable income of 4.3 per cent.[3] This means that when the taxpayer decides on whether to change the amount of labour to supply, the taxpayer is responding to the 4.3 per cent increase in post tax marginal income rather than to the 10 per cent reduction in tax payable on that marginal income. For any given elasticity for a transaction, the magnitude of the response effect from a given proportionate change in tax will be smaller, the smaller the tax is as a percentage of the price concerned. Therefore, in the example above, a taxpayer would have to have a wage elasticity of +2.3 for the magnitude of the response effect to equal the magnitude of the tax change.

  - In this example, income effects may, to some extent, counteract the added incentive to work arising from a lower tax rate. These effects arise from the increase in disposable income for a given amount of work and wage rate, which means less work is needed to achieve a particular target level of income.

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3 Calculated as follows: $[(1 - t_{ni})/(1 - t_{bi})] - 1 = [(1 - 0.27)/(1 - 0.3)] - 1 = -0.043$.

- While tax changes may produce changes in taxpayer behaviour, those changes are often at the *margin of behaviour* (that is, a tax cut may mean that for *some* taxpayers, the post-tax price of a transaction falls sufficiently to induce them to undertake an additional transaction) but the tax change applies equally to all taxpayers and transactions, including taxpayers whose behaviour remains unchanged or transactions that would have occurred without the tax change. It is the cost across all taxpayers and transactions that is included in new policy costings.

- Usually, the tax on a transaction cannot be reduced to less than zero.[4] This means that, if we assume no offsetting impacts on activity elsewhere (i.e. o=0), the cost of providing a tax exemption (or reduction in rate to zero) is equal to the revenue previously collected, regardless of the magnitude of any behavioural response.

  - This can be illustrated in the general costing model. If the new tax rate $t_{ni} = 0$ and offsetting activity effects o=0 then the change in revenue will be:

    $$\Delta\text{Rev}_i \quad = [t_{ni} - t_{bi} + (c + a + c.a).t_{ni} - a.o.t_{oth}] \times B_{b0} \times (1 + g_{bi})$$

    $$= - t_{bi} \times B_{b0} \times (1 + g_{bi})$$

Resource constraints and offsets

The response to providing a tax concession for an activity may be affected by the effect of wider resource constraints in the economy. These constraints may be financial or due to constraints on the availability of physical resources, such as labour or capital. In an economy with near full employment, constraints on physical resources are likely to be more apparent. However, even in a less than fully employed economy, a tax change is still likely to see a diversion of resources between activities. For instance, unemployment may be due to labour market regulations, so any changes to tax rates may involve changes in the allocation of labour already employed.

Resource constraints introduce an additional element into costings that offsets the behavioural impact of a change. For instance, if we relax the assumption that there is no offsetting impact on activity in the tax exemption example above (that is o>0), an

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4 *Tax offsets* (or rebates) are the exception to this rule if the offset can be used to reduce *other* tax payable by the taxpayer or is refundable. A tax offset is an amount that is payable as a credit against a taxpayer's tax liability, usually calculated by reference to the value of a transaction. A refundable tax offset is one where any amount by which the offset exceeds the taxpayer's tax liabilities is payable to the taxpayer in cash. Refundable tax offsets are classified as expenses for budget purposes.

additional revenue impact arises from the reduction in tax paid on other activities. The magnitude of this additional impact will be determined by the size of the response effect (a), the extent to which that response offsets the other activity (o) and the tax rate applying to the displaced activity (t_{oth}):

$$\Delta\text{Rev}_i \qquad = [- t_{bi} - \boldsymbol{a.o.t_{oth}}] \times B_{b0} \times (1 + g_{bi})$$

This means that when considering the response effects to a new policy proposal, the costing analysis needs to take account of where the resources for that response (physical or financial) come from. The effect of providing a tax concession for one activity will be to increase its post tax return relative to other activities. As a result, the concessionally taxed activity will have a relative advantage over competing activities which will tend to divert resources away from them.

Resource allocation effects may be built into costing models in the form of a budget constraint assumption and are necessary to avoid 'magic pudding' effects in costings. The resource allocation effects may differ, depending upon the nature of the substitution effects (or 'offsets') concerned and macroeconomic conditions. For instance:

• The extent of offsets may be limited. For example, at full employment, the labour force response to a cut in marginal tax rates comes from individuals reducing their consumption of leisure. If leisure is untaxed ($t_{oth} = 0$) then the *value* of the offset will be zero (even if $o = 1$) and will not affect the costing estimate, but the *extent* of the offset will be limited by the numbers of hours of leisure available.

• The impact of offsets on a costing will depend upon whether a change increases or decreases differences in effective tax rates. As an economy approaches full employment, the main effect of a tax concession will be to divert resources from one marginal investment to another as a result of the change in the relative after-tax returns from each activity (that is, the offset factor $o \rightarrow 1$). If $o = 1$ then the revenue impact of a tax change will depend upon whether the new effective tax rate is above or below the rate applying to alternative activities (that is, $t_{ni}+c$ versus t_{oth}). For example, reducing the effective tax rate on a heavily taxed activity may expand that activity at the expense of lower taxed activities, with the result that the net impact of the response and offset effects reduces the cost of the tax change (that is, where $a > 0$; $t_{ni} < t_{bi}$ or $c < 0$ and $t_{ni} > t_{oth}$). On the other hand, the net effect of providing a tax concession to an activity that is already concessionally taxed will add to the cost of the tax change.

• The impact of offsets on financial flows may differ from offsets arising from physical resource constraints. Financial offsets may be smaller where the response is financed from a change in the rate of saving or from wealth rather

than by diverting finance from other activities. The overall offset (o) will depend upon the extent to which taxpayers can dissave (or wish to increase savings), whether the response simply reallocates savings from one investment activity to another (in which case $o = 1$) and whether other binding constraints apply, for example through the operation of resource constraints in a near full employment economy.

• Similarly, where a tax change affects highly mobile foreign investment, the response effect (a) can be large and the financial offset to other (domestic) activity (o) small. In this case the response to a tax change may result in financial resources moving into or out of Australia with the offsets manifesting themselves in other countries.

Second-round effects

Policy costings reported in the budget are 'static' policy costings which means that they only take account of the direct impact of a policy change. Direct impacts include the immediate behavioural response to a policy change net of any offsetting changes in other activities that arise as a result of the target group for the change switching resources from those other activities. In this context, the target group of a change may be interpreted broadly, for instance by considering the decisions of the entities that invest in businesses or industries rather than looking at the impact of the concession at the business or industry level.

Second-round effects refer to the impacts on tax revenues that arise from the responses of non-target groups and from the further economic feedbacks from a policy change, for instance due to changes in the level of demand, supply, prices or wages flowing on from the introduction of a new policy.

Generally, budget costings of new policy proposals do not include second-round economic feedback effects because of the uncertainty of the magnitude and timing of those impacts and because second-round impacts are likely to be small relative to the direct financial impact of a measure, particularly over the forward estimates period. This position is reflected more generally in the guidelines for costing all new policy proposals for the budget (revenue, expense or capital).

Second-round economic feedback effects are likely to take much longer to arise than the immediate costs of a new policy proposal. While some second-round effects, such as those which arise from changes in the level of economic activity, demand or prices, may arise relatively quickly, other effects such as those arising from changes in investment or saving may take much longer. A recent US study has indicated that a cut in capital taxes could have second-round impacts sufficient to finance up to half the

cost of the original tax cuts[5], but other analysis of the models used to derive these results indicates that only two thirds of these second-round effects could be expected to be realised after twenty years.[6]

Second-round effects have been included as separate elements of the costings of a few major tax reform packages: the 2000 New Tax System; the 1999 Review of Business Taxation; and the 2005 Welfare to Work package. These packages included estimates of second-round effects because the magnitude of the reforms meant that the second-round effects were likely to be measurable over the forward estimates timeframe. More importantly, the broadly based nature of the packages meant that they were expected to produce unambiguous second-round benefits for the whole economy rather than shifting resources from one activity to another.

As discussed in Appendix A, the exclusion of second-round economic feedback effects from new policy costings is implied in the general costing model by assuming that the growth in the tax base is not affected by the new policy (that is, the assumption that $g_{ni} = g_{bi}$).

Where estimates of the impact of second-round effects on taxation revenue are estimated they are usually presented as a separate element of the costing of the new policy proposal. This is because second-round effects are estimated separately, for instance by feeding the results of the base costing into a macroeconomic model.

In cases where the second-round effects of new policy proposals cannot be quantified reliably, the analysis of those proposals often includes qualitative assessments of second-round effects. This reflects the purpose of most new policy proposals — which is to provide some form of economic benefit. An important point to note is that the analysis of second-round effects needs to go beyond the financial impact of a proposal on taxation revenue and look at all aspects of the impact of proposals. The second-round impacts of a proposal on taxation revenue usually arise from the impact on total output and economic growth, which can be expected to be larger than the impacts on tax revenue (by a factor of $1/t_{ni}$).

Second-round economic impacts can be positive, as would be expected in the case of a change that enhances economic efficiency, or negative, as would be expected in the case of a change that detracted from economic efficiency. A proposal can have an overall benefit for the economy but still impose a financial cost on the Budget — this

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5   N Gregory Mankiw and Matthew Weinzierl, Dynamic Scoring: A Back-of-the-Envelope guide, Harvard University, December 2005.
6   *Economic Report of the President*, United States Government Printing Office, February 2004, page 123.

will happen wherever the second-round gain in tax revenue is less than the first round budget cost.

Tax expenditure costings

The Treasury produces an annual Tax Expenditures Statement (TES) which provides details of tax concessions provided by the Australian Government.[7] The TES estimates measure how much assistance is provided to taxpayers by the tax concessions listed — rather than the revenue gain that would accrue to the Australian Government from abolishing them. The benefit to taxpayers of each concession is measured relative to a non-concessional benchmark. Potentially, tax expenditure estimates can be calculated in a number of ways.[8]

Consistent with most tax expenditure statements published in OECD countries, Australia uses the 'revenue forgone' approach to calculate tax expenditures. This approach measures how much the revenue is reduced (relative to a benchmark) because a particular tax expenditure exists. It is the most reliable method of estimating the level of assistance each tax expenditure provides to taxpayers.

Under the revenue forgone approach, tax expenditure estimates identify the financial benefits derived by individuals or businesses that receive concessions. It does not follow that, if a tax concession is abolished, tax revenue would increase by this amount because the approach does not take account of behavioural responses of the recipients of tax expenditures (that is, $a = 0$, $o = 0$).

The 'no behavioural change' assumption means that tax expenditure estimates may differ substantially from budget revenue costings, which are measured relative to the government's forward estimates of revenue and take into account both current and prospective taxpayer behaviour.

For example, the tax expenditures for the capital gains tax (CGT) discounts applying to individuals are measured relative to a benchmark of full taxation of capital gains.

• The budget estimates for implementing the CGT discount from 1 October 1999 counted the revenue arising from increased realisations of capital gains as an offset to the cost of introducing the discount.

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7 The 2006 TES lists around 270 tax expenditures. The aggregate value of the measurable tax expenditures is nearly $42 billion or 4.4 per cent of GDP for 2005-06.
8 See Chapter 3 of the *2006 Tax Expenditures Statement* for a discussion of the different approaches to measuring tax expenditures.

- On the other hand, the estimates of the tax expenditure arising from the CGT discount are proportional to the total level of capital gains realisations — increased realisations of capital gains increase the magnitude of the tax expenditure estimate.

Box 1: The difference between a budget costing and a tax expenditure

The diagram below illustrates the difference between a tax expenditures estimate and a revenue estimate for the budget. The axes of the chart are the tax base and the tax rate and the areas shown in the chart represent tax revenue. If in period 0 an activity is subject to a non-concessional effective tax rate[9] $t0$ and at that tax rate the tax base is $b0$ then revenue from this tax is equal to the area A + B. If a tax concession is provided for this activity that reduces the effective tax rate to $t1$ and as a result activity increases to a new level of $b1$, the total revenue collected will now be equal to area A + D.

In this example the budget impact of the measure would be the difference in revenue collected (A + D) – (A + B) = (D - B).

On the other hand, for measuring tax expenditures, the benchmark effective tax rate is $t0$, so before the tax change there is no tax expenditure. When the effective tax rate is reduced to $t1$, a tax expenditure is created equal to the difference between the benchmark tax rate and the new tax rate (that is, $t0 – t1$) times the new tax base (that is, $b1$). This is equal to area B + C in the diagram.

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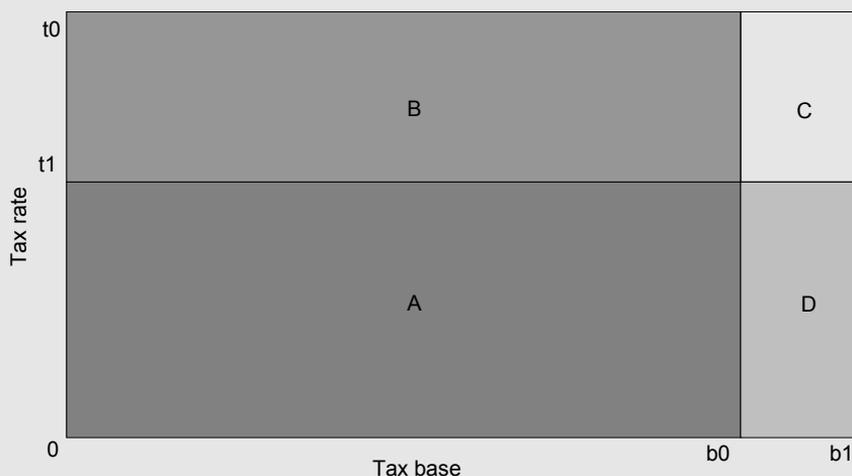
9 This refers to the effective tax rate rather than the statutory rate. We calculate the effective tax rate as the actual tax payable divided by the full tax base. We can change the effective tax rate by changing tax rates, the tax base or combinations of both.

Box 1 illustrates the difference between the tax expenditure estimate for a particular tax provision and the estimates of its budgetary cost. The box illustrates the following points:

•   The value of the tax expenditure associated with a concession and its budgetary cost will only be equal where there is no behavioural response to the measure (that is, *b1 - b0* = 0);

•   A positive tax expenditure (that is, one which provides a benefit to the taxpayer) will arise from a tax concession even if the response effect is such that the concession results in a gain to tax revenue (that is, B + C > B - D).

•   More generally, where the response to providing a new tax concession is an increase in activity, the tax expenditure estimate will be greater than the revenue estimate. Similarly, once the concession is in place, the revenue gain from removing the concession will be smaller than the associated tax expenditure.

•   Tax expenditures are calculated on a case-by-case basis which means that overlaps between tax expenditures may not be taken into account. For instance, a concession that reduces the tax rate applying to a particular taxpayer will also reduce the value of tax base concessions provided to that taxpayer.

Behavioural responses, substitution of tax concessions and potential overlaps between tax concessions all mean that estimates of tax expenditures under the revenue forgone approach, while being a reasonable measure of the benefit particular concessions provide to taxpayers, will overstate the magnitude of the revenue impact of tax concessions, both for individual concessions and in aggregate. The aggregates published in the TES are only a guide to broad trends in tax expenditures over time and are not an accurate estimate of the impact of tax expenditures on total taxation revenue.

Understanding what is included in the tax expenditure benchmarks is very important because being able to identify a revenue impact for a tax provision does not necessarily mean that it gives rise to a tax expenditure. For instance, personal income tax cuts have a revenue impact but are not tax expenditures because the personal income tax rate scales are part of the tax expenditure benchmarks. Similarly, tax deductions for work related expenses are not tax expenditures because they are not personal consumption

and are therefore excluded from the calculation of income used in the TES income tax benchmark.[10]

On the other hand, some tax measures may have no revenue impact but may still give rise to a tax expenditure. For instance, rollover relief for some transactions may result in a tax expenditure because it defers taxation. It is possible for the rollover relief to have no impact on the revenue estimates because: (a) no revenue in respect of these transactions was included in the forward estimates (for instance because the transaction concerned was not expected to occur in the forward estimates period); and (b) the transaction being provided rollover relief would not proceed in the absence of that relief.

Concluding remarks

Treasury's costings of the financial impact of new taxation policy proposals are only one input into taxation policy analysis. Any assessment of a new policy proposal needs to take account of the wider policy environment, including most importantly the effectiveness of a proposal in terms of the policy objectives it is meant to achieve and the impact of policy proposals on the wellbeing of Australians. While costings of new taxation policy proposals do not generally include second-round effects, these are important considerations in assessing their impact, particularly in the longer term.

While costings of new policy proposals aim to include behavioural responses and offsets where it is practical to do so, this is made difficult by the lack of reliable data on these effects. This means that it is frequently not possible to estimate behavioural responses precisely and that judgements often have to be made about the magnitude of these effects, including whether to assume that a proposal has 'no behavioural effect'. Where a behavioural response is included in the costing of a new policy proposal, the analysis also must take account of whether that response has any impact on other activities.

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10 Under the Schanz-Haig-Simons definition of income used in the TES, an entity's income is defined as the increase in the entity's economic wealth (stock of assets) between two points of time, plus the entity's consumption in that period. Consumption includes all expenditures, *except* those incurred in earning or producing income. Further information on definitions of income can be found in *Tax Policy Handbook,* edited by Parthasarathi Shome, page 117, International Monetary Fund, Washington DC, 1995.

Understanding the purpose of tax policy costings is important. This is illustrated by the difference between costings against the forward estimates for budget purposes and costings for the Tax Expenditures Statement. Budget costings measure the impact of proposals on the government's budget, taking account of existing behaviour and the existing revenue base, which in many cases includes tax concessions. By contrast, the Tax Expenditures Statement measures the benefit of concessions to the taxpayer, relative to a non-concessional benchmark with no behavioural change. This means that tax expenditures estimates are not comparable to budget revenue estimates and are not a good indicator of the revenue effect of removing tax concessions.

APPENDIX A

A general model for estimating the revenue impacts of tax policy propsals

Revenue from a particular tax base or taxpayer[11] can be represented as the product of the tax rate and the value of the tax base from which we collect tax. The tax base could be income, turnover, sales, a stock such as wealth and so on. We can therefore estimate tax revenue in any period i as:

$$R_{bi} \qquad = t_{bi} \times B_{bi} \qquad\qquad (1)$$

where:

- R_{bi} is revenue from the tax concerned in period i;

- t_{bi} is the applicable average tax rate in period i;

- B_{bi} is the tax base in period i; and

- b is a flag that indicates we are looking at the base (forward estimates) tax scenario.

We can represent the forward estimates of revenue for a particular tax as:

$$R_{b0} \qquad = t_{b0} \times B_{b0} \qquad\qquad \text{Tax in base year}$$

$$R_{b1} \qquad = t_{b1} \times B_{b0} \times (1 + g_{b1}) \qquad \text{Tax in first estimate year}$$

$$R_{bi} \qquad = t_{bi} \times B_{b0} \times (1 + g_{bi}) \qquad \text{Tax in year } i \qquad (2)$$

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11 The level at which this modelling approach can be applied will depend upon the complexity of the tax base concerned. The more complex the base the greater the level of disaggregation required. For instance, for individuals (where we have a tiered tax scale, rebates and credits), the approach could be applied at the individual taxpayer level through a microsimulation approach and the results aggregated. For companies where there is a single tax rate, a more aggregated approach is possible.

where g is the cumulative compound growth rate for the tax base (B) measured between the base period (0) and period i — that is:

$$g_{bi} \quad = B_{bi} \Big/ B_{b0} - 1 \tag{3}$$

We could implement a new tax policy by changing the tax rate (t), the tax base (B) or both. We can calculate the taxation revenue under this new policy proposal (denoted by the subscript n against each variable in equation (2)) as:

$$R_{ni} \quad = t_{ni} \times B_{n0} \times (1 + g_{ni}) \tag{4}$$

and the cost of the new policy proposal in period i (ΔRev_i) would be:

$$\Delta Rev_i \quad = R_{ni} - R_{bi}$$

$$= [t_{ni} \times B_{n0} \times (1 + g_{ni})] - [t_{bi} \times B_{b0} \times (1 + g_{bi})] \tag{5}$$

Second-round economic feedback effects

Generally costings of new taxation policy proposals only focus on the direct first round behavioural impacts (where practical to do so) and direct budgetary consequences of a new policy. This is because the second-round economic feedback effects of policy changes are very difficult to estimate, uncertain and likely to be small relative to the direct effects of the policy over the forecasting period.

The implications of our assuming no second-round economic feedback effects is that the growth parameter in our costing formula (g) is not affected by the new policy proposal with the result that we assume that $g_{ni} = g_{bi}$.

This means that the equation (5) can be rewritten as follows:

$$\Delta Rev_i \quad = [(t_{ni} \times B_{n0}) - (t_{bi} \times)] \times (1 + g_{bi}) \tag{6}$$

Changes to the tax rate versus tax base

We can now look at estimating the effects of changes in the tax base versus the tax rate. In the equations above we express the tax base in terms of its level in a base year 0. This is because we usually prepare costings using a period where we have data for the tax base then grow the resulting estimates out to subsequent years using a growth parameter (g in the equations above). For most costings, provided the tax base in the base period is not zero (that is, $B_{b0} > 0$), we can also express the impact of a policy change in terms of a tax base change parameter (h), the value of which represents the impact of the proposed policy change on the size of the tax base (for instance, by way

of a tax deduction) or the impact on the base of the direct behavioural responses to the policy change.

