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This issue includes data up to 18 July 2001

The following is a reprint of Statement 3, Economic Outlook, from Budget Paper No. 1: Budget Strategy and Outlook 2001-02.

Economic outlook

Part I: Overview

Economic growth in Australia in 2001-02 is forecast to rebound quite strongly, driven by a turn around in residential construction. Employment growth is expected to be subdued with the unemployment rate averaging around 7 per cent, while inflation is forecast to decline and the current account deficit to be well below the average of the last decade. World growth is expected to weaken in 2001 to a little below historical averages, although there are significant downside risks.

In 2001-02, **economic growth** in Australia is forecast to be around 3¼ per cent in year-average terms and a strong 4 per cent through the year to the June quarter 2002. Residential construction is expected to contribute strongly to growth in 2001-02, with moderate growth in household consumption, business investment and net exports. Average unemployment rates are forecast to be slightly higher than recent levels, with inflation declining and the current account deficit well below its decade average.

Following three years of very strong economic growth in excess of 4 per cent per annum, the Australian economy slowed sharply in the second half of 2000. The weakness was concentrated in the residential construction sector, in part reflecting an unwinding of the bring-forward of residential construction into the first half of 2000, ahead of the introduction of *The New Tax System*. The downturn in this sector had flow-on effects to other parts of the economy through its impact on employment, consumer spending and consumer and business sentiment. At the same time, net exports contributed strongly to growth in 2000-01, buoyed by the lower exchange rate and the Olympics, despite a deteriorating international outlook and adverse seasonal conditions in the farm sector.

Given the weakness in the second half of 2000 and subdued growth expected in the first half of 2001, economic growth is now expected to be around 2 per cent in 2000-01 in year-average terms, and around 1 per cent in through-the-year terms.

The outlook for **world growth** has deteriorated since late 2000, led by a sharp slowdown in the United States (US) and weaker conditions in Japan. The outlook for growth in countries with close linkages to the US — such as the non-Japan East Asian economies — has also weakened. Europe is likely to be less affected by a slowdown in the US and is expected to continue to grow at a solid pace. Overall, the global economy is expected to grow by around 3¼ per cent in 2001, down sharply from 4.8 per cent in 2000, although only a little below the long-run historical average. Nevertheless, there are significant downside risks to growth in the US and Japan. Slower than forecast growth in these countries would result in weaker growth in East Asia and a more broadly based global slowdown.

Despite the slower world growth expected in 2001, **net exports** are estimated to contribute strongly to overall economic growth in Australia in 2000-01, with a further modest positive contribution expected in 2001-02. The exchange rate has helped boost the competitiveness of many of Australia's export and import competing industries. Australia's **current account deficit** (CAD) is forecast to be around 3 per cent of gross domestic product (GDP) in both 2000-01 and 2001-02. At these forecast levels, the CAD will be down markedly from 5.3 per cent of GDP in 1999-2000 and well below its average of the 1990s. In addition to the stronger balance of trade, the lower CAD also reflects a decline in the net income deficit (NID) in response to lower world and domestic interest rates and reduced margins between Australian and world investment returns.

Gross national expenditure is forecast to grow at a moderate rate of around 3 per cent in 2001-02, compared with less than 1 per cent in 2000-01. Residential construction is expected to grow by around 5 per cent in year-average terms in 2001-02, following a marked decline of around 25 per cent in 2000-01, with the turn around supported by recent reductions in interest rates and the Government's more generous First Home Owners Scheme. The recovery in this sector is expected to gather strength as 2001-02 proceeds, with through-the-year growth of around 14 per cent. Modest growth is also expected to resume in non-residential construction, particularly engineering construction, following several years of decline since the recent peak in 1998-99.

Household consumption expenditure is forecast to increase by around 3 per cent in 2001-02, a little faster than in 2000-01 but well below the very rapid growth experienced in the latter part of the 1990s (which was buoyed by strong growth in asset prices and household wealth). Household consumption will be supported by lower interest rates and a forecast gradual easing in petrol prices.

Employment growth in 2001-02 is expected to be slower than in recent years but grow at around 1 per cent in year-average terms and around 1½ per cent through the year. This largely reflects the lagged effects of slower overall economic growth in 2000-01, particularly the downturn in the labour intensive construction sector. The **unemployment rate** is expected to increase slightly, to average around 7 per cent in 2001-02 and in the June quarter 2002. This follows a period of declining unemployment which carried the unemployment rate down to around decade lows. Prospects are sound for a resumption in the downward trend in unemployment over the medium term as the construction sector recovers and overall economic growth strengthens.

Inflation is forecast to decline in 2001-02, with the headline consumer price index (CPI) rising by around 2 per cent in both year-average and through-the-year terms. The abolition of Financial Institutions Duty and other elements of *The New Tax System* will put downward pressure on consumer prices in 2001-02 and the forecasts also incorporate a slight easing in petrol prices in line with an expected downward trend in world oil prices.

From a domestic perspective, a key **uncertainty** relates to the possibility that the recent downward trend in business and consumer sentiment is sustained over coming quarters. This poses a downside risk to the forecasts for business investment and consumption. On the other hand, there is a possibility that the lower exchange rate and reductions in interest rates will provide a greater stimulus to economic growth than has been incorporated into the forecasts.