If:

h $$= \frac{B_{n0}}{B_{b0}} - 1 \qquad\qquad \textit{where } B_{b0} > 0$$

Then:

B_{n0} $$= (1 + h) \times B_{b0} \tag{7}$$

Substituting equation (7) for B_{n0} in equation (6) gives the following result:

ΔRev_i $$= \{[t_{ni} \times (1 + h) \times B_{b0}] - [t_{bi} \times B_{b0}]\} \times (1 + g_{bi})$$

$$= (t_{ni} - t_{bi} + h.t_{ni}) \times B_{b0} \times (1 + g_{bi}) \tag{8}$$

Direct behavioural responses

We can break down the impact of a tax change on the size of the tax base (h) above into separate components representing the impact of the policy change on the proportion of the tax base that is subject to tax (c) and an element representing the response of taxpayers to the change (a). Generally, we would expect that an increase in tax, whether due to an increase in the tax rate (that is, $t_{ni} > t_{bi}$) or an increase in the tax base (that is, $c > 0$) would result in a negative response effect (that is, $a < 0$).

If:

h $$= \frac{B_{n0}}{B_{b0}} - 1$$

and:

B_{n0} $$= (1 + c) \times (1 + a) \times B_{b0}$$

then:

h $$= [(1 + c) \times (1 + a)] - 1$$

$$= c + a + ca \tag{9}$$

Substituting for h in equation (8) allows us to take account of behavioural effects in our costing:

$$\Delta\text{Rev}_i = (t_{ni} - t_{bi} + h.t_{ni}) \times B_{b0} \times (1 + g_{bi}) \tag{8}$$

$$= [t_{ni} - t_{bi} + (c + a + ca).t_{ni}] \times B_{b0} \times (1 + g_{bi}) \tag{10}$$

The response effect a in equation (10) represents the taxpayer response to the policy change on transactions subject to the policy change. This response effect does not take account of the impact of the change on other transactions. This impact is important where the resources underlying transactions are constrained, for instance where an increase in activity in response to a tax concession diverts resources from non-concessionally taxed activities. This effect can be taken into account into by adding another term to the equation (10)

$$\text{Offset} = a \times o \times t_{oth} \times B_{b0} \tag{11}$$

where:

- o is an offset factor, representing the extent to which an increase in the activity affected by a tax change is offset by a change in other activities. Generally $0 \leq o \leq 1$ where 0 is no change and 1 is a full dollar for dollar offset in activity.

- t_{oth} is the average tax rate applying to the other activities affected by the tax change.

Deducting this offset factor (11) from equation (10) gives:

$$\Delta\text{Rev}_i = [t_{ni} - t_{bi} + (c + a + c.a).t_{ni} - a.o.t_{oth}] \times B_{b0} \times (1 + g_{bi}) \tag{12}$$

Equation (12) provides a general equation that can be used to estimate the revenue impact of a taxation change.

As noted in deriving equation 7, this equation requires the existing tax base to be greater than zero. Where the existing tax base for a transaction is equal to zero (for instance, in the case of an import that is excluded from the domestic market due to a prohibitive tariff) there would be no loss of tariff revenue on that item from reducing the tariff but there would be a loss of revenue from tariffs on competing imports and taxes on domestic production. In this case the cost would be wholly due to the offset factor in equation 11, which would need to be respecified in terms of the tax base for the other transactions so that:

$$\Delta\text{Rev}_i = t_{oth} \times \Delta B_{oth} \tag{13}$$

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Recent productivity outcomes and Australia's potential growth

Robert Ewing, Sian Fenner, Steven Kennedy and Jyoti Rahman[1]

In recent years, employment has grown strongly while output has grown modestly. This implies a weak growth in labour productivity that is difficult to interpret. In this article, we explore some possible explanations for recent economic growth and labour productivity outcomes, with a focus on developments in the composition of growth. We also examine whether recent productivity outcomes hold any implications for the Australian economy's potential growth rate. We find that recent weak growth in output and strong growth in labour are indeed unusual when compared with previous experiences. However, we also find that the uncommon circumstances surrounding Australia's mining boom explain some of the output and labour conundrum.

Introduction

The most important determinant of economic growth is the one that we understand the least. Over the past 25 years, around 80 per cent of the increase in living standards (measured by GDP per capita) has been due to an increase in the level of productivity. While distilling the drivers of long term productivity growth is challenging, understanding short term changes is particularly difficult.

Recent productivity trends illustrate this well. Since June 2004, GDP has grown by an annual average of 3 per cent (well below its 10-year average growth rate of 3¾ per cent), while employment has grown by 2¾ per cent per year (well above its 10-year average of 2 per cent).[2] If employment is growing relatively quickly compared with GDP then labour productivity growth is weak (Chart 1).[3]

Chart 1: Through-the-year growth in real GDP, employment and productivity
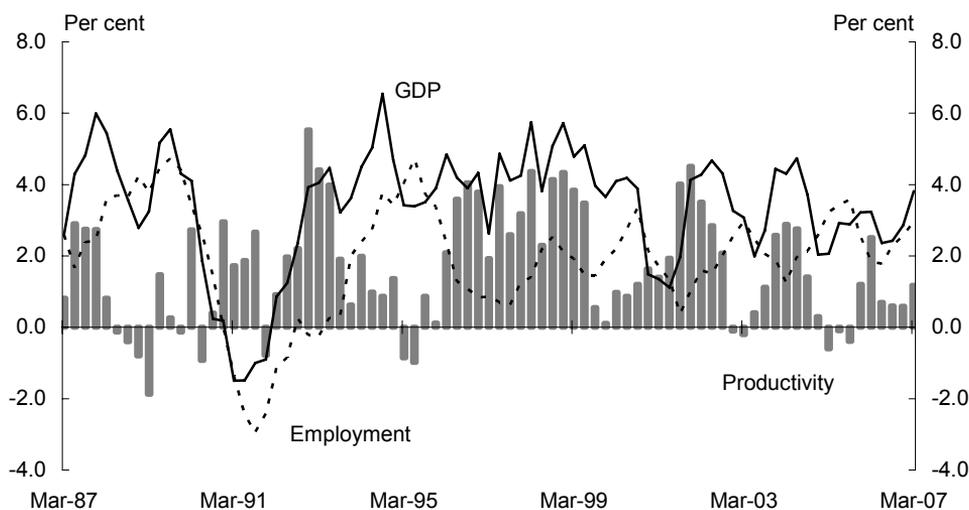
Source: ABS Labour Force, ABS National Accounts.

There is no simple explanation for this apparent slowdown in labour productivity.[4] Possible explanations include mismeasurement of outputs and/or labour, changes in the composition of the economy, lags between growth in output and growth in labour leading to short run productivity cycles, and developments in particular sectors of the economy. One explanation, popular with the press, is that the economy has hit

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2   Business investment has also grown strongly since June 2004, by 11 per cent per year, compared with a 10-year annual average growth rate of 9 per cent.

3   Throughout the paper, productivity and labour productivity are used interchangeably unless otherwise indicated. For quarterly data, we mostly analyse the period since June 2004. For annual data, we analyse the financial years 2004-05 and 2005-06.

4   See the Reserve Bank of Australia (2006) for a discussion on recent productivity growth.

'capacity constraints' and is finding it difficult to grow at past rates. This raises the question, how fast do we expect the economy to grow on average? Moreover, what rate of growth is consistent with low and stable inflation? That is, what is the potential growth rate of the Australian economy?

The long-run potential growth rate of an economy is determined by the growth of inputs (labour and capital), and the rate of growth in the efficiency with which these inputs are used to produce outputs (that is, multi-factor productivity). An economy can grow faster than the potential growth rate without generating inflationary pressures if, for example, there is excess capacity in input markets.

In constructing projections of economic growth for budget purposes, Treasury considers likely trend rates of growth in labour inputs and labour productivity. Average productivity growth over the past 30 years is used as a guide for trend productivity growth while the growth in labour inputs reflects projected demographic changes and participation rates. Currently these estimates are 1¾ per cent annual growth for productivity and 1¼ per cent for employment growth leading to real GDP growth of 3 per cent.[5] Broadly speaking, this growth rate could be thought of as Australia's current potential growth rate.

Keeping in mind this notion of potential growth, we examine recent outcomes in labour productivity in three ways. First, we examine if recent growth in labour productivity is consistent with historical relationships between various determinants of productivity growth. Second, we explore the growth in labour input and its relationship with wages and output. Finally, we examine whether there are any factors at play within the economy that would disturb the typical relationship between output and labour, and for example, whether measurement issues are likely to be more pronounced than usual.

We find that recent weak growth in output and strong growth in labour are indeed unusual when compared with previous experiences. However, we also find that the uncommon circumstances surrounding Australia's mining boom may contain some of the explanation for the weakness in labour productivity. These findings suggest that, at this stage, recent events hold little for policymakers to worry about in terms of the underlying dynamism of the economy, although they hold implications for policy makers as to, until recently, which economic aggregates are providing the best read on the strength of the economy.

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5   Primarily driven by increased immigration, the growth rate of working-age population has increased recently. If the working-age population continues to grow at a faster pace, then this will lead to an increase in trend employment growth and potential real GDP growth.

Labour productivity outcomes

In recent years, labour productivity has grown little. However, low growth in labour productivity for short periods is not a particularly unusual outcome (Chart 2). There are two main reasons for this. First, productivity growth is cyclical, and this cyclical pattern implies high and low productivity growth from year to year. And second, productivity growth is difficult to measure, and hence is susceptible to measurement errors. For both of these reasons, the usual practice in examining productivity outcomes is to use a technique that takes into account these factors by examining medium to longer term influences. One way we can examine the underlying trend and cycles in productivity is by using a mathematical filter to separate out the trend. We can then examine whether the deviation from this trend is consistent with the typical shorter-term cycles in productivity.[6]

Chart 2: Through-the-year growth in actual and trend productivity
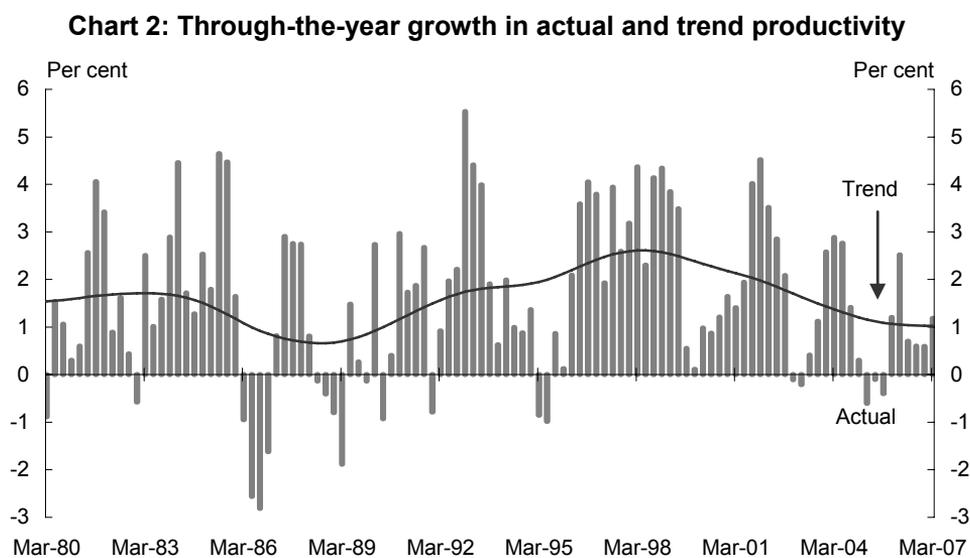
Source: ABS National Accounts; authors' calculation.

The smooth line in Chart 2 shows that growth in one estimate of trend productivity slowed in the 2000s after strong growth through the late 1990s.[7] Since June 2004, annual productivity growth has averaged around a ¼ of a percentage point less than

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6   The Australian Bureau of Statistics (ABS) averages rates of growth across identified 'productivity growth cycles'. The cycles are defined as the period between two 'productivity peaks', where the peaks are the local maxima above a smoothed (Henderson 11-period moving average) series of multi-factor productivity in the market sector (ABS 2005). In practice, these cycles are constructed such that there is only one weak period, usually early, in each cycle. The latest productivity cycle was for 1998-99 to 2003-04 over which economy wide labour productivity growth averaged 1.7 per cent per year.

7   See Dolman, Lu and Rahman (2006) and Eslake (2007) for discussions on productivity trends since the end of the 1990s, and Australian Government (2003) for a longer run perspective.

the trend growth rate would predict. This current deviation from trend growth is, however, not unprecedented.

The trend productivity in Chart 2 is derived by using the Hodrick-Prescott (HP) filter, a very common detrending method in macroeconomics.[8] However, the HP filter is a mathematical technique that makes no use of other economic information, whereas productivity growth is affected by the capital-labour ratio and technological progress in the long run and the business cycle in the short run. We can further enhance our understanding of recent movements in labour productivity by using a decomposition that accounts for factors related to capital deepening, trend productivity and the business cycle. This approach is derived from a Cobb-Douglas production function, which relates these factors to labour productivity.[9] The details of this analysis are discussed in more detail in Appendix A.

Our analysis suggests that after growing rapidly during the 1990s, trend productivity growth slowed in the current decade. Even after accounting for this trend slowdown, however, the relationship between output, labour and capital has sometimes been outside the usual historical experience in recent years. For example, our analysis suggests that in the September quarter 2006, labour productivity was about 1¾ per cent below the level the equation would predict.

In summary, part of the recent outcomes in labour productivity can be explained by a moderating in the rate of trend productivity growth from the high growth rates experienced in the latter half of the 1990s. Nevertheless, even after taking into account this moderation, and the trends in the level of capital, there is still a substantial part of the recent productivity outcomes that is not yet explained, so we need to turn to other approaches.

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8   The HP-filter assumes that a given time series contains a trend component and a cyclical component, and chooses as smooth a trend component that is possible while being as close to the actual observed value of the series as possible. Denoting p as the log of productivity and p* as its trend, the HP-filter satisfies the following optimisation problem.

$$\underset{P_t^*}{Min} \sum \left(P_t - P_t^* \right)^2 + \lambda \sum \left(\Delta P_t^* - \Delta P_{t-1}^* \right)^2$$

Here, the first term describes the closeness of the actual productivity to its trend; the second term shows the variability of the trend itself. The smoothing parameter λ is the relative weight given to these terms and a larger λ means a smoother trend. We follow the common practice for quarterly data and set $\lambda = 1,600$ (Hodrick and Prescott 1981).

9   These estimates are an update of analysis originally undertaken at Treasury by Ben Dolman and David Gruen. Another, less theoretically grounded, approach is to augment the univariate HP-filter with other variables using more sophisticated detrending techniques (see Rahman and Tunny 2006).

Labour demand

Labour input has grown rapidly in recent two years (Chart 3). This has seen the unemployment rate fall to 32-year lows and the vacancy rate (measured as the ratio of job vacancies to the number of people unemployed) rise to levels not seen in nearly three decades (Chart 4). Moreover, while wages accelerated in early 2005 they have since settled at around 4 per cent annual growth.

Chart 3: Through-the-year growth in labour input (hours worked)
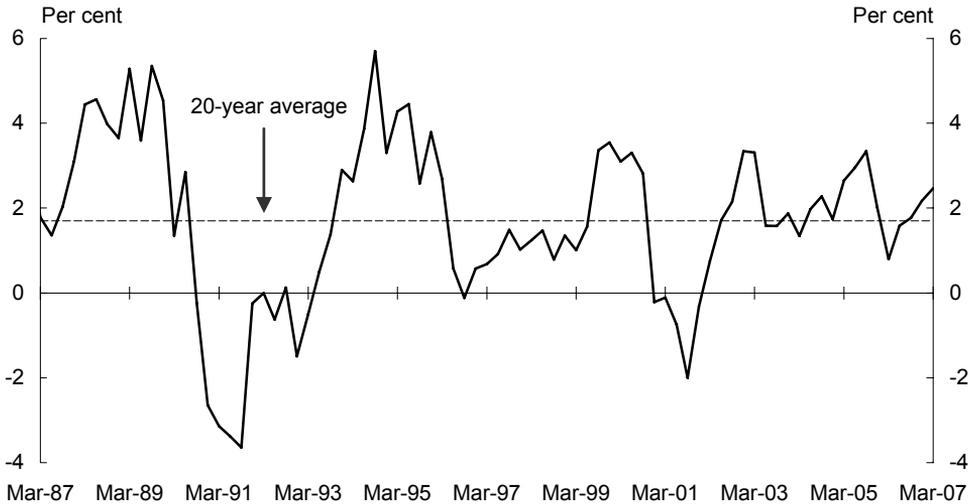
Source: ABS National Accounts.

Chart 4: Job vacancies per unemployed person
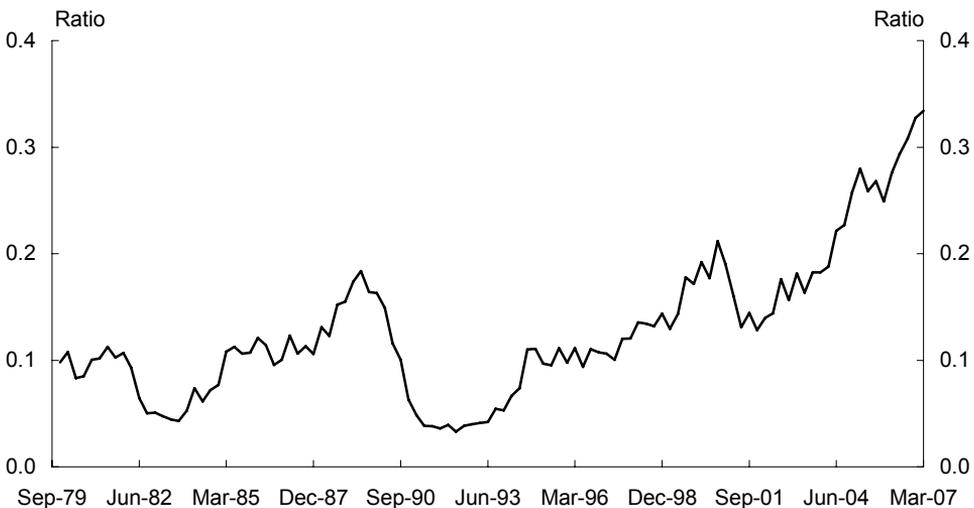
Source: ABS Labour Force, ABS Job Vacancies.

One way to examine whether the growth in labour input is consistent with current economic conditions is through a labour demand equation. In this analysis we use a full-time equivalent measure of labour input rather than a 'heads' measure of employment. A labour demand equation relates the growth in labour input to the growth in output, and importantly, to the growth in real labour costs or wages. This equation captures the longer run relationship between labour, output and wages as well as shorter dynamics driven by lags between output growth, wages and labour. This equation also allows us to take account of changes in the long term trends in labour productivity. Further details about the estimated equation and data used can be found in Appendix B.

In Chart 5, we show the predictions of the labour demand equation and the actual growth in labour input for the past 27 years. This analysis suggests that in recent years, labour input has been growing faster than we would expect given the average historical relationships between full-time equivalent employment, growth in output and changes in real wages.

Chart 5: Actual and predicted growth in labour input
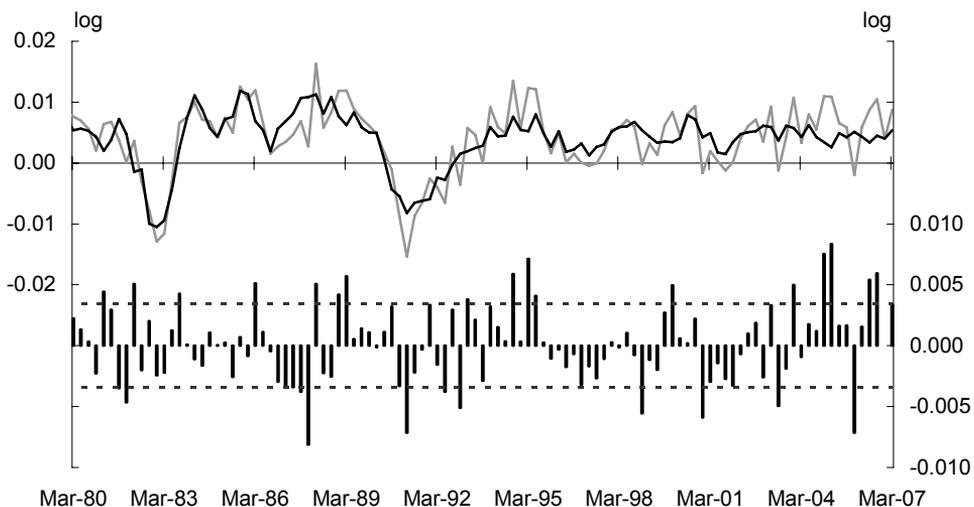
Source: Authors' calculations. The top panel, represented against the left axis, shows the predicted values (dark line) and actual outcomes (light line) for the equation, in terms of log differences. In the bottom panel, represented against the right axis, the equation's residuals (differences between actual and predicted outcomes) are shown as the bars and its standard error is shown as the broken lines.

Interestingly, our measure of labour costs or producer real wages captures the strong growth in profits in the mining sector and resultant decline in producer real wages by using an economy-wide output price that includes the increase in export prices, yet it still fails to explain fully why labour input has grown so strongly.

To illustrate the extent to which labour input has grown more strongly than historical relationships would suggest, we conducted the following exercise. We estimated the

relationship up until December 2000 (with the productivity trends imposed from the full-period equation), predicted labour input thereafter, and compared this simulated outcome with what actually occurred.

The results of this exercise suggest that while growth in labour inputs was somewhat below the model prediction up until around late 2004, since then it has been significantly stronger than predicted (Chart 6). Since December 2004, (full-time equivalent) employment has increased by around 495,000, while the average relationship between employment, output and wages would suggest an increase of around 300,000.

**Chart 6: Actual versus predicted labour demand,
equation from December 2000**
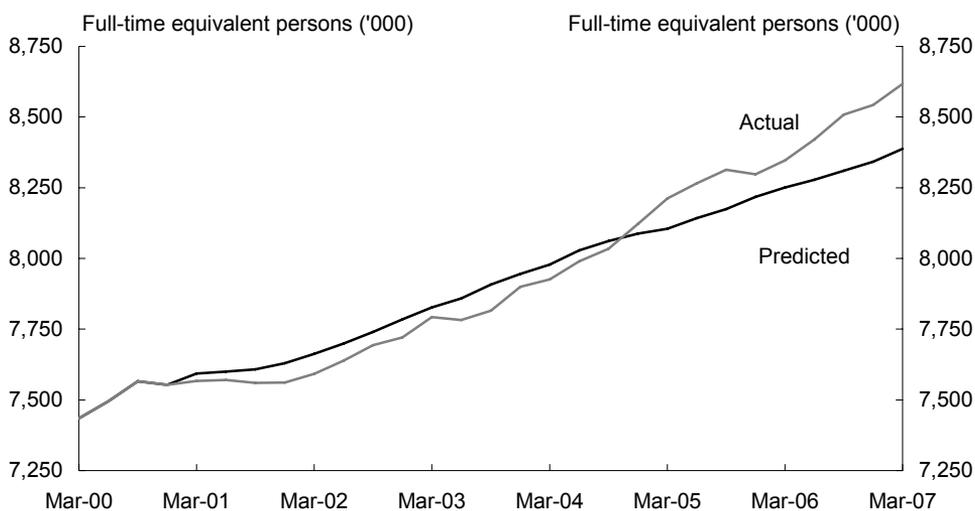
Source: Authors' calculations.

The analysis conducted thus far confirms that recent labour productivity outcomes are not explained in terms of typical macroeconomic relationships between labour input, output and the real wage. This could suggest that either measurement issues may be at play or there has been a slowing in productivity to below-trend growth rates. However, there are alternative explanations of the current outcomes. In particular, the current degree of change within the economy could be sufficiently dramatic that it is being reflected in unusual movements in macroeconomic aggregates. We explore this explanation in the following section.

The composition of growth

If we cannot explain the recent trends in productivity outcomes by the macroeconomic explanations discussed so far, can we find the answer by examining trends within individual sectors? Australia is currently experiencing a very significant increase in the terms of trade, which is having widespread effects on the economy.

Australia's terms of trade hit their highest level in over 50 years in the December quarter 2006 and continued to rise in the March quarter 2007. As is well known, the high terms of trade predominantly reflects a rapid increase in commodity prices driven in significant part by strong demand from China. The Australian economy has been responding to this rapid shift in relative prices with a massive increase in mining investment and accompanying surge in mining and construction employment.[10] In the five years to 2005-06, real mining investment rose by around 200 per cent and mining and construction employment rose by around 30 per cent. The increase in mining and construction employment accounted for around 25 per cent of the increase in employment in that period compared with their combined industry share of employment of 10 per cent.

To explore how these dramatic changes might be being reflected in measures of aggregate output growth and labour productivity we divided the economy into three sectors: mining and construction; the market sector excluding mining and construction; and the non-market sector.

While examining the mining and construction sector separately from the rest of the economy seems an obvious step given the rapid changes in commodity prices, dividing the rest of the economy between the market and non-market sectors may not seem so obvious. The non-market sector is comprised of those parts of the economy where output is difficult to measure. It includes industries such as health, education, and government. In some parts of the non-market sector such as the provision of health and education services, it is difficult to measure output because it is not priced and sold into a market, while in other parts (such as business services) it is difficult to disentangle price and volume movements from overall turnover. It is for these reasons that the ABS does not publish estimates of productivity for these industries, and given the acknowledged output measurement issues it is worth considering them separately from the rest of the economy when examining changes in economy-wide labour productivity.

Chart 7 shows growth in labour productivity for mining and construction, the market sector excluding mining and construction, and the non-market sector. It is immediately

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10 Mining and construction are considered together as much of the increase in mining-related investment represents activity being undertaken by the construction sector.

apparent from the chart that much of the slowdown in productivity in recent years is due to low productivity growth overall in 2004-05, and low productivity growth in the non-market sector and mining and construction in 2005-06.

Chart 7: Labour productivity in selected sectors
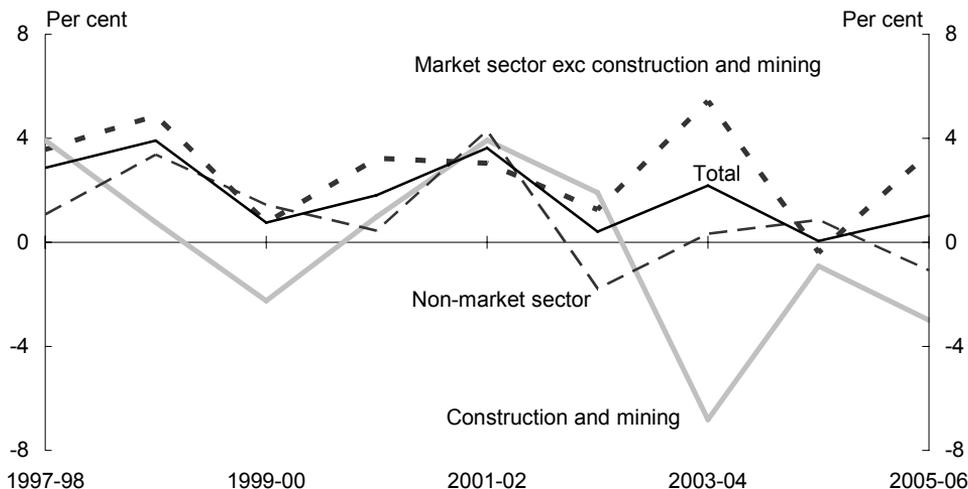
Source: ABS National Accounts and authors' calculations. Calculations are made at producer prices, and so total productivity growth rates may differ from those published by the ABS.

To explore further how changes in different industries and sectors are contributing to the overall change in productivity we conducted a shift-share analysis (see Appendix C for details). The total contribution of each industry or sector to the change in overall productivity reflects two components. First, the extent to which changes in within-industry productivity contributed directly to changes in productivity. Second, the degree to which the movement of labour between industries with relatively low productivity levels and industries with high productivity levels contributed to productivity change (a composition effect).

Table 1 shows the results of this exercise for the three sectors considered in this paper. For example, because mining has a relatively high level of productivity, an increase in the share of labour going to mining will increase overall productivity. In fact this was the case in 2005-06, as can be seen in Table 1, but because the change in productivity within mining was large and negative, this more than completely offset the positive composition effect, leading to mining's overall contribution to productivity being negative.

Table 1: Industry decomposition of labour productivity growth

| | 2004-05 | | | 2005-06 | | |
	Total	Productivity growth within industry	Industry share of hours worked	Total	Productivity growth within industry	Industry share of hours worked
Total economy	**0.05**	**-0.15**	**0.20**	**1.03**	**-0.01**	**1.04**
Market sector	**-0.26**	**-0.41**	**0.16**	**1.46**	**0.34**	**1.11**
Mining & Construction	**-0.04**	**-0.28**	**0.24**	**-0.32**	**-1.01**	**0.69**
Mining	0.06	-0.24	0.30	-0.52	-1.27	0.75
Construction	-0.11	-0.04	-0.06	0.20	0.26	-0.06
Other	**-0.21**	**-0.13**	**-0.08**	**1.78**	**1.35**	**0.42**
Non-market sector	**0.31**	**0.26**	**0.04**	**-0.43**	**-0.35**	**-0.08**

Source: Authors' calculations based on ABS National Accounts and unpublished data. Calculations are made at producer prices, and so total productivity growth rates may differ from those published by the ABS.

In 2004-05, a fall in market sector productivity largely offset the positive contribution from the non-market sector. The market sector detracted around a ¼ of a percentage point from total labour productivity growth. Within the market sector, mining made a small positive contribution, with the share effect outweighing the fall in within-mining productivity.

In 2005-06, the non-market sector and the combined mining and construction sector dampened labour productivity. The non-market sector subtracted around ½ of a percentage point from productivity growth, with both components of the decomposition falling. The mining and construction sector subtracted around 0.3 of a percentage point in 2005-06 as a fall in within mining productivity more than offset a strong positive contribution due to an increasing share of employment. The fall in mining sector productivity was due in large part to capital shallowing (see the box on the following page).

The following exercise illustrates the contribution that the non-market sector and mining and construction are making to slow productivity growth, particularly over the past year. If we set productivity in these two sectors to their trend rates of growth and hold employment shares constant, productivity growth in 2005-06 would have been slightly above its long-run trend.

Capital deepening and labour productivity

The Cobb-Douglas framework used earlier in this paper shows the contribution of labour, capital and productivity to economic growth at an aggregate level. Using this framework we can also examine at an industry level the contribution to labour productivity growth from multi-factor productivity (MFP) and capital deepening/shallowing.

Labour productivity growth = MFP growth + Capital deepening/shallowing effect

The current terms of trade shock that Australia is experiencing is influencing the allocation of capital and labour among industries (Kennedy and Garton 2007, Henry 2006). According to the most recent Annual National Accounts, capital services to the mining industry grew by 13.5 per cent over the past two years. But at the same time, mining labour input grew by an astonishing 31.7 per cent. As a result, the amount of capital provided per worker has fallen in the mining sector, that is, the mining sector has experienced capital shallowing.

To calculate the effect that capital shallowing is having on mining sector labour productivity, we decomposed the contribution of within-industry productivity growth in Table 1 into MFP growth and capital shallowing/deepening contributions. Over the past two years within-industry mining productivity declines have subtracted around 1.3 percentage points from overall productivity growth. Of this decline, almost ¾ of a percentage point was due to the capital shallowing effect.

Table 2: Decomposition of within-industry productivity growth contributions to total productivity growth

	2004-05				2005-06			
	Total productivity growth	Productivity growth within industry		Industry share of hours worked	Total productivity growth	Productivity growth within industry		Industry share of hours worked
		MFP growth	Capital deepening			MFP growth	Capital deepening	
Market sector	**-0.26**	**-0.82**	**0.41**	**0.16**	**1.46**	**-0.36**	**0.70**	**1.11**
Mining & construction	**-0.04**	**-0.06**	**-0.23**	**0.24**	**-0.32**	**-0.55**	**-0.46**	**0.69**
Mining	0.06	-0.02	-0.22	0.30	-0.52	-0.81	-0.47	0.75
Construction	-0.11	-0.04	-0.01	-0.06	0.20	0.25	0.01	-0.06
Other market sector	**-0.21**	**-0.76**	**0.63**	**-0.08**	**1.78**	**0.20**	**1.16**	**0.42**

Source: Authors' calculations based on ABS National Accounts and unpublished data. Calculations are made at producer prices, and so total productivity growth rates may differ from those published by the ABS.

What then should we make of low productivity growth in the non-market sector, and mining and construction? It is difficult to analyse the non-market sector given the acknowledged difficulties in measuring output in this sector. For example, the education sector subtracted 0.3 of a percentage point from productivity growth in 2005-06. The output of the education sector is measured using student numbers, so any

decrease in student-teacher ratios (smaller class sizes) will be reflected in the national accounts as a fall in productivity.

A more fruitful analysis can be made of the productivity trends in the market sector, and, in particular, falling productivity in the mining sector. As noted earlier, in response to a large increase in commodity prices there has been a rapid increase in investment and labour in the mining sector. However, this is yet to be reflected in higher output. Gruen and Kennedy (2006) compared the current mining boom with the previous boom in the late 1970s and early 1980s and noted that it took around five years for the increase in mining investment to be translated to high growth in output. Furthermore, declining production in the oil sector (which has relatively high productivity within the mining sector) has also subtracted from productivity growth in mining.

In Chart 8, we compare the labour productivity of this and the previous mining boom and adjust for the contribution of oil and gas to the decline in productivity seen over the past four years. Clearly, the experience of the two booms is similar, particularly after we account for the effects of oil and gas production.

Chart 8: Labour productivity in two mining booms
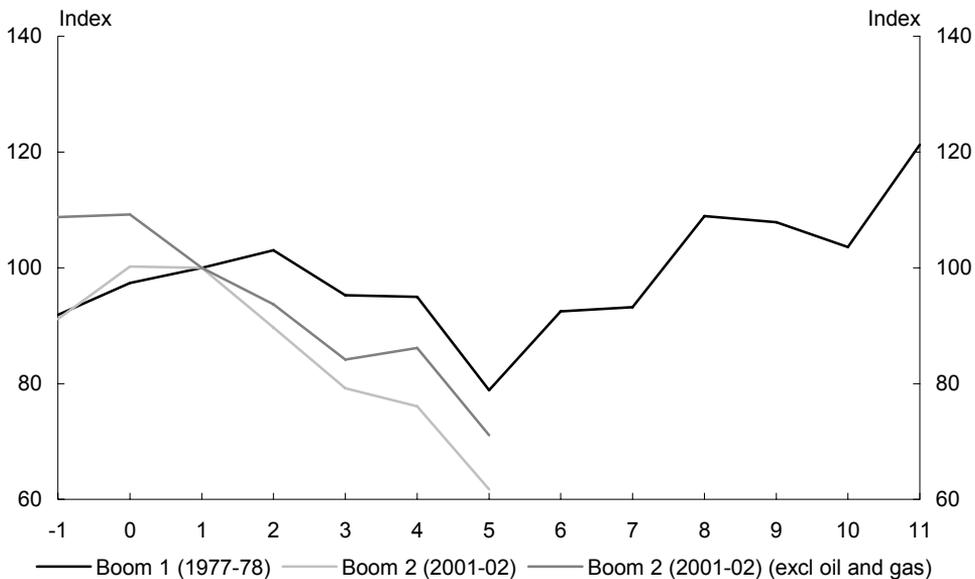
Note: Year 1 = 100 each boom (the first year of double-digit investment growth).
Source: ABS National Accounts, ABARE, and authors' calculations.

While we have isolated some significant factors that help explain recent productivity outcomes, it could be argued that at any time some industries are experiencing poor productivity growth while others experience strong productivity growth, leading to around average productivity growth. However, the effect of mining and construction

seems to be relatively large compared with history. Moreover, the current unusual circumstances surrounding the mining boom are also being reflected in strong public revenues and this may be part of the explanation for why employment growth in the non-market sector, particularly in the health and community services industry, has been strong.[11] In combination, these factors go at least some of the way to explaining recent labour productivity outcomes.

Summary

Labour productivity trends over recent years have been unusual. There are a number of factors at play that partly explain the unusually low growth in labour productivity.

First, low relative labour costs in mining and construction industries (reflecting a rapid increase in the price of their output) are encouraging very strong demand for labour in these sectors. Moreover, output growth in the mining sector has been weak due to a combination of declining oil and gas production and what appear to be long lags between increases in inputs in the mining sector and stronger output growth.

Second, the non-market sector accounted for a larger-than-average proportion of growth in employment in 2005-06. As this sector's measures of productivity are not reliable, the strong employment growth in this sector may have been confounding the overall productivity picture.

This suggests that because of the unusual circumstances surrounding the economy, changes in productivity have been difficult to interpret. This also suggests that it is too early to read much into the slowdown in productivity over recent years.

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11 Health and community services accounted for 39 per cent of the total increase in hours worked in the non-market sector over the past two financial years, with property and business services accounting for a further 36 per cent.

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APPENDIX A

Cobb-Douglas decomposition of productivity growth

We assume that in the long run output can be represented by a Cobb-Douglas production function, with constant returns to scale and steady, exponential technological change over time (1).[12]

$$Y_t = A K_t^\alpha L_t^{(1-\alpha)} e^{\delta t} \tag{1}$$

Here Y is output, L is labour input, K is capital input, α is the importance of capital in the production process (and in a competitive economy, it is capital's share of national income) and δ is the exogenous rate of technological change. We can rearrange (1) to express labour productivity ($P = Y/L$) in terms of the capital-labour ratio ($\Gamma = K/L$) and the technology available at a given point in time (2).

$$P_t = A(\Gamma)^\alpha e^{\delta t} \tag{2}$$

Taking logs of (2) yields the following linear relationship between the log levels of output, labour, capital and technology (3).

$$p_t = a + \alpha k_t + \delta t \tag{3}$$

Here p is the log of productivity, and k is the log of the capital-labour ratio.

We estimate (3) using quarterly data. Our measure of productivity is the ABS index of GDP per hour worked. For the capital-labour ratio, we take the ratio of a capital services index for the whole economy derived from the ABS market sector capital services index and the ABS index of hours worked in the whole economy. To reflect the observed patterns of medium-term productivity growth rates, we allow for breaks in the trend rate of technological growth in December 1981, June 1990 and September 2000.

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12 In estimation, the assumption of constant returns to scale was tested and accepted by the data. The model also assumes constant capital and labour elasticities of output (and constant capital and labour shares of income).

Table A1 decomposes the estimated productivity growth between these periods in terms of the contribution of capital deepening and technological progress (interpreted as growth in multi-factor productivity in the table).

Table A1: Decomposing medium-term productivity growth

	Capital deepening	Contribution of capital deepening α = 0.32	Multi-factor productivity growth	Labour productivity growth
Sep 1978 to Dec 1981	2.0	0.6	1.1	1.7
Dec 1981 to Jun 1990	1.1	0.3	0.5	0.9
Jun 1990 to Sep 2000	1.9	0.6	1.6	2.2
Since Sep 2000	2.5	0.8	0.9	1.7

Source: Authors' calculations.

Chart A1 compares the actual log labour productivity with our estimates and shows that in recent quarters, actual productivity levels have been below those implied by the historical experience.

Chart A1: Actual and predicted log productivity
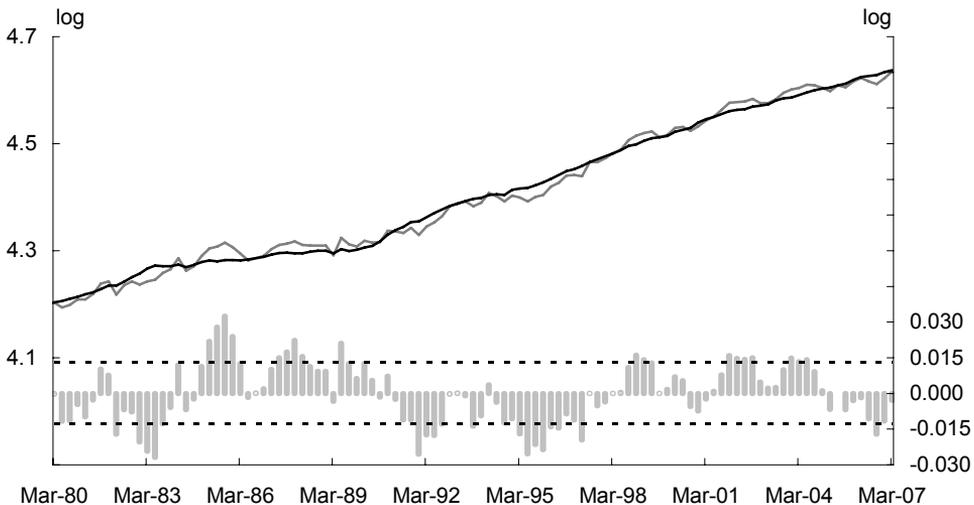
Source: ABS National Accounts, authors' calculation. The top panel, against the left axis, shows the predicted values (dark line) and actual outcomes (light line). In the bottom panel, represented against the right axis, the equation's residuals (difference between actual and predicted outcomes) are shown as the bars and its standard error is shown as the broken lines.

Productivity and the capital-labour ratio wander over time. Therefore, to maintain the long-run relationship, we would expect these recent deviations from this relationship to affect the subsequent rate of growth in labour productivity. This suggests estimation of a short-term equation within an error-correction framework. Short-run growth in labour productivity will differ from this long-run linear trend according to the stage of the business cycle. For example, during economic slowdowns firms hoard labour to

mitigate hiring and firing costs and retain firm-specific skills. Alternatively, the economy may experience pro-cyclical short-term technology shocks. As an indicator of the business cycle, we use quarterly changes in the capacity utilisation measure published by the National Australia Bank.

Chart A2 compares the actual quarterly changes in log labour productivity (that is, quarterly growth rate in productivity) with our estimates and shows the difference between these two series. It appears that in recent quarters, actual productivity growth has been somewhat below what would be implied by the model, but these differences have usually not been significant.

Chart A2: Actual and predicted differences in log productivity
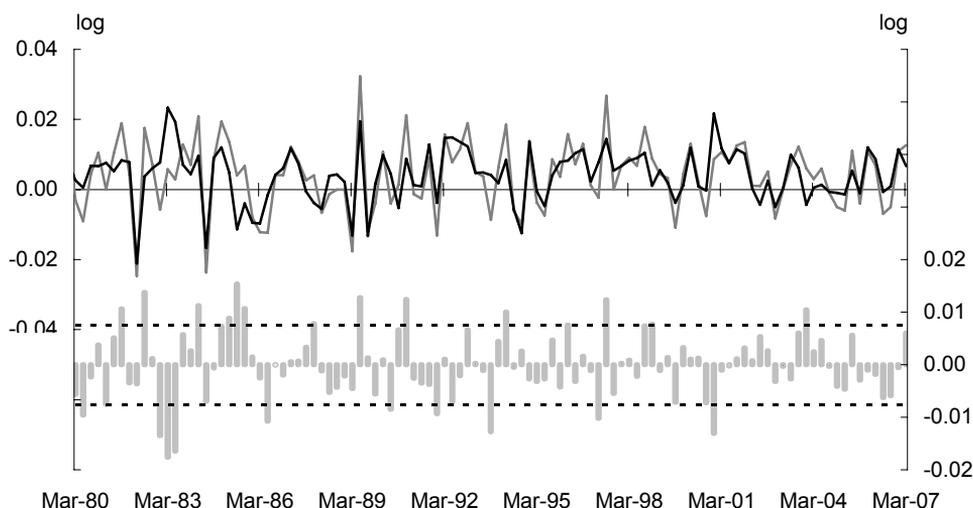
Source: Authors' calculations. The top panel, represented against the left axis, shows the predicted values (dark line) and actual outcomes (light line) for the equation, in terms of log differences. In the bottom panel, represented against the right axis, the equation's residuals (difference between actual and predicted outcomes) are shown as the bars and its standard error is shown as the broken lines.