Table 1: Domestic economy forecasts^(a)

	Outcomes(b)	Estimates	Forecasts	
	1999-00	2000-01	2001-02	Four
	Year	Year	Year	Quarters to
	Average	Average	Average	June 2002
Panel A - Demand and output(c)				
Household consumption	4.5	2 3/4	3	3 1/4
Private investment				
Dwellings	12.4	-25	5	14
Total business investment(d)	3.6	0	5	9
Other buildings and structures(d)	-11.0	-22	6	10
Machinery and equipment(d)	8.8	5	3	7
Private final demand(d)	5.0	0	3 1/2	4 3/4
Public final demand(d)	5.6	2 1/4	2 1/4	0
Total final demand	5.1	1/2	3 1/4	3 3/4
Change in inventories(e)				
Private non-farm	-0.6	1/4	- 1/4	1/4
Farm and public authorities	0.0	0	0	0
Gross national expenditure	4.5	1/2	3	4
Exports of goods and services	9.2	6	5	7
Imports of goods and services	12.5	0	4	7
Net exports(e)	-0.9	1 1/4	1/4	0
Gross domestic product	4.3	2	3 1/4	4
Non-farm product	4.4	2 1/4	3	3 3/4
Farm product (at basic prices)	4.0	-6	7	13
Panel B - Other selected economic measures				
External accounts				
Terms of trade	4.3	4	- 3/4	- 1/2
Current account balance				
\$billion	-33.7	-20 1/2	-20	
Percentage of GDP	-5.3	-3	-3	
Labour market				
Employment (labour force survey basis)	2.7	2	1	1 1/2
Unemployment rate (per cent)(f)	6.6	6 1/4	7	7
Participation rate (per cent)(f)	63.4	63 3/4	63 3/4	63 3/4
Prices and wages				
Consumer price index - headline	2.4	6	2	2
Consumer price index - 'ongoing'(g)	2.4	3 1/4	2 1/2	2 1/4
Gross non-farm product deflator	1.8	4	1 1/2	1 1/2
Average earnings (national accounts basis)	2.8	3 1/2	3 3/4	3 3/4

(a) Percentage change on preceding year unless otherwise indicated.

(b) Calculated using original data.

(c) Chain volume measure.

(d) Excluding private sector net purchases of second-hand public sector assets.

(e) Percentage point contribution to growth in GDP.

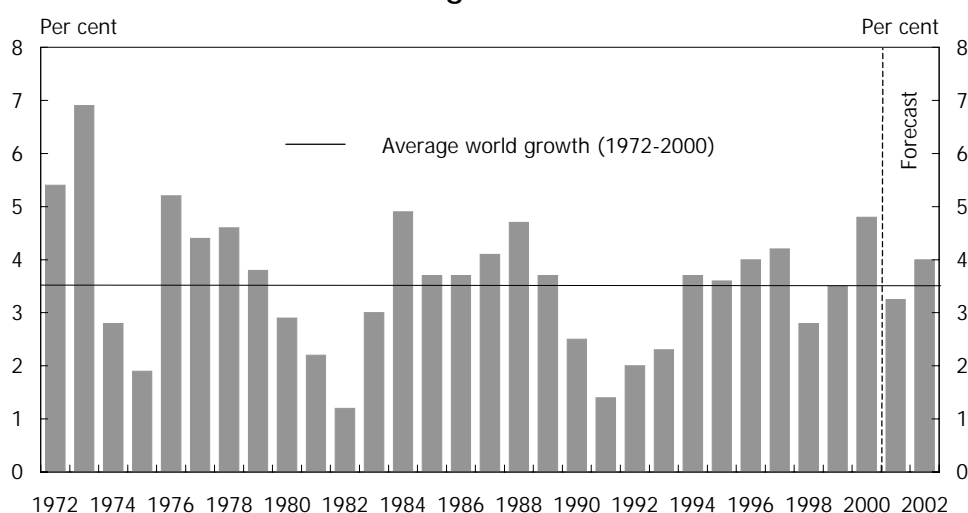
(f) The estimate in the final column represents the forecast level in the June quarter 2002.

(g) The 'ongoing' CPI is the headline measure abstracting from the impact of *The New Tax System*.

Part II: The outlook for the international economy

The world economy grew by an estimated 4.8 per cent in 2000, up from 3.5 per cent growth in 1999 and well above long-term average growth rates. However, economic growth slowed through the second half of 2000 and is expected to be significantly weaker in 2001 at about 3¼ per cent, although this is only a little below the long-run historical average. The pace of growth is expected to pick up later in 2001 and increase to around 4 per cent in 2002 (Chart 1).

Chart 1: Annual growth in world GDP^(a)



(a) World GDP growth rates are calculated using GDP weights based on purchasing power parity.

Source: Various national statistical publications, International Monetary Fund (IMF) and Treasury.

The slowing in world economic growth in the second half of 2000 reflected the restraining influence of earlier monetary tightenings, the rise in oil prices that reduced business and household purchasing power, and falls in equity prices, particularly in high-technology stocks.

The slowing in growth was particularly pronounced in the US. Following very rapid growth in the first half of 2000, household consumption slowed and production and investment eased in manufacturing industries following the build-up of inventories and capacity earlier in the year. Growth also softened in Europe, and the nascent recovery in Japan stalled. Activity in non-Japan East Asia was adversely affected by slowing US growth as the year ended.