APPENDIX B

Labour demand equation

We continue to assume that in the long run, output can be represented by the Cobb-Douglas production function (1).

$$Y_t = AK_t^{\alpha} L_t^{(1-\alpha)} e^{\delta t}$$

We assume that the representative firm uses this production function to maximise profit, Π, subject to the price it receives for its output (denoted ξ) and the ones it has to pay for the inputs (wage, W, for the use of labour, and interest, i, for the use of capital). Equation (4) describes the firm's profit function.

$$\Pi_t = \xi_t AK_t^{\alpha} L_t^{(1-\alpha)} e^{\delta t}_t - W_t L_t - i_t K_t \tag{4}$$

Differentiating Π with respect to L yields the following first-order-condition (5).

$$(1-\alpha)Ae^{\delta t}_t \left(\frac{K_t}{L_t}\right)^{\alpha} = \frac{W_t}{\xi_t} \tag{5}$$

We can rearrange (5) and use (1) to solve for L. This yields the equation (6).

$$L_t = (1-\alpha)Y_t \left/ \frac{W_t}{\xi_t} \right. \tag{6}$$

Taking logs of (6) yields the following linear relationship between the levels of labour input, output and their prices (7).

$$l_t = a + y_t - \omega_t \tag{7}$$

Here l is the log of labour input, y is the log of output and ω is the log of the real wage paid by the firm.

We can estimate (7) using quarterly data. We construct a full-time equivalent employment series from the employment and hours worked series published by the ABS Labour Force Survey for the labour input. Output is GDP. For the real wage, we use a non-farm real labour cost index constructed by the Treasury.

Because labour input, output and their prices wander over time, to maintain the long-run relationship, we would expect any deviations from this relationship to affect the subsequent rate of growth in labour demand. As our interest is in the recent short-term developments, we estimate a short-term equation within an error-correction framework. This short term equation also takes account of changes in the trends in labour productivity by allowing a time trend with breaks in December 1981, June 1990 and September 2000. The results are described in the paper.

APPENDIX C

Shift-share analysis

Aggregate labour productivity is the ratio of total gross value added divided by the number of hours worked in the economy. It is a weighted average of hours worked by industry. As such, movements in labour productivity can be due to: changes in the contributions from productivity growth in each industry; the change in the share of the industry in total employment; and the interaction of these two components.

Let Y be total output, L total hours worked, Y_i be industry output, L_i be industry hours worked and s_i be the industry's share of total hours worked. So we can write economy-wide productivity at time t as:

$$\left(\frac{Y}{L}\right)_t = \sum_i \left\{ \left(\frac{L_i}{L}\right)_t \cdot \left(\frac{Y_i}{L_i}\right)_t \right\} = \sum_i \left\{ s_{it} \cdot \left(\frac{Y_i}{L_i}\right)_t \right\}$$

Hence the change in productivity between time 0 and time 1 can be written as:

$$\Delta\left(\frac{Y}{L}\right) = \sum_i \left\{ s_{i1} \cdot \left(\frac{Y_i}{L_i}\right)_1 - s_{i0} \cdot \left(\frac{Y_i}{L_i}\right)_0 \right\}$$

Now add and subtract $s_{i0}\left(\frac{Y_i}{L_i}\right)_1$ from the equation:

$$\Delta\left(\frac{Y}{L}\right) = \sum_i \left\{ \left[s_{i1} \cdot \left(\frac{Y_i}{L_i}\right)_1 - s_{i0} \left(\frac{Y_i}{L_i}\right)_1 \right] - \left[s_{i0} \cdot \left(\frac{Y_i}{L_i}\right)_0 - s_{i0} \left(\frac{Y_i}{L_i}\right)_1 \right] \right\}$$

$$= \sum_i \left\{ \left(\frac{Y_i}{L_i}\right)_1 \cdot \Delta s_i + s_{i0} \cdot \Delta\left(\frac{Y_i}{L_i}\right) \right\}$$

Further decomposing this to refer to base period productivity:

$$\Delta\left(\frac{Y}{L}\right) = \sum_i \left\{\left[\left(\frac{Y_i}{L_i}\right)_0 + \Delta\left(\frac{Y_i}{L_i}\right)\right] \cdot \Delta s_i + s_{i0} \cdot \Delta\left(\frac{Y_i}{L_i}\right)\right\}$$

$$= \sum_i \left\{\left(\frac{Y_i}{L_i}\right)_0 \cdot \Delta s_i + \Delta\left(\frac{Y_i}{L_i}\right) \cdot \Delta s + s_{i0} \cdot \Delta\left(\frac{Y_i}{L_i}\right)\right\}$$

Where the first term is the 'share' effect — the effect of changing shares in hours worked; the final term is the 'productivity' effect — the effect of changing output per hour in each industry; and the middle term is the 'interaction' effect — the contributions that cannot be decomposed into one or the other.

We can rewrite the first term to take account of relative productivity without changing the results, as the total change in shares sums to zero. The other two terms do not require adjustment.

$$\Delta\left(\frac{Y}{L}\right) = \sum_i \left\{\left[\left(\frac{Y_i}{L_i}\right)_0 - \left(\frac{Y}{L}\right)_0\right] \cdot \Delta s_i + \Delta\left(\frac{Y_i}{L_i}\right) \cdot \Delta s + s_{i0} \cdot \Delta\left(\frac{Y_i}{L_i}\right)\right\}$$

Table C1 shows the results of this exercise for all industries and for the three sectors considered in this paper.

Table C1: Industry decomposition of labour productivity growth

	2004-05			2005-06		
	Total	Productivity growth within industry	Industry share of hours worked	Total	Productivity growth within industry	Industry share of hours worked
Total Economy	**0.05**	**-0.15**	**0.20**	**1.03**	**-0.01**	**1.04**
Market Sector	**-0.26**	**-0.41**	**0.16**	**1.46**	**0.34**	**1.11**
Mining & Construction	**-0.04**	**-0.28**	**0.24**	**-0.32**	**-1.01**	**0.69**
Mining	0.06	-0.24	0.30	-0.52	-1.27	0.75
Construction	-0.11	-0.04	-0.06	0.20	0.26	-0.06
Other market sector	**-0.21**	**-0.13**	**-0.08**	**1.78**	**1.35**	**0.42**
Agriculture, forestry & fishing	0.13	0.09	0.05	0.38	0.34	0.04
Manufacturing	-0.34	-0.33	-0.01	0.29	0.32	-0.03
Electricity, gas & water	-0.05	-0.06	0.01	-0.07	-0.22	0.15
Wholesale trade	0.27	0.33	-0.06	0.15	0.18	-0.03
Retail trade	-0.05	0.03	-0.08	0.26	0.11	0.15
Accommodation, cafes & restaurants	-0.06	-0.01	-0.05	0.28	0.18	0.10
Transport & storage	0.12	0.12	0.00	0.09	0.09	0.00
Communication services	-0.11	-0.17	0.06	0.24	0.29	-0.04
Finance & insurance	-0.07	-0.10	0.03	0.22	0.12	0.11
Cultural and recreational services	-0.05	-0.03	-0.03	-0.06	-0.04	-0.02
Non-market sector	**0.31**	**0.26**	**0.04**	**-0.43**	**-0.35**	**-0.08**
Property and business services	-0.09	-0.07	-0.01	-0.10	-0.15	0.05
Government administration & defence	0.06	0.06	0.00	0.03	0.03	0.00
Education	0.43	0.30	0.13	-0.27	-0.20	-0.07
Health & community services	0.05	0.07	-0.02	-0.19	-0.12	-0.07
Personal & other services	-0.15	-0.10	-0.05	0.09	0.09	0.00

Source: Authors' calculations based on ABS National Accounts and unpublished data. Calculations are made at producer prices, and so total productivity growth rates may differ from those published by the ABS.

The financial sector in Papua New Guinea — A good case of reform

Peter Biggs[1]

This paper contains a review of the institutions, markets and regulation involved in the financial sector in PNG. An assessment is made of recent reform in the sector and some conclusions are drawn from this case regarding further reform in public policy.

These conclusions note the success in PNG in improving the financial sector: business has been revitalised with restored trust, profits and increasing services. Furthermore reforms are continuing in the sector.

There appears much to learn from the reforms of the PNG financial sector, from its genesis in crisis, the comprehensive approach to reform, and the Government setting down clear rules and roles for players, and delegating responsibility to a regulator.

Publicly available information about the sector is improving. This article is based on published material and information on websites of the Bank of Papua New Guinea and of commercial businesses in the sector.

Introduction

'The financial markets of the Pacific are underdeveloped and do not provide support for the private sector', *Swimming Against the Tide*, ADB 2004.[2]

Papua New Guinea's financial sector plays a key role in people's lives as they save for major expenses such as education, health or retirement or as they strive to expand their incomes and businesses. More generally a sound financial sector is an essential foundation for a market economy, such as PNG, to prosper in good times and overcome bad times.

Recent years have seen profound changes in PNG's financial markets. This article discusses those changes and what could be learned from them. Relative to the rest of the economy, the financial sector contributes less than 4 per cent of GDP, however reform in the sector is bringing encouraging results.

This article reviews the institutions, markets and regulation involved in the financial sector. An assessment is made of recent reform in the sector and some conclusions are drawn from this regarding further public policy reforms.

Institutions[3]

The Bank of Papua New Guinea (BPNG) regulates commercial banks, finance companies, merchant banks, savings and loan societies, superannuation funds, life insurance companies and other licensed institutions in PNG. There are also general insurers and a stock exchange.

Commercial banks are the largest part of the financial sector. However, the BPNG reports that non-bank financial intermediaries have assets as big as commercial banks and contribute to the growth in private sector credit in PNG.[4] The BPNG is expanding its financial sector survey to include these institutions.

Banking and credit

There are four commercial banks in the PNG financial sector: Bank South Pacific Limited (BSP), Australia and New Zealand Banking Group (PNG) Ltd, Westpac Bank (PNG) Limited and Maybank (PNG) Limited. The largest of these — BSP — has

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2 See report by Holden, Bale and Holden.
3 Information for this section has been obtained from www.bankpng.gov.pg, www.bsp.com.pg, www.posf.com.pg, www.nasfund.com.pg, www.anz.com.au/png, www.westpac.com.pg, www.maybank2u.com.my and www.iccc.gov.pg.
4 Bank of Papua New Guinea, *Quarterly Economic Bulletin*, June 2006.

around 40 branches throughout PNG, and a branch in Niue and has recently acquired other banks in Fiji and Solomon Islands. ANZ and Westpac, subsidiaries of Australian banks, operate some nine and 15 branches respectively in PNG. Maybank, a subsidiary of a Malaysian bank, has two branches in PNG.

Table 1: PNG commercial banks' measures of size, October 2006

Commercial banks	Assets per cent of total	Deposits per cent of total	Lending per cent of total	Service points: branches and ATMs (no.)
BSP	53	53	48	52
ANZ	29	30	32	13
Westpac	16	15	19	19
Maybank	2	1	1	2
Total Kina million	7,172	5,054	2,348	-

Source: BPNG, *Statistics Update*, Volume 6 No. 24.

Other deposit-taking institutions include 21 savings and loan societies and 10 licensed financial institutions. Savings and loan societies are mainly linked to groups of employees, or are regionally based. Licensed financial institutions include credit providers that also provide limited deposit facilities such as term deposits and some microfinance entities.

There are also some very small microfinance groups that are not presently covered by the prudential regulator.

While not a licensed deposit-taking institution, PNG Government's Rural Development Bank lends to rural and regional borrowers from capital provided by the Government.

Regulation of banking is done under the Banks and Financial Institutions Act 2000 and the Savings and Loan Societies Act 1995. The BPNG — the central bank and major PNG financial regulator — is established under the Central Banking Act 2000 as an independent agency with defined statutory roles so that it operates independently from the day-to-day influences of government.[5]

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5 For the advantage of the people of Papua New Guinea, the objectives of the Central Bank are:
   (a) to formulate and implement monetary policy with a view to achieving and maintaining price stability;
   (b) to formulate financial regulation and prudential standards to ensure stability of the financial system in Papua New Guinea;
   (c) to promote an efficient national and international payments system; and
   (d) subject to the above, to promote macro-economic stability and economic growth in Papua New Guinea.

Box 1: Bank reconstruction

A major bank reconstruction in PNG followed unsound conditions in a government-owned bank and a nationally owned commercial bank in the late 1990s and early 2000s. Attempts to recapitalise the nationally owned Bank South Pacific (BSP) had not brought success and the larger recently government corporatised Papua New Guinea Banking Corporation of (PNGBC) was in poor shape. The central bank removed its board in 2001 and the Government offered 51 per cent of the ownership of PNGBC to private buyers. This privatisation led to a domestic consortium of financial institutions amalgamating BSP and PNGBC to form a publicly listed BSP on the Port Moresby Stock Exchange with a minority Government holding of almost 25 per cent of the shares. The Government's motor vehicle insurance company (MVIL) owns a further 12 per cent.

The bank reconstruction occurred when the regulations empowering the central bank as the banking regulator had been reformed to give it clear roles as an independent authority. This reform, the reform of the superannuation legislation and the establishment of the stock exchange created conditions that facilitated the bank reconstruction.

In the reformed environment the BSP emerged as a bank with a sound governance structure operating under the prudential oversight of an independent regulator away from the political pressures of the day. The new board and managers of the bank are required to meet the 'fit and proper person' test and to meet the prudential standards of the banking regulations in their daily operations. Furthermore the bank has to meet the public reporting requirements of the stock exchange on its financial activities and its shareholding structure. The bank's dealings are thus open to direct scrutiny by the public and its shareholders, away from the damaging directions that a government can impose on banks.[6]

At the time BSP was listed on the Stock Exchange, the Government was putting in place a fiscal strategy to limit the growth of its debt and its need to borrow. Implementing this has led to a more stable economic policy environment in PNG and, with favourable commodity prices, BSP has prospered. At the end of 2005 it had total assets of K2.95 billion and has gained a credit rating of B+ Stable from Standard and Poors. As a sound bank, BSP is using its position to lend more to support private business growth in PNG and to increase the access that it provides to depositors. The BSP has now started to expand its operations in PNG, has invested in PNG Microfinance Limited and owns and operates banks in Niue, Fiji and Solomon Islands.

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6   For information on the record of government failure in banking see the World Bank's report on *Finance for Growth*.

Superannuation

PNG has 10 authorised superannuation funds, 10 licensed trustees, 2 licensed investment managers, and 7 licensed fund administrators. The Public Officers Superannuation Fund[7] (POSF), and the National Superannuation Fund (NASFUND) are the two largest authorised funds with over 86,000 members each and net assets of K1.517 and K851 million respectively at the end of 2006. Regulation of superannuation is done by the BPNG under the Superannuation (General Provisions) Act 2000 and the Superannuation Regulation 2002.

Life insurance

There are five licensed life insurance companies: Kwila Insurance Corporation Ltd, Life Insurance Corporation (PNG) Ltd, Workers Mutual Insurance (PNG) Ltd, Pacific MMI Insurance Limited, and Capital Life Insurance Company Limited, formerly Pan Asia Pacific Assurance (PNG) Ltd.

Regulation of life insurance by the BPNG is done under the Life Insurance Act 2000.

General insurance

The general insurance industry includes 12 insurers, 6 brokers, 5 loss adjusters and 1 reinsurance company. Companies providing general insurance in PNG include QBE Insurance (PNG) Limited, American Home Assurance Co, Tower Insurance Limited, Pacific MMI Insurance Ltd, Mitsui Sumitomo Insurance Co Ltd and the Government-owned Motor Vehicle Insurance Limited (MVIL) which provides compulsory third party motor vehicle insurance. For 2005 the net worth of the general insurance industry was reported as K292 million with total premiums of K201 million.[8]

Regulation of general insurance is done by the Insurance Commissioner under the Insurance Act 1995.

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7   In June 2007 the name of the POSF was changed to Nambawan Super Limited.
8   Details of the general insurance industry have been released recently by the Independent Consumer and Competition Commission (ICCC).

Box 2: National Provident Fund restructure

The National Provident Fund (NPF) was established in 1982 under the National Provident Fund Act 1982 to provide mandatory retirement savings for employees in companies with more than 20 employees. The NPF Board included representatives of the government and was subject to ministerial investment guidelines. The NPF was required to report annually to the Parliament and was subject to audit by the Auditor-General's office, but was not subject to formal supervision. By the late 1990s concerns were being raised about the NPF's exposure to the PNG government, real estate and mineral sectors.[9]

During 1996–97, the NPF approved large illegal borrowings from foreign and domestic commercial banks to finance acquisition of equity (mostly in mining companies), a land purchase, and the construction of a large commercial building. With adverse economic conditions NPF became overburdened by its debt with estimated cumulated losses of K153 million, and a restructure package was legislated in the National Provident Fund (Financial Reconstruction) Act 2000. This involved :

- member account balances being written down by 15 per cent;

- a quarterly government grant to NPF of K1 million, indexed to the CPI, until 2016; and

- an additional employer levy of 2 per cent (ceased 31 July 2004).

Also, interest credited to member accounts in 1998 was reversed as the profit and loss statement for that year was found to be incorrect so that the average effective write-down on members' accounts was about 18 per cent.

The National Provident Fund (Financial Reconstruction) Act 2000 also provided retrospective authority for state borrowings from the NPF through nominee borrowers and conversion of those borrowings into inscribed stock (long-term bonds) issued to the NPF. In May 2002 the renamed NPF — as the National Superannuation Fund (NASFUND) — became the first superannuation fund to comply with the new superannuation legislation.

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9   Further details about the NPF's investments are presented in BPNG's *Money and Banking in PNG.*

Box 2: National Provident Fund restructure (continued)

Building on the reforms begun in mid-1999, the restructure package, and wide-ranging improvements in governance, NASFUND returned to profitability. The resulting turnaround in financial performance between 2000 and 2003 was impressive. Outstanding debt was eliminated, and net assets grew from K223 million in 2000 by an average of 26 per cent a year, while net after-tax profits jumped from K16 million in 2001 to K53 million in 2003, enabling a rebuilding of reserves and a resumption of interest credits to member accounts.[10] NASFUND membership has increased and net assets have continued to grow to reach K851 million by December 2006.

Markets

Financial markets in PNG have been evolving from the structure common in the Pacific where Australian commercial banks predominate.[11] Not only is domestic banking dominated by a PNG-owned bank but other developments are occurring so that non-banking institutions provide financial services covering savings, lending, securities, foreign exchange, money transfer, funds management, insurance and pensions.

Savings

Financial institutions supply a range of savings services in PNG.

The commercial banks offer transaction and savings accounts and these provide for the bulk, over 90 per cent, of reported deposits by depository institutions. Savings and loan societies account for almost 4 per cent of reported deposits and micro finance less than 1 per cent. Finance companies and merchant banks offer term deposits and non-bank account services in which they hold almost 3 per cent and 2 per cent of reported deposits respectively. Deposits in the banking institutions have grown in recent years as the state of the economy has improved, with a rise in the level of deposits from 23 per cent of GDP in deposit accounts in 2003 to a level of 35 per cent in late 2006. However, this level remains below that of other Pacific countries such as Fiji, Samoa and Vanuatu.

The BPNG reported that weighted average deposit interest rates paid by commercial banks averaged 1.1 per cent in the third quarter of 2006 per annum, ranging from

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10 In 2004 the IMF provided a comprehensive assessment of PNG's financial reform of pension funds.

11 Holden, Bale and Holden characterise financial markets in the Pacific in this way.

0.43 per cent for cheque accounts to 7.9 per cent for term deposits longer than one year. Since the latter part of 1999 interest rates have generally trended downwards, although 182-day Treasury Bill rates spiked markedly in 2003 (see Chart 1). Savings and deposit rates are all low historically and in comparison with the central bank's indicator, the Kina Facility rate of 6 per cent. Interest rates have shown some reflection of the Treasury Bill rates during the last 10 years.

Chart 1: PNG selected interest rates
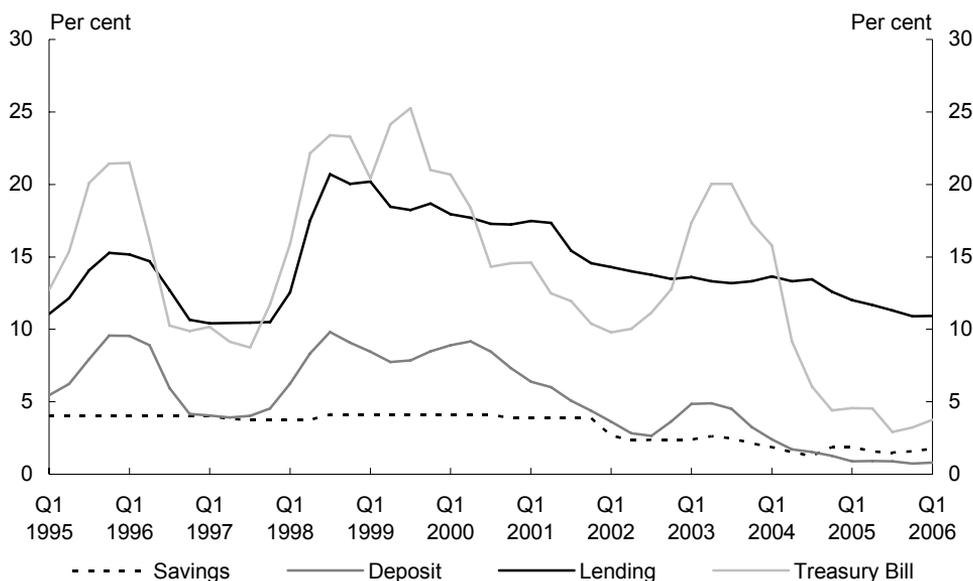
Source: International Financial Statistics.

The PNG superannuation funds provide another major repository for savings. These funds now hold over K2 billion in accumulated savings for their members from largely mandatory superannuation contributions and earnings. This amount is about 40 per cent of the value of deposits in depository institutions. The superannuation funds POSF and NASFUND credited their members' accounts with an average nominal return of 14.6 per cent annual for each of the five years 2001 to 2005.[12]

Competition by the PNG financial sector for savings can occur among the banks savings and loan societies, and those licensed financial institutions such as microfinance groups that take deposits. Less directly it can also occur among the above group and the super funds and the securities markets for those savers who can access such other forms of licensed financial services.

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12 PNG superannuation funds operate accumulation funds for their members with the accumulated savings being paid out as a lump sum on termination of membership; they do not generally offer pensions to their members. Some funds administer grandfathered government pension schemes for a limited group of public officers.

Box 3: Microfinance in PNG

There have been various initiatives to increase access to both saving and lending services to people in PNG who have difficulties in accessing other financial services. Initiatives taken several years ago are discussed in the BPNG book *Money and Banking in Papua New Guinea*.

More recent initiatives include the establishment of two licensed institutions, PNG Microfinance Ltd and Wau Microfinance. The former is a 60 per cent owned subsidiary of PNG Sustainable Development Program Limited in which BSP owns 40 per cent. It operates five branches and an agency in two provinces with over 46,000 deposit accounts in total. Wau Microfinance operates in Wau and Lae and was developed with support from the Asian Development Bank, the Australian Government and commercial banks in Papua New Guinea.

One of these microfinance institutions now reports to the BPNG and by December 2006 its assets of had grown to K31 million from just under K6 million in May 2005.

Other initiatives to expand access to microfinance services include support for 'grassroots microfinance initiatives' in Bougainville with support from the Australian Government.

For savers in PNG, improving regulation and restructuring financial institutions in banking and superannuation have restored soundness to much of the financial sector and its capacity to increase financial services across PNG. Such soundness has restored business confidence in PNG's financial institutions, which is essential for the sector to operate effectively.

The financial sector reforms and those in competition policy are bringing more publicly available information about financial institutions and products to savers and investors in the financial sector. This helps them make sound choices about where to save and invest.

New entrants such as the Nasfund Contributors Savings and Loans Society, established by NASFUND, and PNG Microfinance Ltd, established by PNG Sustainable Development Program Limited, are examples of legitimate competition to increase the range of options open to savers.

'Fast money' schemes and other scams of various forms are not part of the financial sector in PNG. Under the reformed legislation, the BPNG provides information and

takes action to drive out such schemes so as to help savers avoid losing their money, as some have already done.[13]

Securities

The stock exchange is run by a private company Port Moresby Stock Exchange Limited (POMSoX) and lists public companies some of which are also listed on the Australian Stock Exchange. There are two share brokers who are members of the exchange and in 2005 some 15 companies were listed. The stock exchange operates under the Companies Act 1997 and Securities Act 1997 and its rules are used under licence from the Australian Stock Exchange.

The market for government securities is operated by the BPNG. In 2005 Treasury Bills to the value of K1.94 billion were on issue as were inscribed stock (government bonds) of maturities up to 10 years to the value of K1.57 billion. Information on this market is made available on the Government's Treasury website and by the BPNG through its website. The market has been restricted largely to wholesale activity. PNG financial institutions are holders of a large proportion, around 85 per cent of the government securities on issue domestically.

The market was described in the PNG 2007 Budget in the following terms, 'PNG has a rudimentary primary market for Treasury Bills and Inscribed Stock, with weekly competitive auctions of Treasury Bills and Central Bank Bills, and monthly competitive auctions of Inscribed Stock. However, there is almost no secondary market, and no effective repo market.'[14]

There are some moves being considered to expand the domestic government debt market as explained in the PNG 2007 Budget, including a pilot listing of some Government debts on the Port Moresby Stock Exchange.

Lending

There has been an increase in lending during the last two years along with growth in the economy and more stable macro policy conditions (see Chart 3). However, as deposits have been growing more rapidly there is a capacity for lending to increase more rapidly. The ratio of domestic credit (provided by the financial sector) to GDP has been around 22 to 24 per cent of GDP in recent years. Other Pacific countries such

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13 As BPNG pointed out in October 2006, it behoves others also to take a stand against such schemes.

14 The 2007 Budget Volume I also reports the establishment of a Treasury/BPNG project team to implement improvements to develop the market for inscribed stock.

as Fiji and Vanuatu have ratios almost double that of PNG, and New Zealand and Australia have ratios twice as high again.

Interest rates on lending declined in 2005 and fell further in late 2006 to reach a weighted average level of 10.4 per cent in the third quarter (see Chart 1). Consistent with this, the BPNG reports the annualised growth in largely private domestic credit in the 12 months to September 2006 being 35.4 per cent.

Chart 2: PNG selected interest rate margins
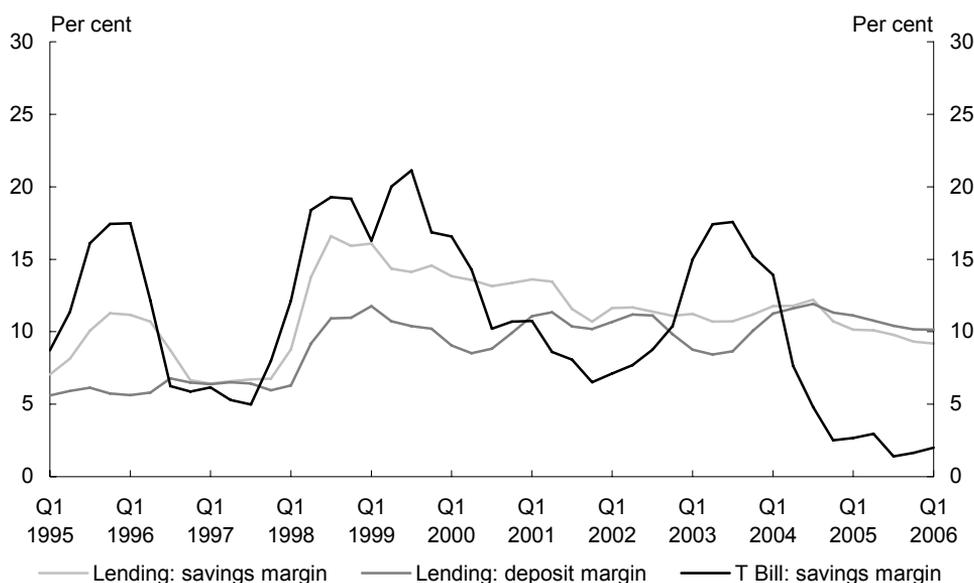
Source: IMF International Financial Statistics.

Margins between lending rates on the one hand, and rates paid for funds in savings accounts and term deposits on the other, are lower than they were in the late 1990s (see Chart 2). However, these margins are still above the levels achieved earlier in the 1990s. This suggests there is still scope to improve the performance in the financial sector, particularly in the competitiveness of savings and loan products.[15]

In the last few years we see low rates for Treasury Bill, savings and deposit rates below the Kina Facility rate, which have been associated with a low margin between the Treasury Bill rate and the interest rates offered for savings. Commercial banks are the major holders of Treasury Bills and maintaining competitive access to the Treasury Bill market will be important in keeping this margin low if Treasury Bill rates increase to the Kina Facility rate. The BPNG announcement on 13 April 2007 to reduce the

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15 Conditions for business may have to be more conducive to new entrants and business expansion for this to occur; see for example Faal or Kavanamur, Yala and Clements.

minimum bid in Treasury Bill and Inscribed Stock auctions from K1 million to K100,000 should help foster this competition.

Foreign exchange

Under the floating exchange rate, the value of the Kina against the US dollar is set by the activity of commercial and retail buyers and sellers of foreign exchange. The BPNG uses market operations to provide some stability to the Kina exchange rate, and under the current exchange control regulations PNG banks are authorised dealers for foreign currencies in PNG. Exchange controls were liberalised in 2005 to provide exemptions from central bank approval for a range of transactions.

As noted in the PNG 2007 Budget the foreign currency market is relatively illiquid, and there are no currency swaps or other sophisticated financial instruments available that can be used to hedge financial risks.

The margins between the buy and sell rates for the Kina appear high relative to those offered for other currencies, which is consistent with a thinly traded market for foreign exchange.

The volume of trade in the foreign exchange market may well be limited by arrangements for payment of mineral and petroleum taxes in US dollars rather than in Kina.

Competition

As can be seen from the above, there are relatively few organisations supplying financial services in the PNG financial sector. In this environment it is likely that the competitive pressure is relatively light. Retail foreign exchange rates show that the margins in that market are high relative to the margins on rates elsewhere, suggesting limited competition in that market. Similarly, the margins between lending and deposit rates are higher than they have been in earlier periods and these could be expected to decline as increased competition occurs in the markets for deposits and for lending.

The Independent Consumer and Competition Commission (ICCC) is currently conducting a review of the general insurance industry in Papua New Guinea. The involvement of this organisation in the financial sector could be an important influence in helping to encourage a regulatory climate that not only ensures prudential soundness, but also fosters competition to ensure the financial industry operates and develops efficiently.

Regulation and reform[16]

Major reform of the financial sector was prompted by the financial crisis and near collapse of some major financial institutions in the 1990s. Many people lost wealth and their trust in the financial system. This, combined with a depreciated currency, rising public debt and low levels of foreign reserves, led to demands for reform.

Ministerial leadership in the PNG Government commenced the structural reform, drove it through parliamentary processes and marshalled PNG resources and other assistance to develop and implement detailed policy changes. In its resolve to reform the regulatory structure the Government was supported with finance and technical assistance from external lenders and donors.

There were three key areas of reform: (i) the central bank's role; (ii) government fiscal policy; and (iii) superannuation legislation and restructuring.[17]

Central bank role

The reform of the central bank's legislation gave it an independent role as the monetary policy authority and financial regulator. Importantly, with its unambiguous role as financial regulator it used its authority to improve the governance and performance of the PNGBC (see Box 1) and savings and loan societies. The central bank was also in a strong position as monetary policy authority which helped it to establish a sound macroeconomic environment. Furthermore the limitations on its role as lender to the government helped improve fiscal policy.

Fiscal policy

Government policy to adopt a medium-term fiscal strategy, to limit the increase in government debt and to insert borrowing restrictions in the Central Banking Act 2000 through a limit of K100 million on a temporary advance facility and preclude central bank financing of government budget deficits, reduced the scope for excessive borrowings. It also set the basis for an improved public debt management strategy and the creation of a broader market in longer term public debt securities. The improved fiscal policy of government and the central bank's monetary policy created a more

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16 While the BPNG is the predominant regulatory agency in the financial sector, the Insurance Commissioner and his office have a role in regulating general insurance, and other regulators such as the Independent Consumer and Competition Commission and the Investment Promotion Authority can also impact on the establishment and operations of businesses in the financial sector.

17 Satish Chand, in his 2007 paper on governance for growth, notes government initiatives that had a critical role in the recuperation of the financial sector.

stable macroeconomic environment to increase trust in financial assets and the business environment for the financial sector.

Superannuation reform

The general reforms of superannuation legislation and the restructuring packages of the NPF (see Box 2) reinvigorated the superannuation industry and set it in a new direction.

At the end of the 1990s PNG's compulsory pension and retirement savings schemes were suffering from mismanagement at both the government level and the fund management level. A broad reform was begun to bring in general superannuation legislation to cover such schemes. This legislation set down principles for continuing mandatory superannuation for employees (with some exceptions) with these principles applying across all funds and to public and private employers. The key features of the superannuation legislation are that it requires:

- mandatory participation in licensed corporate accumulation funds by employers and employees;

- that these funds are to be managed by trustee companies which are responsible for proper appointment of investment managers and fund administrators; and

- that the funds be under the prudential supervision of a superannuation regulator, the central bank — the BPNG.

    – The BPNG authorises the establishment of new funds and issue of annually renewable licences for trustees, fund administrators, and investment managers. It also has the power to obtain any information about the affairs of the funds, intervene in the management of the funds in cases of wrong-doing, and enforce sanctions and penalties.

    – In its authorisation the BPNG applies a 'fit and proper person' test to members of a fund's board and management.

The requirement that only corporate entities can be licensed under the Act and the separation between, and outsourcing of, investment management and fund administration have erected barriers against political interference, and thereby provide better protection of members' funds.

Under this legislation and supervision members of the fund have a separately identifiable interest in the fund. The funds are required to report publicly their operations and details of their assets and liabilities and to follow proper business principles in their dealings. With these arrangements and some competition between

the funds for members, there are incentives for funds to behave in the interest of the members.

Commenting in 2004 on superannuation reforms, the IMF concluded that:

> The main reasons for the sharp deterioration in the financial performance of the main pension funds in the late 1990s were bad governance and inadequate supervision. Flaws in the original architecture of the pension system and excessive government influence also contributed. The near collapse of the NPF, the formation of a new government in mid-1999, and the public deliberations of the Commissions of Enquiry provided both the impetus and rationale for fundamental and far-reaching reforms. The introduction of comprehensive legislation emphasizing a strict division of labour between trustees, fund administrators, and investment managers, combined with strong and independent regulatory and supervisory powers of the BPNG, helped reduce the scope for inappropriate government intervention and fostered dramatic improvements in governance. As a result, performance improved quickly and sharply. The implications for reforms in other areas of the public sector are obvious.[18]

Consequent reform

These three areas of reform were fundamental to restructure of the local banks, improving superannuation governance and reinvigorating the financial sector more generally. These changes combined to bring about a greater separation between the government on the one hand and the central bank and the financial sector on the other. This has improved the quality of government debt instruments through limiting the scope for irregular borrowings from not only the central bank but also superannuation funds.

Positive changes in the financial sector occurred as business conditions improved, with very favourable prices for several of the commodities PNG produces and a more general improvement in the macro policy settings in PNG. Consequently, the financial performance of the banks and superannuation funds and the values of listed companies on the stock exchange have shown a general improvement over the last few years.

In the 2007 Budget the Government noted that regulatory supervision in the financial sector continues to be fine-tuned, especially in the superannuation industry. In late 2006, the Government decided on implementation of the recommendations of the Joint

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18 Further comment on the reforms can be found in the IMF 2004 report.

Superannuation Task Force, to improve and strengthen the effectiveness of the prudential regulation and administration of the superannuation industry. Some of the recommendations adopted are directed at improving prudential supervision. Others, with wider community implications, are about enforcement of employers' obligations, withdrawals of members' contributions to finance housing and requirements for superannuation funds to make annual reports and disclosures to members. Legislation to implement these changes is reported to have passed Parliament on 19 April 2007.

The Government announced that the Department of Treasury and the Bank of Papua New Guinea will further review several related issues, including extension of superannuation coverage to the self-employed and the informal sector, group cover life insurance, and the three-month waiting period for mandatory contributions.

Reform in insurance has led to prudential regulation of life insurance being done by the BPNG. A reform initiative has begun through the Insurance Commissioner to introduce legislation on general insurance contracts. However, the split responsibility can mean that one entity offering both general insurance and life insurance is covered by two regulators.

The PNG Government announced in the 2007 Budget an inquiry concerning competition and premium levels in fire and general insurance and foreshadowed the potential for undertaking regulatory reform in fire and general insurance. In March 2007 the ICCC, as part of consultations for developing reform proposals, released its review of the general insurance industry in Papua New Guinea and issues for discussion.

Other financial sector reforms have been initiated by the BPNG to improve the performance of the savings and loans societies (S&L societies). The BPNG reports that dormant S&L societies have been liquidated and their numbers have fallen from 101 in the year 2000 to 22 in 2006 while over the same time their total assets have increased from K126 million to K356 million.

Reforms that were mentioned as part of the way forward by the Governor of the BPNG in October 2006 included broadening of the foreign exchange markets to allow licensed financial institutions (non banks) to operate as foreign exchange dealers, ongoing review of the remaining foreign exchange controls and review of the Savings and Loans Societies Act 1995.

With hindsight, carrying through the financial sector reforms can be seen to be less ambitious than was originally planned; for example the restructure of the PNGBC did not involve a 100 per cent privatisation. However, the process did allow for an evolution of an acceptable reform, which in the example of the bank led to a domestically owned and publicly listed bank that is operating successfully. The

evolution of the reform in superannuation was fostered by the statutory establishment of a taskforce that consulted publicly and worked with industry, government and the regulator to bring about a necessary regulatory change. In both cases of reform the participants had an interest in seeing the reforms through and the Government had taken a stance that did not prevent, but encouraged, evolutionary change consistent with generally accepted principles that apply to an open economy like that of PNG.[19] As economic conditions remained unfavourable to PNG a strong financial imperative also kept the pressure on moving reforms ahead.

Banking sector performance since recent reforms

PNG's banking sector has been improving its performance, as data from the BPNG show (see Chart 3). The health of the sector improved as non performing loans were reduced to less than five per cent of total lending and the capital adequacy ratio rose well above the minimum requirement of 12 per cent set out in the prudential guidelines by the BPNG. This performance is favourable to those reported for other small countries such as those in the Caribbean.[20]

Chart 3: Status of Papua New Guinea's banking sector[a]
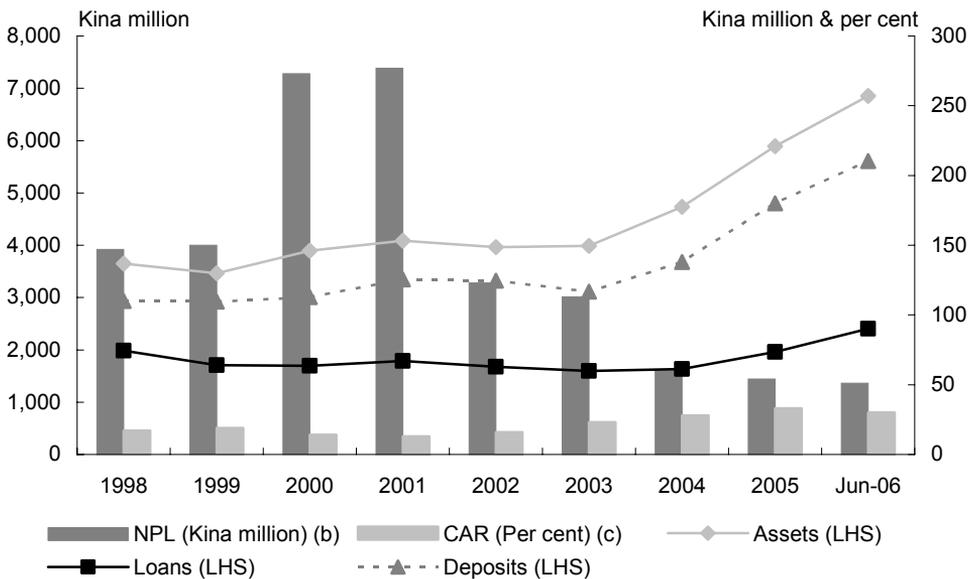
(a) Source: Bank of Papua New Guinea, 19 October 2006.
(b) Non-performing loans.
(c) CAR: Capital adequacy ratio, which is capital divided by risk-weighted assets.

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19 PNG has a floating currency, depends on exports of commodities and on average has relatively low trade barriers against imports of goods.
20 See Jingqing Chai's report.

The PNG finance sector has recently increased its level of lending to the private sector, however it remains heavily involved in financing government debt. Concerns about crowding out of private lending by the government were raised in 1998 and with holdings of government debt in 2006 being a higher share of depository corporation assets than lending to the private sector, there is still scope for government to take a part in addressing such concerns.[21]

Access to banking services has been limited in PNG and was described in 2002 along the following lines:

> 85 per cent of the population of Papua New Guineans who live in rural areas have access to basic and intermittent banking services. In the urban areas, queues at banking outlets extend to hundreds on paydays. The PNG banking sector, as of 1997, accounted for a relatively low proportion of domestic credit provided. These observations are symptomatic of communities being deprived of competitively priced banking services.[22]

Attempts have been made to expand access and competition in the banking sector including through a government sponsored initiative. In cooperation with some commercial banks and Post PNG, the PNG Government implemented a District Treasury/Finance Office Rollout Scheme that aimed to bring basic services including banking, postal and finance office access to over 80 rural districts throughout Papua New Guinea. Some 42 such offices have been opened.

There has also been expansion of banking facilities from existing institutions such as through new branches, agencies, ATMs, electronic funds transfer at point of sale and microfinance initiatives (see Box 3).

Conclusions

PNG financial markets have developed well from their pre-reform situation. The sector is profitable and beginning to expand its services across the country and the Pacific. Securities markets are developing and the Government and the financial regulator are working to further reforms to improve the sector's performance.

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21 This concern is raised in the BPNG book *Money and Banking in PNG*.
22 These comments are summarised from Satish Chand's paper, and suggest a greater level of access in rural areas than what may currently prevail.