World growth is expected to pick up as 2001 progresses, supported by a recovery in the US economy over the course of the year, solid growth in Europe and continued, albeit slower, growth in East Asian economies, particularly China. With the Japanese economy remaining sluggish, economic growth in Australia's main export markets is expected to be around 2¾ per cent in 2001, down sharply from 5 per cent in 2000, but well above the fall of 0.5 per cent recorded in 1998, during the Asian financial crisis.

In 2002, world growth is expected to rise to around 4 per cent, underpinned by gathering momentum in the US and stronger growth in the East Asian economies. However, the slow pace of growth expected in Japan points to Australia's export market growth being around 3½ per cent.

World inflation is expected to remain subdued with slower growth in the major economies easing capacity constraints and moderating price pressures. Ongoing productivity gains and increasingly competitive trading environments should also help contain inflation as growth picks up in 2002.

World oil prices have declined significantly over the past six months, suggesting that the risks to world activity and inflation from this source have abated somewhat. Prices are expected to continue to ease, in line with the weaker outlook for the world economy in 2001. Crude oil prices are now expected to decline from a world trade weighted¹ average of US\$27.6 per barrel in 2000 to around US\$23¼ per barrel in 2001, and US\$22 per barrel in 2002.

Oil prices are likely to remain volatile in the short term, reflecting uncertainty about the action of key producers and the strength of world demand. In particular, the actions of the Organisation of Petroleum Exporting Countries — which has already cut production by 2.5 million barrels per day thus far in 2001 — in the face of falling demand and prices, create some uncertainty around the forecast.

Growth in the **United States** was 5 per cent in 2000, although the rapid growth of the first half gave way abruptly to very modest rates in the second half of the year. Growth is expected to average around 1½ per cent in 2001 before rising to around 3¼ per cent in 2002.

The first half of 2000 was marked by a surge in business and consumer spending and a continuation of the same supply-side forces that have

¹ The world trade weighted oil price is the average of the contract price of different types of oil, weighted by their share of the world oil trade (that is, between countries).

propelled the economy over the past few years: ongoing realisation of synergies from new technology and improved business practices, high levels of investment and elevated rates of productivity growth. In the second half of 2000, the situation changed. Equity markets adjusted downwards (particularly in high technology), consumption slowed, inventories grew, production weakened particularly in the manufacturing sector, and some capital spending was put on hold. The new technologies and business practices, which had underpinned the expansion, appeared to contribute to a more rapid pass through of the change in conditions than in the past.

The extent and duration of the slowdown in the US is expected to be mild compared with previous episodes, moderated by relatively sound underlying macroeconomic conditions and supportive policy settings. Growth is expected to be weak in the first half of 2001 as inventories and excess capacity in some industries are worked off, but should recover quickly in the second half of the year and into 2002. Consumer spending is expected to be supported by ongoing growth in income, still relatively high levels of consumer confidence, and by recent interest rate cuts and the prospect of tax cuts later in the year. Investment in housing appears to have picked up in the first part of 2001 and other investment should be supported in the longer term by productivity growth and prospects of attractive returns on high-tech investment. Nevertheless, risks around the US growth forecasts are substantial, with any significant deviations in US growth from the forecast levels having the potential to markedly affect overall world growth (Box 1).

Table 2: Annual growth in GDP for selected countries and groupings^{(a)(b)}

	1997	1998	1999	2000(c)	2001	2002
	Actual	Actual	Actual	Estimate	Forecast	Projection
World	4.2	2.8	3.5	4.8	3 1/4	4
OECD(d)	3.5	2.7	3.2	4.1	2 1/4	3
Main Trading Partners(e)	4.1	-0.5	4.0	5.0	2 3/4	3 1/2
United States	4.4	4.4	4.2	5.0	1 1/2	3 1/4
Japan	1.9	-1.1	0.8	1.7	3/4	1 1/2
European Union	2.6	2.9	2.6	3.4	2 1/2	2 3/4
Non-Japan East Asia(f)	6.7	1.1	6.3	7.4	5 3/4	6 1/2

(a) Percentage change on previous year.

(b) Growth rates for the World, the Organisation for Economic Co-operation and Development (OECD), the European Union (EU), and non-Japan East Asia are calculated using GDP weights based on purchasing power parity.

(c) Treasury estimates of World, OECD and EU growth rates.

(d) The OECD comprises the United States, Japan, Germany, France, Italy, the United Kingdom, Canada, Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, Greece, Hungary, Iceland, Ireland, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey and includes Slovakia from 2001.

(e) Export trade-weighted basis.

(f) Non-Japan East Asia comprises Korea, Singapore, Taiwan, Hong Kong, China, Indonesia, Malaysia, Thailand, and the Philippines.

Source: Various national statistical publications, IMF and Treasury.

Japan's economy grew by 1.7 per cent in 2000, although uncertainty about the sustainability of the expansion remains. Growth is expected to be uneven in 2001 with last year's fiscal package likely to raise public investment during the first half of the year, but with the boost to activity tapering off in the second half of the year as public spending declines. Consumption is likely to remain subdued and investment is expected to ease through 2001 as slower world growth and weaker demand for high-tech products reduce exports and weaken the outlook for corporate profits. The sharp decline in equity prices over the past year is also likely to undermine business confidence and the investment outlook. For 2001 as a whole, growth is expected to average around $\frac{3}{4}$ per cent, before picking up to around $1\frac{1}{2}$ per cent in 2002 as the global economy strengthens. Sustained recovery in Japan continues to be constrained by high levels of bad debts in the banking system. The new Government has expressed a commitment to progressing further reforms, including in the financial sector.