Efficiency in the sector can be expected to increase if the good governance under existing and new regulations continues in the positive direction that has been followed. While more is to be done, regulatory reforms in the sector alone will not be the only factors impacting on its performance. As can be seen from the impact of the Government's fiscal strategy reforms, continued sound fiscal policy can be expected to be a key to the future evolution of the financial sector.

In view of the small size of PNG financial markets, ensuring strong competition to drive innovation and increase efficiency is a challenge facing the BPNG as prudential regulator and the Government when setting market access policies. Modern telecommunications are an integral part of the financial sector as can be seen from the use of ATMs, EFTPOS, credit cards, money transfer services, Internet banking, transferring market information, security and so on. The growth of the PNG financial sector is thus likely to be closely linked to developments in the country's telecommunications as well as general economic policy and conditions.

When the opportunity for reform was grasped, major advances were initiated in PNG's financial sector. This augurs well for future reforms where similar conditions exist. In this regard it is worth recalling certain points:

• The financial crisis that preceded and gave impulse to the reforms of the PNG financial sector was a high-cost genesis that might be better avoided in other situations. There may be a lesson here for reforming before a crisis arises.

• Reform by government clearly benefits from ministerial leadership. Carrying through reform also depends on the leadership and the skills of departmental policy and administrative officers. This was the case in PNG where leaders took action to reform, with assistance where they needed it.

• A well-structured and sequenced process of reform is essential. This can be seen, for example, from the initial reform of the powers of the central bank and regulator and the setting down of the main pillars of superannuation reform with a taskforce to develop the more detailed provisions in consultation with stakeholders.

• The scope of the reform was comprehensive in as much as it covered the role of the central bank, the financial regulator and specific financial business, such as banking, superannuation and life insurance. Moreover, it extended to reforms in competition policy, fiscal policy and financial responsibility. This coverage has been sufficient to set the financial sector in a sound direction. There remains, however, the challenge of more reforms that are needed to increase further the performance and competitiveness of the PNG financial sector.

- Financial sector reform shows the benefits of clear governance structures in terms of roles and responsibilities. It is important to establish in legislation, in regulations, in government strategies and behaviour, a clear delineation and separation of the roles and responsibilities of government and other participants in industry.

  - This point of government setting down clear rules and roles for players and delegating responsibility to a regulator might equally be applied to other sectors of an economy such as telecommunications.

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The Bottom Billion: Why the poorest countries are failing and what can be done about it: Some insights for the Pacific?

Terry O'Brien[1]

A noted scholar of fragile states and of African economies, Paul Collier, argues that the appropriate focus for today's development effort is those countries whose residents have experienced little, if any, income growth over the 1980s and 1990s. On his reckoning, there are just under 60 such economies, home to almost 1 billion people.

Collier argues the plight of the 'bottom billion' is that they are caught in one (or often several) of four traps; (i) conflict; (ii) mismanaged dependency on natural resources; (iii) weak governance in a small country; and (iv) economic isolation among other very poor economies, with access to big markets available only at high cost. Or as he puts it in the African context, 'landlocked with bad neighbours'.

Countries such as East Timor, Papua New Guinea and Solomon Islands suffer several of the four traps Collier identifies. The growth performance over the last quarter-century of the six Pacific economies in the bottom billion has been significantly weaker than the average of the other states in the bottom billion. Effectively aiding the Pacific's attempts to improve decades of very weak per capita income growth may benefit from the insights into novel and 'whole of government' forms of development assistance that Collier identifies for the 'bottom billion'.

Introduction

A noted scholar of African economies and fragile states, Paul Collier, has recently taken stock of the pattern of progress in reducing global poverty in a short, non-technical book, *The Bottom Billion: Why the poorest countries are failing and what can be done about it*. The book rests heavily on Collier's and others' earlier and more technical research, especially his work with Anke Hoeffler on the economics of conflict, aid, resources and fragile states. It proceeds mainly by practical and insightful narratives of the lessons learnt from the occasional success, and many failures, of work in some of the world's most stagnant economies.

Collier's book was aimed at a G-8 audience of concerned citizens and policy makers, and received its European launch at a May 2007 event on improving African economic performance, under the aegis of Germany's G-8 chairmanship. With that audience in mind, the book tends to be somewhat Africa-centred, but its insights are of much broader applicability. This article conveys some of Collier's insights, and points to their applicability to those Pacific states whose citizens are among the 'bottom billion'.

The need to focus development effort on the 'hard cases'

Collier argues that the world is no longer best pictured as 1 billion rich and 5 billion poor. Rather, it is 1 billion rich, 4 billion in countries rapidly developing and converging in living standards on the rich (even if still home to the majority of the world's extremely poor people), and 1 billion in states 'falling behind, and often falling apart'.[2]

This 1-4-1 division of the world's 6½ billion population is a useful approximation: there are about 1.1 billion people in the 30 developed countries of the Organization for Economic Cooperation and Development; and by various approaches to listing, there are almost 1 billion people in very poor countries that are not delivering much, if any, growth in per capita incomes. This leaves about 4 billion in the middle. But as we shall see, the definition of the 'bottom billion' cannot be wholly objective, and the category remains (at its margins) subject to debate and judgment.

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2   Collier (2007a), p 3.

Helping the bottom billion is not, in Collier's view, a task for which traditional Official Development Assistance (ODA) is well suited.[3] Their states are often characterised as 'fragile'; they suffer weak governance, often with a history of conflict, and with resultant limited government ability to disburse aid effectively. He argues they are subject to one or often more of four traps: conflict; mismanaged dependency on natural resources; weak governance in small countries; and being landlocked with bad neighbours.

Speaking of the European donors, Collier argues that development portfolios are generally not the best placed to lead donor governments to the most effective forms of assistance for the bottom billion, because aid ministers think in terms of increasing quantities of traditional ODA, and of targets such as the 0.7 per cent ODA/GNI ratio and the Millennium Development Goals. In contrast, the bottom billion would benefit more from the innovative 'whole of government' forms of assistance that Collier proposes, and that call on resources from other portfolios.

The 'bottom billion': defined by country, rather than individuals' poverty

One could group the world's poorest billion people in at least two ways.

- One could hypothetically search for the poorest billion individuals, by interspersing the data from national household surveys of income or expenditure, and ranking individuals from poorest to richest, so that poor individuals from many poor countries 'rub shoulders' at the bottom of the global income distribution with the very poorest individuals from middle-income countries, and even a few from developed countries.[4]

- Or one could take a national perspective, seeking the countries whose per capita GDPs are very low, and growing weakly if at all, and summing their populations across countries.

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3   ODA is defined as grants or loans to developing countries which are: (a) undertaken by the official sector; (b) with promotion of economic development and welfare as the main objective; and (c) at concessional financial terms. In addition to financial flows, technical cooperation is included in aid, but grants, loans and credits for military purposes are excluded. See the OECD's Development Assistance Committee's glossary: http://www.oecd.org/glossary/0,3414,en_2649_33721_1965693_1_1_1_1,00.html#1965422
    ODA by this definition would not include, for example, international expenditures to promote standards and codes to assist better governance, and may not include peacekeeping expenditures.

4   This is the approach taken by Milanovic (2005). It seeks to overcome various problems of gaps in national data, and lack of ready comparability among available data, among many conceptual and practical difficulties that need not detain us here.

This second approach is the one chosen by Collier, for practical reasons of policy relevance: whether a community can grow richer is only partly a function of individuals' capabilities and efforts, but substantially a function of the national policy environment. Is the country at war, or peace? Can the government supply basic infrastructure, health and education, or not? Do governance structures secure property rights, or give rein to corruption? Is the national market growing, or contracting?

Identifying the countries of the 'bottom billion': relation to 'fragile states'

Using this second approach, Collier speaks of a group of some 58 countries with a current population of 980 million who constitute the 'bottom billion'. While he does not list those countries, he argues they are distinguished by:

• low per capita income levels and weak per capita GDP growth; and

• being judged subject to one or more of the four traps.[5]

These countries tend to be small: the average population is 17 million.

The problem of the 'bottom billion' is closely related to the difficulties confronting 'fragile states', which are also broadly defined in terms of low incomes, and poor policy, institutional and governance capacities.[6] The World Bank, the African Development Bank, the Asian Development Bank and the OECD donor countries that are members of the Development Assistance Committee have all discussed the special development challenges of these weakly performing states, and offered slightly different ways of identifying them. Box 1, Figure 1 and Appendix A offer some comparison of the countries these institutions have grouped into the 'fragile state' category, and Box 2 provides a brief overview of the policy approaches suggested for aid donors to best help fragile states.

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5 Collier (2007a), pp 5-12.
6 See, for example, OECD/DAC, (2007). En route to the current usage of 'fragile states', this topic has had a rapid succession of 'politically correct' names: 'failed states', 'Low Income Countries Under Stress' (LICUS), and 'difficult development partners'.

Box 1: Listing 'fragile states': different approaches towards the 'bottom billion'?

The World Bank now identifies globally some 35 'fragile' and 'borderline fragile' states and territories, home to almost half a billion people and characterised by weak institutions, poverty and vulnerability to conflict. Operationally, these characteristics are defined by: being an International Development Association (IDA) borrower, plus suffering weak policy and institutional capacity (measured by a score below 3.2 (roughly the bottom two quintiles) on the 0-5 scale of the Bank's Country Policy and Institutional Assessment (CPIA) index. (This listing includes Timor Leste, Papua New Guinea, Solomon Islands, Tonga and Vanuatu, plus Cambodia, the Lao PRD and Myanmar in the East Asia and Pacific region.)

Other agencies that have sought to enumerate the fragile state concept have generally arrived at similar or broader lists:

- The African Development Bank, focusing just on its membership in sub-Saharan Africa, and using both the CPIA index and its own 'country vulnerability index', has added six African countries to the 21 African countries identified in the World Bank listing.

- The Asian Development Bank, focusing just on its Asia-Pacific membership, proposes an identification of 'weakly performing countries' based on its own Country Performance Assessment (CPA) system, and involving either a CPA score in the fourth or fifth quintile in two of the three most recent years, or vulnerability based on conflict or post-conflict status. The CPA for 2006 has been published, but the list of weakly performing countries is not published. We understand the Asian Development Bank's CPA and the World Bank's CPIA ratings are highly correlated, so probably much the same group of Asia-Pacific countries are identified as 'weakly performing' by the Asian Development Bank's approach as are classified as 'fragile' by the World Bank approach.

- The United Kingdom Department for International Development (DFID) (2005) includes a 'proxy list of fragile states', which it defined as countries that had appeared at least once in the fourth and fifth quintiles of the World Bank's CPIA between 1999 and 2003. That produced a list of 46 countries, home to some 920 million people, approaching in aggregate Collier's 'bottom billion' of 58 countries and 980 million. The criterion led it also to include Indonesia in its list.

Box 1: Listing 'fragile states': different approaches towards the 'bottom billion'? (continued)

The marked differences at the margins of these four listings, and with Collier's approach, can give rise to large differences in the numbers of people included, and in the 'fragile' group's measured economic growth.

- For example, the DFID list includes Indonesia, which with its population of 220 million and strong GDP growth (even allowing for the Asian financial crisis), significantly raises the group's population-weighted average per capita GDP and growth.

- Some data-dependent approaches necessarily exclude countries for which there are no CPIA or GDP measures (such as Iraq and North Korea), whereas more subjective approaches can include such countries (on the judgment that their policy and institutional capacities are obviously very low, even if not formally measured).

- Analysts usually impose some judgmental lag process on their listings, so that a country is not classified as having escaped fragility until it has sustained several years of good performance (rather than having just enjoyed the temporary fruits of a commodity boom, for example).

To illustrate the comparative economic performance of Collier's 'bottom billion', this paper uses a composite listing of 54 countries of 960 million people, and compares it with the World Bank's list of 36 fragile states of 460 million people. Figure 1 and Appendix A aggregate the listings from the World Bank, the African Development Bank, and DFID.

These classification issues are well summarised in World Bank (2007b).

Box 2: Suggested policy approaches for donors to help fragile states

OECD donor countries that are members of the Development Assistance Committee have participated in a dialogue with the World Bank, the European Community (EC) and the United Nations Development Programme (UNDP) to shape a consensus on how best to engage in fragile states. Resultant broad principles include:

1. Take context as a starting point: understand the local limits to capacity, political will and legitimacy.

2. Do no harm: for example, don't inadvertently worsen corruption or disrupt budget processes by large, uncoordinated swings in aid.

3. Establish state building as the central objective: strengthen the capabilities of states to perform their core functions and address democratic governance issues.

4. Align with local policies and/or systems: donors should use local systems for disbursements where they are satisfactory, and where not, disburse aid in a way that helps build local capacities.

5. Recognize the political-security-development nexus: fragile states need help in all dimensions, and a 'whole of government' approach among donors is likely to work best.

6. Promote coherence between donor government agencies: where possible, use joint assessments and shared strategies among donors and with host governments.

7. Act fast: take rapid action where the risk of instability is highest, but stay engaged long enough to give success a chance in what is inevitably a slow state-building process that may encounter setbacks.

8. Avoid 'aid orphans': areas characterised by low engagement and field presence.

OECD/DAC (2007).

Figure 1: Overlapping definitions of 'fragility', relative to the World Bank definition

UK Department For International Development
13 extra countries
425 million extra people

African Development Bank

6 extra countries

45 million
extra people

Asian Development Bank
'Weakly performing countries'

World Bank

Fragile and marginal fragile states

35 countries or entities
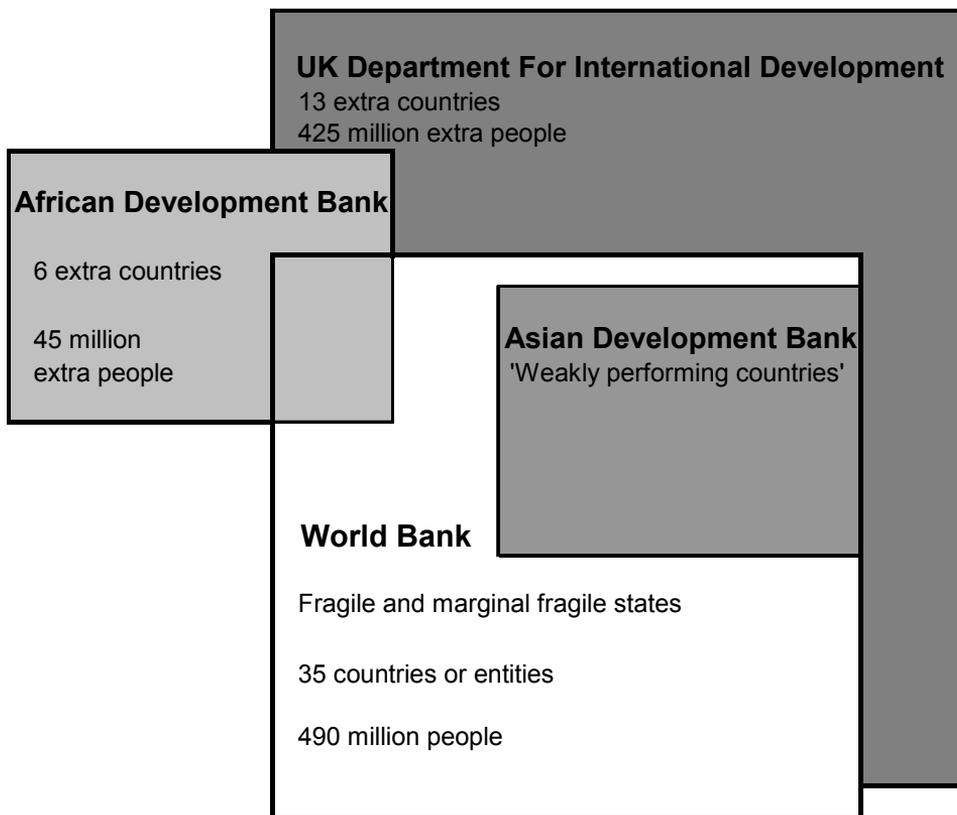
490 million people

Total: **54 countries,**   **960 million people**
Collier *Bottom Billion*:   **58 countries,**   **980 million people**

One would expect Collier's country list of 58 to include all 35 of the World Bank's fragile states, plus most of the countries added in the listings of the African Development Bank, the Asian Development Bank and DFID. He mentions examples such as Timor Leste, Fiji and PNG to illustrate his arguments, but says of the bottom billion that,

> When I want to use a geographic label for them I describe them as 'Africa +', with the + being places such as Haiti, Bolivia, the Central Asian countries, Laos, Cambodia, Yemen, Burma and North Korea.[7]

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7 Collier (2007a), p 7.

He does not, in this context, mention the Pacific, although five Pacific states are included in the World Bank's fragile state listing and six in DFID's.[8]

**Table 1: Relative growth rates of the bottom billion
(GDP per capita, PPP constant 2000 US$)**

	Top billion		Middle 4 billion		Bottom billion 54 countries composite list		Bottom half-billion (World Bank) 35 fragile states	
	$	annual % growth	$	annual growth	$	annual growth	$	annual % growth
1980	16,587		2,190		1,423		1,398	
1990	20,062	1.9%	3,086	3.5%	1,572	1.0%	1,290	-0.8%
2000	24,143	1.9%	4,025	2.7%	1,605	0.2%	1,153	-1.1%
2005	25,975	1.5%	5,190	5.2%	1,834	2.7%	1,294	2.3%
2005 as multiple of 1980	1.57		2.37		1.29		0.93	
Annual % growth, 25 years		1.8%		3.5%		1.0%		-0.3%

Notes: Per capita incomes shown above are population-weighted averages of the per capita GDPs of the countries of each income group.
 The 'top billion' are the OECD economies.
 The 'bottom billion' are approximated by the 54 economies shown in Appendix A.
 The 'bottom half-billion' are the World Bank's 35 'fragile states' shown in Appendix A.
 The 'middle 4 billion' are all other economies not included in the other two categories. (The 'middle 4' growth rates shown in this table are consistent with a grouping in the bottom billion of 54 countries. If focusing instead on a more restrictive listing of 35 fragile states, the larger 'middle' group has a slightly lower growth rate of 3.4%.)
Growth rates are geometric averages.
Source: World Bank Development Data Platform.

Income performance of the states of the bottom billion

Collier reports that since the 1970s, per capita incomes in the middle 4 billion of developing countries accelerated away from the stagnant incomes of the bottom billion in his set of 58 countries by between 2 and 5 percentage points a year, depending on the decade.[9]

Using data from 1980 to 2005, we can broadly confirm the Collier picture. Table 1 shows the average per capita income growth experience of the last quarter-century for the top and bottom billions, and the middle 4 billion.

• For the past 25 years, per capita incomes of the middle 4 billion have grown at almost double the annual rate of the top billion. While the absolute gap in per capita income has widened (from about US$14,000 in 1980 to about US$21,000

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8 The five are Papua New Guinea, Solomon Islands, Timor Leste, Tonga and Vanuatu; Kiribati is added to the DFID list.
9 Collier (2007a), p 10.

in 2005), there is a beginning of convergence (with the middle group's per capita income rising from one-eighth of the top billion's in 1980 to one-fifth in 2005). Collier notes that the current rate of sustained strong per capita income growth in the middle 4 billion is unprecedented in human history.

- For the bottom billion (as approximated by the 960 million people of the composite listing of 54 countries of Appendix A, including six Pacific states), incomes have grown at little more than half the rate in the top billion. Their living standards are still diverging from those in rich countries.[10]

- Within this illustrative 'bottom billion' set of 54 countries, for the 35 'fragile states' identified by the World Bank (home to almost half a billion people, and including five Pacific states), real income levels have fallen by more than 5 per cent in a quarter century, compared to almost 60 per cent growth for the top billion. The citizens of the World Bank's listing of fragile states could now perhaps fairly be called 'the very bottom half-billion'.[11]

- Although not shown in Table 1, the contraction of GDP per capita in the bottom billion over the last 25 years is concentrated in sub-Saharan Africa. As a group, the other bottom billion states' real per capita incomes grew a little, but either still slower than the OECD countries (if Indonesia is excluded from the bottom billion group) or somewhat faster (if Indonesia is included in the group). But in either case, incomes in the 'non-African, bottom billion' states grew much less than in the countries of the 'middle 4 billion' people.

Collier stresses that the problem of the 'bottom billion' is not the 'quality of growth' (for example, the inequity with which the fruits of growth are distributed), it is no growth.[12] Available data probably understate the problem: we lack internationally comparable GDP data for some of the poorest or most turbulent countries (such as North Korea and Iraq). Moreover, weak growth in the measures of national income that are available has parallels in social indicators: progress towards the Millennium Development Goals is disproportionately weak for the fragile states, compared to other developing countries (Table 2).

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10 Even this modest result is heavily influenced by the inclusion of Indonesia in the illustrative bottom billion listing of 54 countries. If Indonesia were instead classified in the middle 4 billion group, that group's growth rate would barely rise, but the new 'bottom three-quarter billion', minus Indonesia's 220 million people, would see their average annual per capita GDP growth fall to about zero (-0.4 per cent, to be spuriously precise).

11 The numbers are best regarded as approximate, because national accounts for many poor countries were of poorer quality, or non-existent, in the 1970s and 1980s, and the quality and coverage of Purchasing Power Parity estimates in that era were also limited. As a generalisation, coverage has been weakest for the poorest countries.

12 Collier (2007a), p 11.

Table 2: Fragile states face the largest deficit in most Millennium Development Goals

Indicator	Total in developing countries (million)	Total in fragile states (million)	Fragile states per cent share
Total population (2004)	**5,427**	**485**	**9%**
MDG1 - Poverty (2004)			
Extreme poverty	985	261	26%
Malnourished children	143	22.7	16%
MDG2 - Universal education			
Children of relevant age that did not complete primary school in 2005	13.8	4	29%
MDG4 - Under five mortality			
Children born in 2005 and expected not to survive to age five	10.5	3.3	31%
MDG5 - Maternal health			
Unattended births	48.7	8.9	18%
MDG6 - Diseases			
TB deaths	1.7	0.34	20%
HIV+	29.8	7.2	24%
MDG7 - Environmental sustainabiliy			
Lack of access to improved water	1,083	209	19%
Lack of access to improved sanitation	2,626	286	11%

Source: *Global Monitoring Report 2007*, p 13.

Traditional aid: already past the point of diminishing returns in the bottom billion?

Collier believes traditional ODA is not well suited to strengthening growth in the 'bottom billion'. Returning to his previous writings that tease out the similarities and differences between aid and oil (both being basically a source of 'sovereign rents' to governments in weak governance environments), he argues that traditional aid to African countries in the 'bottom billion' may already be at levels that produce diminishing returns. He uses the recent surge in oil prices as a natural experiment to test whether the Gleneagles G-8 promises to double aid to Africa might be beneficial. The oil price surge has already given African oil producers more resources than additional aid is likely to, while at the same time African non-oil producing countries have been hindered by high oil prices. Yet so far, there has been no difference in the economic performance of the two groups, suggesting that the four traps are sufficiently powerful to overwhelm the impact on oil exporters of additional resources.[13]

Nonetheless, Collier remains a defender of traditional ODA. Aid is better than oil, because donors' conditions on ODA expenditures (for example, auditing) and on the form of assistance (including, for example, the often-criticised use of international

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13 Collier (2007a), pp 101-2.

consultants) have added value to the flow of funds. In the 'bottom billion', he describes aid as the 'holding operation that has prevented things from falling apart'.[14]

The four traps

Why has the 'rising tide' of strong economic growth in the developing world not 'lifted all boats' in the 'bottom billion'? In Collier's view they have fallen into one or often more of four traps, and resolving their problems will require novel ways of addressing those traps.

Trap 1: Conflict

Almost three-quarters of the people in the bottom billion live in conflict or post-conflict countries. Collier reports his and Hoeffler's striking findings that conflict (both civil wars and coups) is little related to the intensity of political repression or the depth of historical grievances. ('Rebels usually have something to complain about, and if they don't, they make it up.'[15]) Rather, violence is best predicted by poverty, lack of growth, dependence on misgoverned resource wealth, and a previous history of civil conflict or coups.

At the policy level, Collier argues conflict prevention is basically trying to ease all four traps. But since conflict is persistent and many conflicts are flare-ups of previous conflicts, there is great scope for post-conflict foreign military intervention, which he argues should be: committed for a significant period (a decade or so); mandated to fight and be prepared to take casualties; and with pre-arranged obligations on the host country, such as reducing the scale of its own military while training quality police forces.

Collier uses the example of the British forces in 'Operation Palliser' in Sierra Leone as a model of how to intervene, and various Dutch, French, and African Union examples of how not to intervene.[16] He also argues that prolonged foreign intervention and small local forces are superior to relying on large local forces, which in the 'bottom billion' tend to operate as a protection racket, extorting funds from their government under implicit threat of coup. (Collier's studies also suggest some 40 per cent of the cost of large militaries in many 'bottom billion' countries is inadvertently financed by ODA (through the fungibility of financial flows)).[17]

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14 Collier (2007a), p 100.
15 Collier (2007a), p 24.
16 Connaughton (2000), pp 91-4.
17 Collier (2007a), p 103, and in more detail, Collier (2007b).

Trap 2: Mismanaged dependency on natural resources

Almost one-third of the 'bottom billion' live in countries that are resource-dependent. Collier marshals evidence that resource rent dependency in developing country conditions tends to cause 'Dutch disease'[18], corruption, malfunctions of democracy through patronage politics, and often, autocracy.

Collier notes that moves to develop natural resources in the bottom billion, to reduce consuming countries' dependency on autocratic and politically unstable producers in the Middle East, underestimate the role of resource dependency in producing autocracy and political instability: 'Becoming reliant upon the bottom billion for natural resources sounds to me like Middle East 2'.[19]

However he affirms that notwithstanding the challenges, resource-rich countries have to exploit those resources to grow. Resources are their comparative advantage, so the policy question is how best to help them reduce the risks of the resources curse.

He judges aid as 'fairly impotent' to address the resources curse directly, though it can be indirectly powerful through addressing weak governance.[20]

Trap 3: Weak governance in small countries

The World Bank defines public sector governance as 'the way the state acquires and exercises its authority to provide and manage public goods and services, including regulatory services'.[21] Weak governance capacities have bedevilled the countries of the bottom billion, and Collier argues that small, poor states heavily reliant on aid and often resource-rich, face particular governance challenges: 'The minimal state is not a viable model in the context of oil and aid; the government must transform its money into public services'.[22]

Collier argues that in such cases an important contribution to strengthening governance can come from appropriate international standards and codes, including:

• a more comprehensive Extractive Industries Transparency Initiative;

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18 'Dutch disease' is *The Economist's* (26 November 1977) memorable nickname for the tendency for large foreign currency inflows (such as from oil exports or ODA) to raise the real effective exchange rate, disadvantaging other exporters and import-competing industries. Collier argues the reason resource wealth has not had adverse political effects in, say, Norway, Canada or Australia, is that those countries had solid institutional and democratic inheritances before their largest surges of natural resource wealth; Collier (2007a), pp 42-4.

19 Collier (2007a), p 52.

20 Collier (2007a), p 107.

21 World Bank (2006), p 10.

22 Collier (2007a), p 66.

- a comparable initiative for the construction industry (particularly important given the vulnerability of this sector to corruption, and the very strong growth of ODA for infrastructure investment);

- continued roll-out of fiscal transparency standards and a charter for budget scrutiny;

- an international investment charter, working around limitations in Multilateral Investment Guarantee Agency and national risk insurance institutions and delivering on the promise of the failed OECD attempt to negotiate a Multilateral Agreement on Investment; and

- a 'post-conflict' charter for donors and the international security system.

Such developments need to be driven by civil society and governments in poor and rich countries, in Collier's view, and he argues that developed countries' non-government organisations would get better results stressing these areas than environmental and employment policies, which matter less to the 'bottom billion'.

He also argues that regional peer review arrangements to bolster applications of such codes would be valuable.[23] Fiscal codes are particularly important for resource-rich 'bottom billion' states, to help them perform the awkward reconciliation of high resource rents, low need for personal or consumption taxes, and the need for high government accountability. (The difficulty of this task is captured in Thomas Friedman's (2006) aphorism, 'no representation without taxation', also summarised in his 'first law of petropolitics': when oil prices rise, democratisation falls.)

Trap 4: 'Landlocked with bad neighbours' (or high-cost transport to large markets?)

Collier argues from his African research that a prominent trap of the 'bottom billion' is that they are landlocked with bad neighbours. Of course, being landlocked did not hurt Switzerland, but that is because Switzerland's neighbours are big, rich markets and Switzerland invested heavily in transport infrastructure. Landlocked countries in Africa are hemmed in by very poor, small markets, often in conflict, and very poorly invested in the infrastructure that would permit trade at lower costs. He argues the only landlocked African states that have overcome this geographic penalty have been those well endowed with very high value natural resources and that have enjoyed good governance. But with that exception (illustrated by Botswana), Collier argues 'If

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23 A current example of developing country peer review occurs in the New Partnership for Africa's Development (NEPAD); http://www.nepad.org/2005/files/inbrief.php.

you are coastal, you serve the world; if you are landlocked, you serve your neighbours', and are limited by their economies.[24]

There is a broader form of Collier's argument. High transport costs, from whatever source, greatly circumscribe potential growth in living standards. It is apparent from the spread of railroads in Europe and the United States in the 19th century, that as transport costs fell in each region progressively connected cheaply to larger markets, an increase in trade, specialisation and division of labour, productivity growth and income followed. Being landlocked in Africa is just one particular case of the problem of high transport costs to large markets, the maritime version of which bedevils the Pacific. Collier's focus on being landlocked, rather than at high-cost distance from big markets, perhaps explains why he defines the 'bottom billion' as being 'Africa + landlocked countries in central Asia, Cambodia etc' rather than 'Africa plus the Pacific'.[25]

Collier's recommended policy responses to the 'landlock trap' generalise well beyond Africa, and have potential application in the Pacific. He argues that to minimise the economic damage inflicted by geography, one needs a broad range of reforms. Many of these reforms will necessitate external development initiatives by donors, because the costs of initiating a regional solution are large, and the benefits are spread over many states, no one of which can capture a sufficiently large share of the benefits to justify incurring the overall cost. In more technical terms, regional public good issues and collective action problems prevent economic solutions from arising locally or spontaneously.

Minimising the disadvantages of geography requires:

- increasing neighbourhood growth spillovers (Niger can not prosper until Nigeria does);

- improving neighbours' economic policies (for example through regional peer reviews);

- lowering transport costs (or as Collier argues, improving coastal access) through transport infrastructure investments and policy reforms. Again, this may not happen without external development initiatives because of externalities;

- avoiding damage by bad policies or regulations on air travel or electronic trade. Very competitive structures in these areas may reduce the natural disadvantages of geography;

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24 Collier (2007a), pp 56-7.
25 Collier (2007a), p 7.

- encouraging migration and remittances. (That is, since it is costly to export goods, it may be more feasible to increase the mobility of people, in enlightened and mutually beneficial migration or work arrangements. Maximising the development benefits from such mobility requires the economic and financial policies that encourage remittances and business start-ups in the sending country);

- paying attention to rural development, since under the best of policies, most people in the bottom billion are going to remain rural. In their countries' special cases, the technologies for rural productivity increase may require heavy investment in local knowledge;

- trying to attract responsible foreign investment in resource development through transparency and the assistance good host-country governance can provide to maintaining a good corporate image for the resource investor;

- trying to attract aid. Collier argues that ODA ought become more heavily concentrated in higher risk, bottom billion environments, which will require higher 'governance conditionality', and higher tolerance in donor communities of the supervision costs and risks of failure of operating in fragile states. Technical assistance, often reviled as 'aid to consultants' rather than to the bottom billion, is very pertinent, given their countries' skill gaps. Recipients who understand these dilemmas and work with donors can win ODA that might otherwise go elsewhere. At present, Collier argues (particularly from his UK and EU perspective) that donor politics and NGO support for debt forgiveness, 'vertical funds' and so on are generally naive and likely to produce either avoidance of donor commitment to 'bottom billion' countries, or perverse results.[26]

Trade policies for helping the bottom billion

Collier devotes a chapter to trade policy which includes insights that:

- rich country agricultural protectionism is the worst form of 'policy incoherence' for donors who want to help the 'bottom billion'. Viewed from the objective of true economic development, it undoes the benefits of aid;

- protectionism in the 'bottom billion' occurs mainly because it is a key instrument for corruption (import licences, bribes to customs officials and so on);

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26 Collier (2007a), pp 99-123.

- regional trade liberalisation among poor countries is very damaging, leading to accelerating divergence in living standards from global trends, and trade diversion. (There are more regional trade agreements than countries, and the typical African economy is in four agreements, usually incompatible with each other;)[27]

- 'fair trade' consumer movements in developed countries are not merely a harmless form of self-imposed consumption tax; they transfer resources to poor countries only in forms less useful than ODA (for example, higher coffee prices), because they are conditional on producers continuing traditional exports.

Such thoughts lead Collier to argue that:

- it is now getting harder for the bottom billion to benefit by trade, as China and India have driven competition from the field of labour-intensive, low-cost, simple manufacturing. (This claim may only be true for a limited time — historically, countries have always moved up the 'value chain' as they became more productive, and it seems likely China and India will too);

- the 'bottom billion' need temporary protection from low-income Asia, before rich countries' protection falls so low that there is no means to achieve this. Collier favours US-style African Growth and Opportunity Act initiatives (which in the area of apparel, have increased African exports to the US by 50 per cent, because of simple and unrestrictive rules of origin). In contrast, Collier judges the EU's 'anything but arms' initiative to have been ineffective;

- given the low utility of the WTO as a bargaining vehicle to the 'bottom billion', Collier favours an unreciprocated reduction of the trade barriers against them, which he argues would be analogous to the emergence of IDA as a (near) gift to eligible countries after the recognition that the International Bank for Reconstruction and Development's post WWII design for European reconstruction would not benefit broader economic development[28];

- to the extent that he has any support for a 'big push' in ODA, he favours it being used in infrastructure (both physical and social) that would lower the barriers to the bottom billion's trade.

In his conclusion, Collier positions his views between the left (such as Jeffrey Sachs' *The End of Poverty*) and the right (such as William Easterly's *The White Man's Burden*).

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27 Collier (2007a), p 164.
28 Australia has made such an unreciprocated reduction in its barriers to 48 Least Developed Countries (see Lippoldt 2006).

He pleads that we need to focus today not on the development challenges of the past 40 years, but on the new challenges of the bottom billion who are stuck in poverty, and being left behind by the large majority of developing countries. The politics of the bottom billion's progress is 'a dangerous contest between moral extremes' in fragile states, to which rich countries cannot be bystanders. But donors need to think creatively about how to intervene with broad 'development policies', not more traditional and narrow 'aid policies'. 'In short, we need to narrow the target and broaden the instruments.'[29]

Applications in the Pacific?

An earlier *Economic Roundup* article reported that most of the Pacific economies have performed weakly over recent decades, notwithstanding high volumes of traditional ODA.[30]

Five of the Pacific countries feature in the World Bank's list of 'fragile states' (and six feature in the illustrative composite listing of 54 states in the bottom billion). Their per capita income growth over the last quarter-century has been about 3 percentage points a year lower than in countries of the middle 4 billion. Those Pacific states have been weaker by about half a percentage point than the other states we have used as an approximation to the bottom billion, but have modestly outpaced the growth of the other countries in the smaller group of the World Bank's fragile states list (Tables 3 and 4). [31]

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29 Collier (2007a), p 192.

30 Stewart (2006), pp 91-115.

31 The reason the relative performance of the Pacific states appears weaker when measured against the larger group is that, in moving from the narrow World Bank listing of 35 fragile states, home to almost half-a-billion, to any list of some 50-60 states home to the bottom billion, one adds some large states that are relatively stronger performers. For example, the DFID list includes Indonesia (Appendix A).

Table 3: Pacific and the bottom billion (GDP per capita, PPP constant 2000 US$)

	Top billion		Middle 4 billion		Bottom Billion minus Pacific six* 48 countries composite list		Pacific six*	
	$	annual growth	$	annual growth	$	annual growth	$	annual growth
1980	16,587		2,190		1,423		2,127	
1990	20,062	1.9%	3,086	3.5%	1,572	1.0%	2,027	-0.5%
2000	24,143	1.9%	4,025	2.7%	1,605	0.2%	2,440	1.9%
2005	25,975	1.5%	5,190	5.2%	1,834	2.7%	2,367	-0.6%
2005 as multiple of 1980	1.57		2.37		1.29		1.11	
Annual % growth, 25 years		1.8%		3.5%		1.0%		0.4%

* The Pacific six are Papua New Guinea, Solomon Islands, Timor Leste, Tonga, Vanuatu and Kiribati.

Table 4: The Pacific and World Bank fragile states (GDP per capita, PPP constant 2000 US$)

	Top billion		Middle 4 billion		WB fragile states minus Pacific five* (30 countries)		Pacific five*	
	$	annual growth	$	annual growth	$	annual growth	$	annual growth
1980	16,587		2,130		1,398		2,100	
1990	20,062	1.9%	2,963	3.4%	1,290	-0.8%	2,004	-0.5%
2000	24,143	1.9%	3,824	2.6%	1,153	-1.1%	2,408	1.9%
2005	25,975	1.5%	4,896	5.1%	1,294	2.3%	2,341	-0.6%
2005 as multiple of 1980	1.57		2.30		0.93		1.12	
Annual % growth, 25 years		1.8%		3.4%		-0.3%		0.4%

* The Pacific five are Papua New Guinea, Solomon Islands, Timor Leste, Tonga and Vanuatu.

Throughout the Pacific, countries face the pervasive challenges of separation by high transport costs from large markets, weak governance, sometimes high dependency on natural resources, and in some cases, periods of conflict or coups.

Collier's diagnoses of the policies required to help the bottom billion are thought-provoking for the Pacific:

- challenging the Pacific countries to develop policies to minimise the adverse effects of geographic barriers to growth, and manage the governance challenges of resource revenues and aid flows;

- challenging donors to sustain patient 'whole of government' commitment to helping strengthen governance and repair breakdowns in security; and

- encouraging greater development of international codes to help strengthen countries' own performance in mining and construction industry transparency and fiscal transparency.

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APPENDIX A

Components of the bottom billion

Region	World Bank fragile & marginal fragile		African Development Bank		UK DFID	
	Country	Population (Million)	Country	Population (Million)	Country	Population (Million)
Sub-Saharan Africa	1 Angola	15.9	1 Angola	15.9	1 Angola	15.9
	2 Burundi	7.5	2 Burundi	7.5	2 Burundi	7.5
	3 Central African Republic	4.0	3 Central African Republic	4.0	3 Central African Republic	4.0
	4 Chad	9.7	4 Chad	9.7	4 Chad	9.7
	5 Comoros	0.6	5 Comoros	0.6	5 Comoros	0.6
	6 Congo DR	57.5	6 Congo, DR	57.5	6 Congo DR	57.5
	7 Congo, Republic of	4.0	7 Congo, Republic of	4.0	7 Congo, Republic of	4.0
	8 Cote d'Ivoire	18.2	8 Cote D'Ivoire	18.2	8 Cote d'Ivoire	18.2
	9 Eritrea	4.4	9 Eritrea	4.4	9 Eritrea	4.4
	10 Guinea	9.4	10 Guinea	9.4	10 Guinea	9.4
	11 Guinea-Bissau	1.6	11 Guinea-Bissau	1.6	11 Guinea-Bissau	1.6
	12 Liberia	3.3	12 Liberia	3.3	12 Liberia	3.3
	13 Nigeria*	131.5	13 Nigeria	131.5	13 Nigeria*	131.5
	14 Sao Tome & Principe*	0.2	14 Sao Tome and Principe	0.2	14 Sao Tome & Principe*	0.2
	15 Sierra Leone*	5.5	15 Sierra Leone	5.5	15 Sierra Leone*	5.5
	16 Somalia	8.2	16 Somalia	8.2	16 Somalia	8.2
	17 Sudan	36.2	17 Sudan	36.2	17 Sudan	36.2
	18 Togo	6.1	18 Togo	6.1	18 Togo	6.1
	19 Zimbabwe	13.0	19 Zimbabwe	13.0	19 Zimbabwe	13.0
	20 Gambia, The*	1.5	20 Mali	13.5	20 Gambia, The*	1.5
	21 Mauritania*	3.1	21 Benin	8.4	21 Mali	13.5
			22 Equatorial Guinea	0.5	22 Cameroon	16.3
			23 Senegal	11.7	23 Ethiopia	71.3
			24 Seychelles	0.1	24 Kenya	34.3
			25 Zambia	11.7	25 Niger	14.0
	SS Africa Sub-Total	**341.4**		**382.7**		**487.7**

Components of the bottom billion (continued)

Region	World Bank fragile & marginal fragile		African Development Bank		UK DFID	
	Country	Population (Million)	Country	Population (Million)	Country	Population (Million)
Caribbean	22 Haiti	8.5			26 Haiti	8.5
					27 Dominica	0.1
					28 Guyana	0.8
	CAR Sub-Total	**8.5**			**CAR Sub-Total**	**9.4**
East Asia & Pacific	23 Cambodia*	14.1			29 Cambodia*	14.1
	24 Lao PDR	5.9			30 Lao PDR	5.9
	25 Myanmar	50.5			31 Myanmar	50.5
	26 Papua New Guinea*	5.9			32 Papua New Guinea*	5.9
	27 Solomon Islands	0.5			33 Solomon Islands	0.5
	28 *Timor Leste*	*1.0*			34 *Timor Leste*	*1.0*
	29 *Tonga*	*0.1*			35 *Tonga*	*0.1*
	30 *Vanuatu**	*0.2*			36 *Vanuatu**	*0.2*
					37 *Indonesia*	*220.6*
					38 *Kiribati*	*0.1*
	EAP Sub-Total	**78.2**			**EAP Sub-Total**	**298.9**
Europe & Central Asia	31 Uzbekistan	26.2			39 Uzbekistan	26.2
					40 Tajikistan	6.5
	32 *Kosovo*				41 *Azerbaijan*	*8.4*
					42 *Georgia*	*4.5*
	ECA Sub-Total	**26.2**			**ECA Sub-Total**	**45.6**
Midddle East & North Africa	33 *Djibouti**	*0.8*			43 *Djibouti**	*0.8*
	34 *West Bank & Gaza*	*3.6*			44 *Yemen*	*21.0*
	MENA Sub-Total	**4.4**			**MENA Sub-Total**	**21.8**
South Asia	35 Afghanistan	31.9			45 Afghanistan	31.9
					46 *Nepal*	*27.1*
	SAR Sub-Total	**31.9**			**SAR Sub-Total**	**59.0**
	Total	**490.6**	**382.7**			**922.4**

* Marginal fragile.
Italics: Countries on less than three of the four institutions' lists.

Chris Watson: Australia's second Treasurer

John Hawkins[1]

The following article is the second in a series of biographies of Australia's federal treasurers. John Christian Watson was Australia's second (and youngest) treasurer, and the first national Labour prime minister and treasurer in the world. His government did not last long enough for him to bring down a budget. But his cautious pragmatic approach proved influential for subsequent Labour governments.