Growth in the **euro area** strengthened in 2000, rising to 3.4 per cent, buoyed by strong domestic and external demand. For 2001, growth is expected to moderate in the face of a less supportive global environment. However, the euro area appears to be less affected by the downturn in the US than some other regions and the effects are likely to be more muted. Consumption is expected to be underpinned by rising incomes, recent tax cuts and relatively high levels of consumer confidence. Investment, although adversely affected by weaker export earnings and higher energy prices, is likely to be supported by recent corporate tax cuts and relatively high levels of capacity utilisation. In 2001, growth in the euro area is expected to be around $2\frac{1}{2}$ per cent, with slightly higher growth expected in 2002 at around $2\frac{3}{4}$ per cent, as world economic conditions improve. Growth in the **United Kingdom** is expected to be more affected by the slowdown in the US and problems associated with foot and mouth disease, with growth slowing to $2\frac{1}{4}$ per cent in 2001, before picking up to $2\frac{3}{4}$ per cent in 2002 on the back of stronger world growth and supportive macroeconomic policy.

The **non-Japan East Asia** region grew strongly in 2000, supported by strong export demand and rising domestic demand. The region benefited from the strong growth in the world economy and particularly from the upturn in demand for electronics in the US, Europe and Japan.

Growth is expected to slow in 2001 with the slowdown in the US and continued weakness in Japan expected to reduce demand for exports, particularly electronics, industrial machinery and automobiles which have been a cornerstone of the expansion. The impact is likely to be more

pronounced for countries such as Taiwan, Singapore and Korea which have a high electronics component in their export base.

Unfavourable domestic factors are also likely to weigh heavily on the immediate outlook for the region, particularly in Indonesia, Thailand and the Philippines. However, foreign exchange reserves are generally higher than immediately preceding the Asian crisis, external positions have improved, and speculative capital inflow has been limited, leaving countries less vulnerable to unfavourable shifts of sentiment and capital flight.

Growth in non-Japan East Asia is forecast to decline from 7.4 per cent in 2000 to around 5¾ per cent in 2001 before picking up to 6½ per cent in 2002, in line with the expected recovery in the US. Excluding China (which continues to grow strongly), growth in the region is forecast to be 3½ per cent in 2001 before rising to 4¾ per cent in 2002.

Other **emerging market** economies grew strongly in 2000, but growth is likely to moderate in 2001. Financial and economic conditions remain fragile and they remain vulnerable to any further weakening in global conditions and/or a deterioration in sentiment towards emerging markets.

Box 1: Risks to the US and global outlook

The path of the global economy over the next year depends heavily on developments in the US economy. The most likely outcome in the US is that growth will slow through the first half of 2001 as excess inventories are reduced and surplus capital stock is unwound through lower investment and modest growth, but pick up strongly in the latter part of the year. This relatively benign outcome would be consistent with the generally sound underlying fundamentals of the US economy and the stimulative impact of lower interest rates and foreshadowed tax cuts.

It is possible, however, that business conditions and business and consumer confidence will fall further during the adjustment process leading to a deeper and more prolonged slowdown than currently envisaged. Energy prices have risen sharply in the US reflecting in part domestic capacity constraints in the energy sector which could put further pressure on prices and incomes. Other factors, including a reassessment of the wealth and income gains from investment in new technology areas, could also adversely affect incomes and sentiment.

In these circumstances, there would likely be a sharp reduction in consumption and investment spending. Increased uncertainty with respect to employment and incomes would see consumption weaken, and this would be reflected in lower profit prospects and a further decline in equity prices. With household debt already at high levels and savings rates low, household consumption would likely be pared back further. Reduced sales and earnings prospects and increased risk would also likely see firms delay investment, using funds to repair extended balance sheets instead. In this scenario, equity returns would fall, capital inflows would ease, the large current account deficit would unwind, and the exchange rate would depreciate.

A weaker US economy accompanied by a rapid adjustment in financial markets would adversely affect other countries, including East Asian economies. The outlook for Japan has already deteriorated, partly as a result of weaker global conditions, but also due to domestic factors including weak consumer and business confidence and unresolved problems in the financial sector. Further deterioration in the economy and weaker confidence would expose vulnerabilities in the financial and corporate sectors, exacerbating the adverse affects of weaker external conditions.

Continued...

Box 1: Risks to the US and global outlook (continued)

Both Japan and other East Asian economies are particularly vulnerable to a more severe downturn in the US because of their specialisation in electronic products. However, there could be some offsetting effects from lower interest rates, lower exchange rates, and increased capital inflow where attractive investment opportunities arise.

Other countries would also be adversely affected by further weakness in the US and Japan, through the usual trade linkages and through confidence effects.

On the upside, recent policy adjustments in several countries may forestall a further downturn. If confidence were to turn up quickly there may be some upside risks to the forecasts.