National Archives of Australia: A1200, L11176A.

Introduction

John Christian Watson (usually known as Chris) was Australia's second treasurer. He was simultaneously prime minister and his minority Labour[2] ministry could be said to be in office, rather than in power. With his government lasting less than four months, he had little scope for far-reaching reforms. He did not even have the chance to bring down a budget. But he was the world's first Labour treasurer (and prime minister).[3] He was also Australia's youngest treasurer, only 37 years old, and the only one not born in Australia or the British Isles.[4]

Watson's career before Federation

On 9 April 1867, in the Chilean port of Valparaiso, a son was born to seafarers Johan and Martha Tanck, whom they named Johan Cristian after his father. What became of Watson's father is unknown, but his mother soon after remarried, to George Watson, a Scottish miner, and her son became known as John Christian Watson.[5] He grew up in New Zealand. He only attended school until age 10 and, after helping on the family farm, he was apprenticed as a compositor (or 'printer's devil') at a newspaper run by a

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2   The spelling 'labour' is used in this article as the more common usage at the time. While both spellings appear in the caucus minutes of the period, 'labour' was used in the caucus resolution regarding the name of the party on 20 May 1901; Weller (1975, page 46). McMullin (1991, page ix) notes that the federal conference used 'labour' in 1905 and 1908 but 'labor' in 1902 and from 1912 onwards. Faulkner and McIntyre (2001, page xi) also refer to both spellings being used in Watson's time but 'labor' being adopted in 1912.

3   Strictly Watson was the first national Labour treasurer. One of his ministers, Anderson Dawson, had been Queensland premier for a week before federation, but his government was voted down the first time it faced Parliament. William Kidston had been Dawson's treasurer, and went on to serve as treasurer for a substantive term in later Queensland governments and become premier. Also serving in Dawson's short-lived administration was Andrew Fisher, another of Watson's ministers, and a future federal prime minister and treasurer.
    The British Labour Party did not win government until 1924 and its New Zealand counterpart not until 1935. Similar parties in Norway and Sweden did not govern until the 1920s.

4   There have been four other treasurers under 40, mostly decades later; Bruce (in 1921), Howard (in 1977), Keating (in 1983) and Costello (in 1996). Watson was the youngest prime minister in the British Empire since Pitt the Younger, according to Grassby and Ordoñez (2001). The only other treasurers born overseas were Fisher (Scotland), Cook (England) and Bury (England).

5   This background means that Watson was actually ineligible to stand for parliament, let alone be prime minister. Watson's father was a Chilean citizen born in Germany, and section 34 of the constitution required members to be 'subjects of the Queen'. But at the time it was thought he was George Watson's son, which made him a British subject. For example, the *Sydney Morning Herald* (23 April 1904) writing of his becoming prime minister said that 'when a child, he removed with his British parents from South America to New Zealand'.

leading reformist politician. This exposure to public affairs augmented his meagre formal education.

In 1886, after the death of his mother, Watson migrated to Sydney, working for a month as a stablehand at Government House. One day the Governor, Lord Carrington, stopped for a chat, and gave him sixpence for a beer, which Watson used to buy a book, Ellis (1962).

Watson then found another position as a compositor. In 1889 he married Ada Low, an English-born dressmaker.[6] Watson became active in the printing union and in 1890 was elected a delegate to the New South Wales Trades and Labor Council. In April 1891 he became foundation secretary of the Labour Electoral League's West Sydney branch and successfully led the local campaign. By 1892 he was both president of the Trades and Labour Council and chairman of the Labour Party in NSW. In 1894, rather than standing for a natural Labour seat in the inner city, he successfully contested the rural NSW Legislative Assembly seat of Young. He served on the Standing Committee on Public Works and was associated with the drafting of the Factories Act.

Watson was one of 10 unsuccessful NSW Labour candidates for the 1897 federation convention. While not opposed to federation in principle, he was critical of the proposed constitution developed by the convention and campaigned against it. But he readily accepted the democratic verdict and decided to enter federal Parliament.

Watson's early career in federal Parliament

Watson won the country seat of Bland, which included his state electorate. He made a good impression on Alfred Deakin, of whom he would later be a frequent ally. Deakin recalled Watson as 'an apt scholar in practical methods; level-headed and painstaking rather than brilliant; not an orator but by degrees becoming a useful debator … [but over time] his soundness of judgement, clearness in argument and fairness to opponents won him wide respect'.[7]

Watson was chosen unanimously, to his surprise, as the Labour Party's parliamentary leader. Labour followed a policy of 'support for concessions'; voting on matters of confidence with that party willing to implement more of the Labour programme.

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6 Ada is something of a mystery. Little is known of her life before she married Watson and she is the only Australian prime minister's wife of whom no photograph survives.
7 Deakin wrote these words in 1907 as an anonymous 'special correspondent' for London's *Morning Post*. Many of Deakin's columns for the paper were later published as Deakin (1968).

Accordingly, they kept the Protectionist Party in office until early 1904, under first Edmund Barton and then Deakin.

In 1902 Watson had the establishment of a competitive national bank placed on the Labour platform. There was no 'shadow treasurer' or 'finance spokesman' at this time, but Watson usually replied for Labour to speeches by Treasurer Turner.

Watson's term as treasurer

Chris Watson was commissioned to form a government in April 1904 when then prime minister Alfred Deakin treated a Labour amendment to the conciliation and arbitration bill, expanding its coverage to include public servants, as a matter of no confidence in his government. Deakin's treasurer, Turner, was sufficiently well-respected that Watson purportedly asked Turner to stay on as treasurer.[8] None of the other Labour members were discussed in the press as potential treasurers, and in the event Watson assumed the post himself.[9]

Ironically given that he actually had no Scottish blood at all, some commentators praised him as a Treasurer on the grounds that the public finances were 'in safe Caledonian hands … The world has a great and well-grounded faith in Scotchmen in matters of finance.'[10] Fitzhardinge (1964, page 162) interprets Watson taking on the treasury portfolio as 'a further pledge of moderation, for Watson had the knack of getting on with businessmen and winning their confidence'.

8   This was described as a rumour in the contemporary press; *The Age* (25 April 1904, page 5). By the time obituaries were being written for Turner, *The Age* (25 April 1916, page 7), it was reported as fact and is stated as such by Serle (1990). It is not as preposterous an idea as it would be in contemporary politics. Caucus voted to give Watson 'a free hand' in choosing the ministers after discussing the merits of appointments from outside the Labor Party. Watson reached outside the Labor Party to appoint Higgins, a Protectionist member, to his cabinet as he lacked experienced lawyers to fill the position of attorney-general. (He also publicly said that he had hoped to include another Protectionist, Kingston, but Kingston's health would not allow it.) As Watson lacked accountants as well as lawyers (only the flamboyant King O'Malley had any financial experience), bringing in the experienced and respected Turner would be a good way of achieving his goal of demonstrating that Labor could provide sober and responsible government. Furthermore, Labour had generally supported Turner as Victorian premier and did not stand candidates against him in 1901 or 1903. Turner's tenure as treasurer is described in an essay in the previous *Economic Roundup*; Hawkins (2007).

9   This followed the pattern set by Barton and Deakin of holding portfolios while prime minister, although they chose External Affairs rather than Treasury.

10 *Bulletin*, 28 April 1904.

Watson had some socialist leanings, such as wanting to nationalise monopolies, but was generally very pragmatic.[11] While not yet ready to introduce a national government-owned bank, Watson wanted to ensure banks held 40 per cent of their reserves in non-interest bearing Treasury certificates, as a means of funding national projects. Watson also aspired to introduce old age pensions.

The Labour government's main priority in office was the Conciliation and Arbitration Bill, which absorbed about half of parliamentary debate in the House. In a cruel irony, this Bill was the cause of Watson leaving office as well as gaining it when in August 1904 the parliament voted down 36-34 a clause providing for preference for unionists. The Bill was not finally passed until after Labour left office.

Watson had an office at Treasury as well as a 'prime minister's office' in the External Affairs department. He kept on George Allen, the Secretary he inherited from Turner; and four future secretaries were among the score of Treasury staff. Watson had been working towards a budget when he left office, regretting it was delayed. He commented 'I had matters in train … everything is nearly complete'.[12]

Watson also kept on Deakin's prime ministerial private secretary, Malcolm Shepherd. In the latter's memoirs, he remarks on the similarities between the ideals of Deakin and those of the 'shy but likeable' Watson. He also opines that Watson's life as prime minister and treasurer was 'most unhappy' and suggests he was 'only too glad to relinquish' the post. Certainly the hours they worked were daunting.[13]

Watson's career after being treasurer

Watson had offered Deakin a coalition, but the Protectionist party room rejected it.[14] Instead, George Reid led a Free Trade-Protectionist coalition, with Turner taking over again as treasurer. Watson became leader of the opposition.

Initially Watson said he would 'not strew tacks in the way of Mr Reid's cycle'.[15] But as Reid moved from campaigning on free trade to marketing his party as 'anti-socialist', Labor became more opposed to him. Deakin gave a speech on 24 June 1905, which was

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11 His peers respected him, although Beazley Snr (1966) suggests he was 'not a deep thinker' and refers to his 'tactical ineffectiveness'.
12 *Sydney Morning Herald*, 16 August 1904, page 6.
13 Shepherd describes the typical week as working days and evenings in Parliament in Melbourne from Monday to Thursday and Friday morning, taking the Friday afternoon train to Sydney, where they worked Saturday and Sunday mornings and then took the Sunday afternoon train back to Melbourne.
14 Watson's offer to Deakin was rejected in May 1904. Watson's letter is reprinted in Crisp (1955), pages 156-7.
15 *Sydney Morning Herald*, 16 August 1904, page 6.

widely interpreted as a 'notice to quit' to Reid. Watson formally wrote to Deakin on 26 June offering Labour's support to him as an alternative prime minister. Reid's government was soon replaced by a Protectionist one led by Deakin with Labour support (essentially a return to the arrangements of 1901-1903).

Watson was essentially a practical politician, focusing on 'achieving the possible'. But out of office, he became more expansive on political economy and ethics. In a 1904 address he advocated 'evolutionary socialism', which he viewed as sharing many goals with Christianity.[16] Watson supported Canberra as the site for the national capital.[17]

In July 1905 Watson resigned the leadership but was persuaded to change his mind.[18] With his country seat abolished at a redistribution, Watson won the seat of South Sydney at the 1906 election. Watson led Labour at the 1906 election, campaigning on measures (if necessary nationalisation) against monopolies, federal old age pensions, progressive land tax and a referendum on the tariff issue.[19] Labour performed creditably but did not win a majority. Seared by his experience as a minority prime minister, Watson preferred to exercise influence by supporting Deakin's government. He wrote to Deakin that 'our party is not anxious for office unless a programme worth having could be carried through'.[20]

Watson continued to take an interest in economic and financial affairs. In his response to the 1906 Budget, he broke new ground by moving attention from the budget balances to the state of the economy. He quoted a poet:

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16 He angrily rejected (1905) suggestions by Reid's coalition partner McLean that Labour regarded marriage as incompatible with socialism.

17 New South Wales premier Carruthers wrote to Watson on 16 August 1906 that he would 'follow your lead in regard to Canberra'. Watson papers, NLA, MS 451/1/167. Watson's 'strong personal leanings in favour of Canberra' were reported in the *Sydney Morning Herald*, 29 October 1906.

18 His letter of resignation dated 27 July 1905 refers to Labour conference votes tying the parliamentary leader's hands on entering into alliances and selecting his ministers, which Watson interpreted as criticism of his performance. He withdrew his resignation on 2 August 1905. Watson papers, National Library of Australia, MS 451/1/94.

19 His opening campaign speech is given in the *Sydney Morning Herald*, 9 October 1906, pages 7-8.

20 Watson papers, NLA, MS 451/1/9. His political opponents saw him as having excessive influence. Senator Josiah Symon wrote on 21 May 1906 to his fellow Senator Edward Pulsford of the 'debasement of Deakin', asserting that 'if he had any regard for the interests of Australia, much less his own, he would throw up the sponge and let Mr Watson and his followers take up responsibility as at present they exercise power indirectly through him'. (Symon papers, National Library of Australia, MS 1736/1/1074, page 454.)

Ill fares the land, to hastening ills a prey; Where wealth accumulates, and men decay.[21]

While conceding the economy was not in bad condition, he argued 'Australia is not progressing as its resources should make it progress'[22], before turning to commenting on postal arrangements and fiscal federalism. He then raised the idea of a sort of counter-cyclical fiscal policy, arguing 'it is a wise thing to start in a fat year to build up a reserve which would tide us over the lean year, which must inevitably come'.[23]

He resigned again as party leader in October 1907, aged just forty. Tired, aware of Ada's unhappiness at his frequent absences, and perhaps feeling a little unappreciated by the party at large, there was no way he could be persuaded to reconsider this time. He was re-elected at the 1908 election but did not seek a portfolio in Andrew Fisher's first, minority, ministry, probably fearing it would be a repeat of his own frustrating experience leading a minority government. He did not run at the 1910 election and so was not part of Andrew Fisher's first majority Labour government.

In the following years Watson mixed activities supporting the Labour Party and the Australian Workers' Union with business interests. But his support for Hughes on conscription in 1916 led to his expulsion from the party. Watson initially supported Hughes' National Party, but seemed to lose interest after the 1922 election. While not returning to active Labour politics, he welcomed Scullin's 1929 victory and became friends with Curtin. In 1920 he became president of the motorists' group that became the National Roads and Motorists' Association, a position he held for twenty years. He was a director of several companies and chairman of Ampol. He was also a trustee of the Sydney Cricket Ground.

Ada died in 1921. Watson remarried in 1925 and had his only child, a daughter. He died on 18 November 1941. Prime Minister John Curtin paid tribute to a man who 'made friends wherever he went, was an influence for unity, and endeavoured at all times to make Labour a great, and indeed permanent force in the political system of this country'.[24]

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21 *Hansard*, 7 August 1906, page 2411. The poem quoted is 'The Deserted Village' by the 18th century Irish writer Oliver Goldsmith, best known as the author of the novel *The Vicar of Wakefield*, the play She Stoops to Conquer, and the children's tale *The History of Little Goody Two-Shoes*.

22 *Hansard*, 7 August 1906, page 2,412.

23 *Hansard*, 7 August 1906, page 2,422.

24 *Hansard*, 18 November 1941. In a similar vein, his longstanding colleague Billy Hughes (*Hansard*, 18 November 1941), who had entered both the New South Wales and federal parliaments at the same time as Watson, and would remain another decade, described him as 'a man of fine character, high ideals, clear vision, sound judgement and great tact'.

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What's new on the Treasury website

The Treasury's website, www.treasury.gov.au, includes past issues of the *Economic Roundup*. Some of the other items posted on the website since the previous issue of Roundup that may be of interest to readers are listed below.

Speeches

'Achieving and maintaining full employment' (August 2007). 2007 Sir Roland Wilson Foundation lecture, by Dr Ken Henry, Secretary.

http://www.treasury.gov.au/contentitem.asp?NavId=008&ContentID=1296

Sir Roland Wilson had a distinguished career, including serving as Treasury secretary between 1951 and 1966. His tenure coincided with a period of 'full employment', a condition to which the economy has — arguably — recently returned. Despite today's higher rate of unemployment, there are as many people in employment as a proportion of the working age population as there were in Sir Roland's time. There are also stark differences in the structure and operation of the labour market, and greater flexibility.

Sir Roland faced a sharp rise in the terms of trade in 1951. Without the benefit of a floating exchange rate to buffer some of the shock, the economy experienced a short but sharp surge in the inflation rate.

In Sir Roland's time, fiscal policy was the principal instrument of short term macroeconomic management. It is a credit to Sir Roland's judgement and courage that fiscal policy was so effective in promoting stability. The current monetary policy regime, with an operationally independent central bank, provides a more robust framework by which the sails of economic growth can be trimmed.

'The Importance of Open World Markets for Australia's Development and Prosperity' (July 2007). Address to the Lowy Institute Conference on Enhancing Transparency in the Multilateral Trading System, by David Parker, Executive Director, Macroeconomic Group.

http://www.treasury.gov.au/contentitem.asp?NavId=008&ContentID=1280

The progressive dismantling of Australia's protectionist economic model from the early 1970s has led to profound structural change. These reforms fed into the broader reform programme which has opened domestic capital, product and labour markets. The Australian economy is now far more integrated with global markets.

The net result of the reforms is that the economy is more flexible and resilient, and compared with earlier periods, macroeconomic performance has been exceptionally strong. This has been illustrated in recent years by the economy's ability to weather a number of internal and external shocks such as major drought, a housing boom, the Asian financial and economic crises and — more recently — the commodities boom. Transparency institutions, such as the Productivity Commission, were significant actors in the reform process.

'Creating the Right Incentives for Indigenous Development' (June 2007). Address to the Cape York Institute Conference 'Strong Foundations — Rebuilding Social Norms In Indigenous Communities', by Dr Ken Henry, Secretary to the Treasury.

http://www.treasury.gov.au/contentitem.asp?NavId=008&ContentID=1275

Three key foundations of Indigenous disadvantage are: poor economic and social incentives; the underdevelopment of human capital and of capability in general; and an absence of the effective engagement of Indigenous Australians in the design of policy frameworks that might improve social and economic incentives and build capabilities.

An important policy goal should be to create a system of welfare incentives — in tandem with services that build capability and foster employment — that encourages engagement and rewards active participation. In addition, education can help transform social and economic opportunities, with particularly strong gains for those from disadvantaged backgrounds, and health is also a key strategic factor in breaking cycles of poverty. To achieve progress in Indigenous development, there is a need for increased ownership, by Indigenous people, of both the problems and policy solutions.

'The Economic Impact of Australia's Ageing Population' (June 2007). Address to the Committee for Economic Development of Australia State of the Nation Conference, by David Parker, Executive Director, Macroeconomic Group.

http://www.treasury.gov.au/contentitem.asp?NavId=008&ContentID=1273

The second Intergenerational Report (IGR2) examines how Australia's ageing population and other factors affect the economic and fiscal outlook over the coming 40 years. Australia's population will age markedly over this time, due to both increased longevity and lower fertility, which will cause per capita GDP to slow.

Population ageing is a global challenge which will have wide-ranging implications; saving behaviour, asset returns, international capital flows, and the supply of labour are all likely to be affected. In terms of fiscal impacts, the main spending pressures are likely to continue to be in health, age pensions and aged care.

Lifting productivity growth from its historic averages and further reducing barriers to participation would limit the projected slowdown in real GDP per person over the coming 40 years. The results of IGR2 also underline the need to be vigilant about pressures to increase real spending per capita and the overall share of government in the economy.

Working papers

2007-03: Governance of the IFIs: The Case for Merit-Based Selection of Agency Heads (May 2007).

http://www.treasury.gov.au/contentitem.asp?NavId=035&ContentID=1264

Michael Kooymans

The Managing Director of the International Monetary Fund (IMF) and the President of the World Bank are appointed under a 60-year-old unwritten convention that the Managing Director is nominated by the countries of Western Europe while the President is nominated by the United States. All ten Bank Presidents since 1946 have been US citizens and all nine IMF Managing Directors have been citizens of one of six Western European countries.

This paper argues that these arrangements are anachronistic, contrary to modern corporate governance best practice and inconsistent with the multilateral character of the IMF and World Bank. Removing nationality restrictions on candidates for senior leadership positions would be an important complement to other initiatives to modernise the governance arrangements, strategies and operations of the IMF and World Bank. In particular, it would be consistent with measures being taken to enhance the voice and participation of developing member countries, particularly emerging market economies whose voice has not increased with their growing economic importance. Australia has been a strong advocate for these governance reforms.

Alternative selection models are also discussed to illustrate how the issue might be taken forward in a practical way.

Sources of economic data

The following table provides sources for key economic data. Australian Bureau of Statistics (ABS) data can be obtained over the internet at http://www.abs.gov.au. The Reserve Bank of Australia information is available at http://www.rba.gov.au. Similarly, OECD information is available at http://www.oecd.org. Information on individual economies is also available via the IMF at http://www.imf.org.

International economy	
Output, current account balance and interest rates	OECD Main Economic Indicators
Consumer price inflation	ABS cat. no. 6401.0

National accounts	
Components of GDP, contributions to change in GDP	ABS cat. no. 5206.0

Incomes, costs and prices	
Real household income	ABS cat. nos. 5204.0 and 5206.0
Wages, labour costs and company income	ABS cat. nos. 5204.0, 5206.0 and 6345.0
Prices	ABS cat. nos. 6401.0 and 5206.0
Labour market	ABS cat. no. 6202.0

External sector	
Australia's current account, external liabilities and income flows	ABS cat. nos. 5368.0, 5302.0 and 5206.0

Past editions of *Economic Roundup*

A full index to articles published in *Economic Roundup* was included in the Spring 2006 edition. Details of articles published in subsequent editions are listed below:

Autumn 2007

Political awareness

Peer review in the context of regional integration

Australia's G-20 host year: a Treasury perspective

Corporate social responsibility and financial performance in the Australian context

George Turner: Australia's first treasurer

Key themes from the Treasury Business Liaison Programme — November 2006 and February 2007

Summer 2007

Trends in infrastructure

Australia's infrastructure policy and the COAG National Reform Agenda

Improving the investment climate in APEC economies

Evidence on the child care market

Australian net private wealth

Copies of these articles are available from the Treasury. Written requests should be sent to Manager, Domestic Economy Division, The Treasury, Langton Crescent, Parkes, ACT, 2600. Telephone requests should be directed to Mr Chris McLennan on (02) 6263 2756. Copies may be downloaded from the Treasury web site http://www.treasury.gov.au.