Part III: The outlook for the domestic economy

Key assumptions

In framing the forecasts for the domestic economy the exchange rate is assumed, as is usual practice, to remain unchanged from the average levels reached in recent months, at around US52½¢ and around 50 against the trade weighted index (TWI). On the basis of these assumptions, the exchange rate would be lower on average in 2001-02 than in 2000-01, and significantly lower than its average level of around US63¢ and 55 against the TWI in 1999-2000, helping to produce a solid net export performance in the face of slower world growth.

The forecasts take into account the reductions in official interest rates since February 2001. The reductions in interest rates are expected to be supportive of domestic demand, especially residential investment and household consumption spending (in particular, on consumer durables). Although the timing and magnitude of this effect is uncertain, most of the impact from lower interest rates is expected to be felt in 2001-02.

The forecast fall in farm production in 2000-01 largely reflects a combination of very dry conditions in some areas and severe flooding in others. An assumed return to normal seasonal conditions in 2001-02 would see stronger farm production contributing to overall economic growth.

Demand and output

In 2001-02, economic growth in Australia is forecast to be around 3¼ per cent in year-average terms and a strong 4 per cent through the year to the June quarter 2002. Average unemployment rates are forecast to be slightly higher than recent levels at around 7 per cent, with inflation declining relative to 2000-01 and the CAD well below its average level of the 1990s.

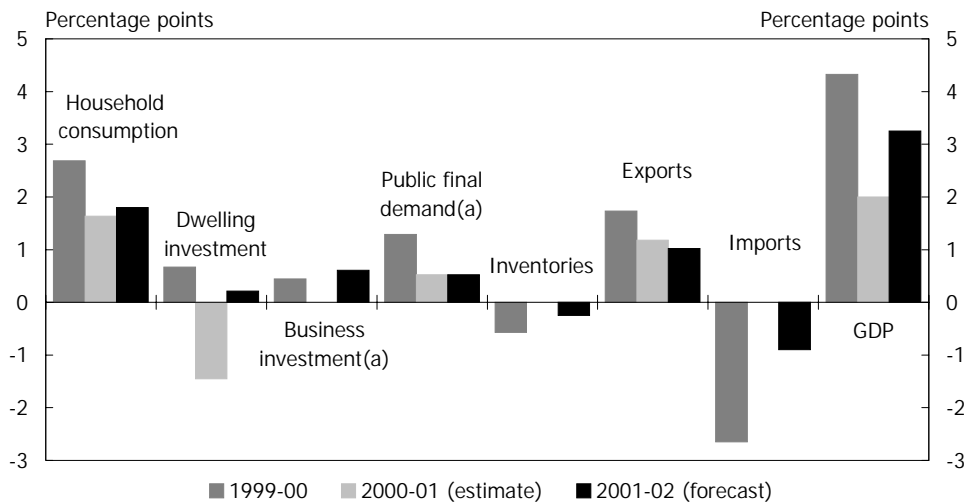
Gross national expenditure is forecast to grow at a moderate rate of around 3 per cent in 2001-02, following growth of less than 1 per cent in 2000-01. Residential construction is expected to contribute strongly to growth, with moderate growth in household consumption, business investment and net exports (Chart 2).

Residential construction is expected to grow by around 5 per cent in year-average terms in 2001-02, following a large decline of around 25 per cent in 2000-01, with the turn around supported by recent reductions in interest

rates and the Government's more generous First Home Owners Scheme. The recovery in this sector is expected to gather strength as 2001-02 proceeds, with through-the-year growth of around 14 per cent. Modest growth is also expected to resume in non-residential construction, particularly engineering construction, following several years of decline since the recent peak in 1998-99.

Following the weakness in the second half of 2000 and subdued growth expected in the first half of 2001, economic growth is now expected to be around 2 per cent in 2000-01 in year-average terms and around 1 per cent in through-the-year terms.

Chart 2: Contributions to GDP growth

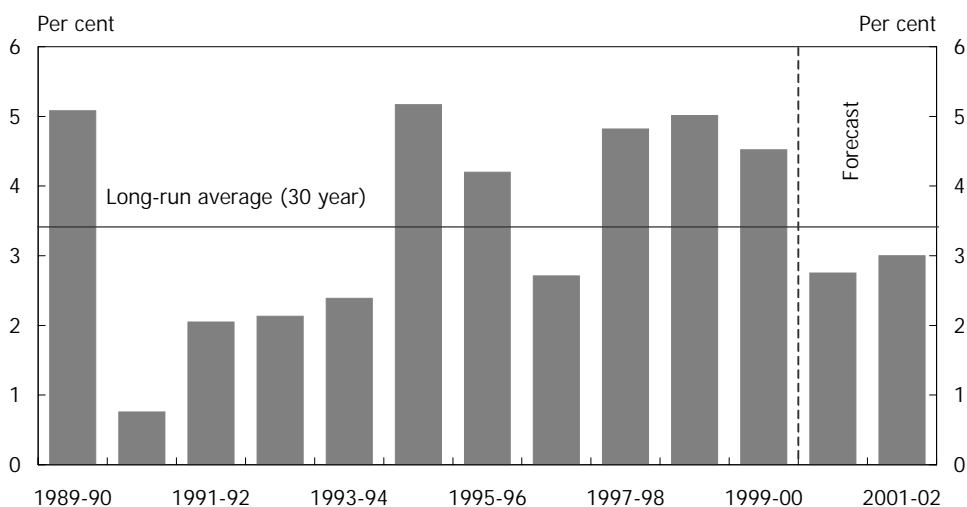


(a) Excluding private sector net purchases of second-hand public sector assets.
 Source: Australian Bureau of Statistics (ABS) Cat. No. 5206.0 and Treasury.

Household consumption

Household consumption is forecast to increase by around 3 per cent in 2001-02, a little stronger than the estimate of 2¾ per cent for 2000-01 (Chart 3). This follows a six year period where consumption growth averaged a very strong 4½ per cent per annum.

Chart 3: Annual growth in real household consumption

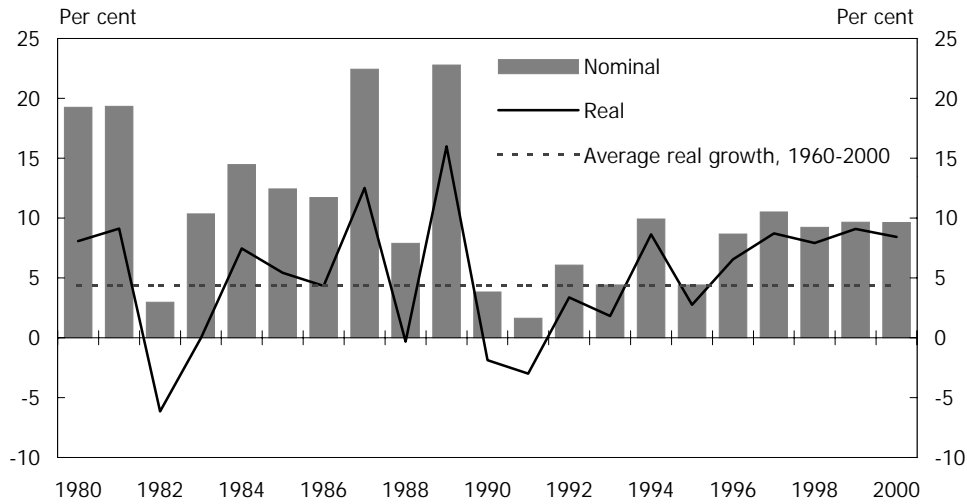


Source: ABS Cat. No. 5206.0 and Treasury.

Real household disposable income in 2000-01 has been boosted by the income tax cuts and increases in benefits flowing from *The New Tax System* (after an allowance for the associated increases in indirect taxes). However, the beneficial impact of these tax cuts on consumption expenditure was offset to some extent in the latter part of 2000 by the effects of rising interest rates during 2000 and rising petrol prices. Slower employment growth in 2000-01 also had a moderating effect on the growth in real household income and consumption. In addition, the strong accumulation of wealth experienced over recent years (Chart 4) did not continue to the same extent in 2000-01, with relatively steady share prices, and with house prices declining in some areas and rising less quickly than previously in other areas.

The significant interest rate reductions since early 2001 are likely to give some boost to consumption growth in 2001-02, as will the expected gradual downward trend in petrol prices. On the other hand, subdued employment growth will continue to have a moderating effect on the growth in real household income in 2001-02.

Chart 4: Annual growth in private sector wealth^(a)



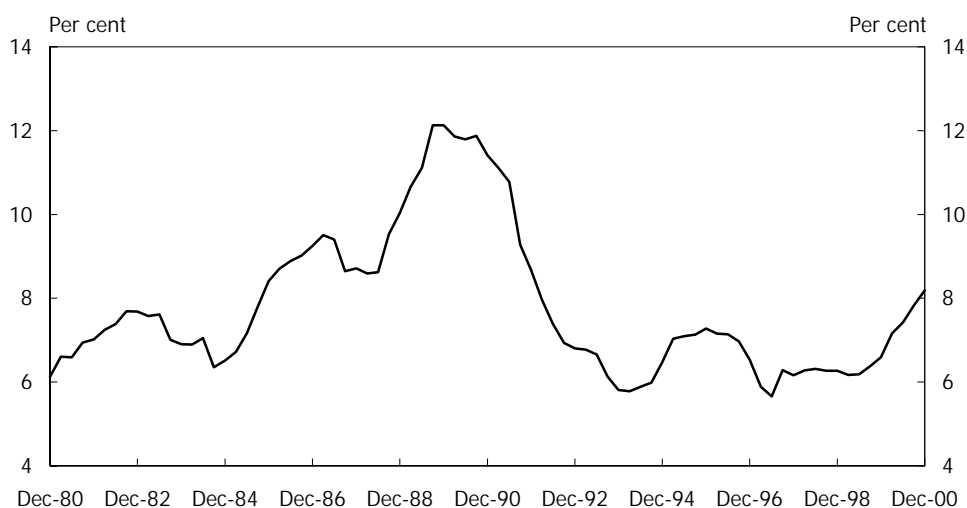
(a) June 30 estimates.
Source: Treasury.

There are few signs of major imbalances in the balance sheet of the household sector, suggesting that the household sector's net financial position should not act as a major constraint on consumption growth over the forecast horizon. Household borrowing has been strong in recent years, partially reflecting the continuing impact of financial deregulation on the availability of credit and lower interest rates. This has increased the debt-to-disposable income ratio to a little over 100 per cent, close to the average of other developed economies. However, the growth in household debt has been broadly matched by an increase in assets held by households, with the household debt-to-assets ratio showing only a gradual increase over recent years. Further, the household debt servicing ratio remains at a relatively modest level by historical standards (see Chart 5), well below the peak in the late 1980s, and is likely to fall during 2001 in response to recent declines in interest rates.

Measures of consumer sentiment have been particularly volatile over the last year, with the Westpac-Melbourne Institute index falling by around 15 per cent prior to the introduction of *The New Tax System* and then rebounding to previous levels, as the uncertainty surrounding the introduction of *The New Tax System* abated. The consumer sentiment index has trended lower over recent months, although with a significant rebound in May. Nevertheless, it is too early yet for the full impact of lower interest rates to be reflected in the survey responses. It is also noteworthy that retail sales increased strongly in the March quarter 2001 (by around 1.9 per cent in real terms), at a time when measures of consumer sentiment were declining.

An extended period of low consumer sentiment represents a downside risk to the consumption growth forecasts, although the recent reductions in interest rates should be supportive of higher confidence levels.

Chart 5: Household debt servicing ratio



(a) Household (including unincorporated enterprises) debt interest payments as a proportion of household disposable income.

Source: ABS Cat. No. 5206.0.

Dwelling investment

Following several years of strong growth, dwelling investment is expected to fall by around 25 per cent in 2000-01 in year-average terms, before returning to a positive rate of growth later in 2001.

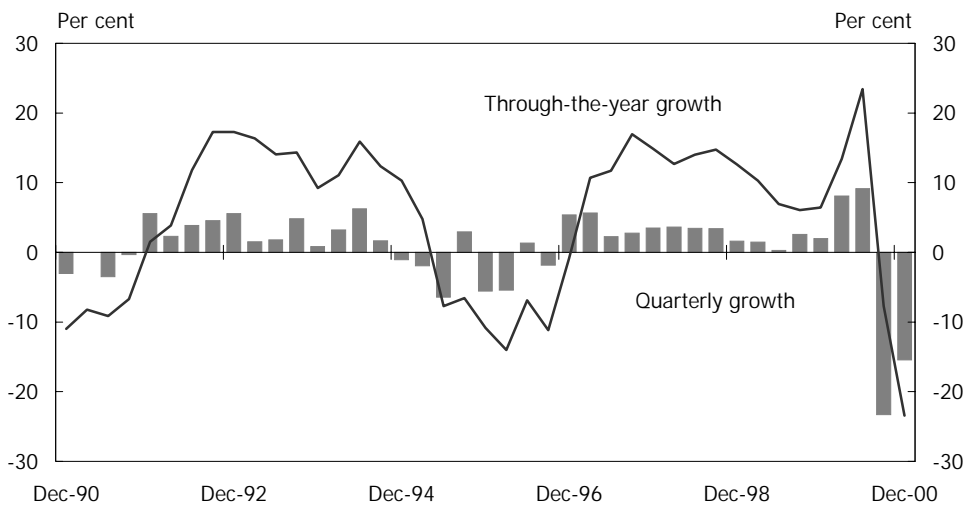
In 1999-2000, building activity rose strongly to its highest level as a share of GDP in almost 20 years, as home builders and renovators brought forward activity ahead of the introduction of *The New Tax System*. This bring-forward of activity was unwound in the second half of 2000 which, combined with the effects of higher interest rates, saw activity in this sector decline by around 35 per cent over the September and December quarters of 2000 (Chart 6). This decline in building activity, in turn, contributed to weaker employment and household consumption spending.

In 2001-02, dwelling investment is expected to rebound significantly, with forecast growth of around 5 per cent in year-average terms and around 14 per cent in through-the-year terms. Strong growth is expected to be driven

largely by improved housing affordability and by the Government's more generous First Home Owners Scheme. Recent declines in interest rates should see housing affordability improve through 2001. The First Home Owners Scheme, which encourages the construction of new dwellings through the payment of a \$14,000 grant to first home buyers, should also provide a targeted, short-term boost to building activity in 2001-02.

There is a greater than normal degree of uncertainty surrounding the timing and extent of the recovery in dwelling investment. The Government's more generous First Home Owners Scheme and the recent reductions in interest rates should provide a significant boost to activity in the sector, although the timing and magnitude of this boost is difficult to assess. Early indications suggest strong interest from home buyers resulting from the First Home Owners Scheme.

Chart 6: Growth in dwelling investment



Source: ABS Cat. No. 5206.0.

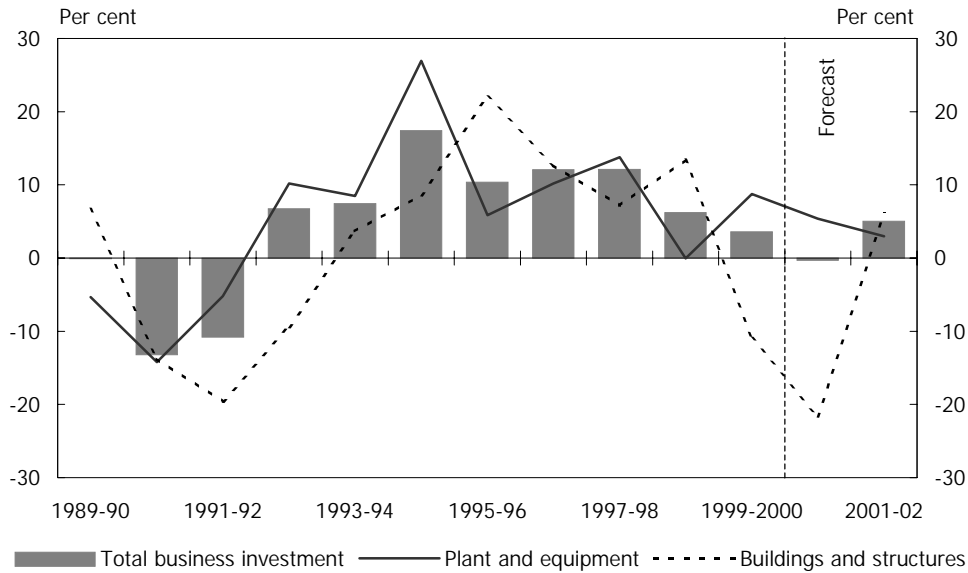
Business investment

New business investment² is expected to grow by around 5 per cent in 2001-02, following approximately zero growth in 2000-01 (Chart 7). Through the year to the June quarter 2002, new business investment is expected to grow by around 9 per cent. The solid outlook for business investment reflects sound fundamentals: short and long-term interest rates are near historical lows; corporate profitability (despite recent declines) remains around historically high levels as a share of GDP, and is particularly strong in the mining sector which is highly capital intensive; and the decline in the exchange rate over recent quarters will give many Australian industries an important buffer against the effects of slower world growth. Despite the forecast solid increase in business investment in 2001-02, the level of business investment would remain slightly below longer run averages as a share of GDP, following a small fall in 2000-01.

New investment in plant and equipment is expected to grow by around 3 per cent in 2001-02, and a strong 7 per cent through the year to the June quarter 2002, following estimated growth of around 5 per cent in 2000-01. The outlook for investment in plant and equipment is partially underpinned by expected investment in the mining sector. After a couple of very weak years during and immediately following the Asian crisis, conditions in the mining sector are conducive to investment, with record levels of profitability boosted by higher prices for a range of commodities and the decline in the exchange rate. Firms' first investment intentions for 2001-02, as reported in the ABS capital expenditure survey, were quite strong, although early estimates only provide a broad indication of likely outcomes. Allowing for some impact from lower levels of business confidence experienced over recent quarters on realisation ratios applied to investment intentions, the investment intentions data point to solid growth in plant and equipment investment in 2001-02.

² Private sector net purchases of second-hand public sector assets can have a significant impact on estimates of business investment and public final demand, despite the fact that these asset purchases have no impact on aggregate economic activity. Accordingly, the forecasts of new business investment abstract from these transactions.

Chart 7: Annual growth in new business investment^(a)



(a) Excluding net purchases of second-hand public sector assets.

Source: ABS Cat No. 5206.0 and Treasury.

The risks around the outlook for plant and equipment investment in 2001-02 appear to be balanced. On the one hand, slower domestic and world growth may point to a weaker outlook than forecast, particularly if business confidence falls in response to this uncertain outlook. While profits in aggregate have been around historically high levels, there is anecdotal evidence that margins in some sectors may have been affected by the lower Australian dollar, high energy and fuel costs, new tax payment arrangements and weaker demand. On the other hand, relatively low short and long-term interest rates, lower plant and equipment prices as a result of the introduction of *The New Tax System*, and the potential for investment by the mining and resource sectors over the medium term are supportive of strong investment. There is also some potential for stronger than forecast investment in 2001-02 if business confidence rebounds sharply from its current level.

New investment in buildings and structures is expected to grow by around 6 per cent in 2001-02 and a strong 10 per cent through the year to the June quarter 2002. This follows an estimated decline of 22 per cent in 2000-01, mainly associated with the completion of Olympics-related projects. Strong growth in engineering construction is expected to underpin growth in investment in buildings and structures in 2001-02, as a number of new projects in the mining and resource sectors, and several power generation projects,

commence during the year. A stabilisation in the level of non-residential building approvals, commencements and work-yet-to-be-done suggests that activity in this sector may have bottomed, following two years of decline.

Investment in intangible fixed assets (that is, computer software, mineral exploration rights and artistic originals) is expected to grow strongly in 2001-02, although at a slower rate than in 1999-2000 and 2000-01. The outlook for intangible fixed assets is dominated by expected strong growth in software investment, which now comprises over 10 per cent of total new business investment. Some easing in growth of software investment is expected in 2001-02, following the completion of work relating to the new tax arrangements in 2000, and Y2K-related work in 1999.

Inventories

Private non-farm inventories are expected to contribute around a $\frac{1}{4}$ of a percentage point to growth in 2000-01. In the first half of 2000, there appears to have been an unanticipated run-down in inventories, especially in the retail sector, as sales were brought forward ahead of the introduction of *The New Tax System*. In turn, there was some rebuilding of inventory levels in the second half of 2000 as this net bring-forward of sales was unwound. However, after making an allowance for this effect, there appears to have been a modest build-up in inventory levels in the second half of 2000, due to weaker than expected growth in sales.

Private non-farm inventories are expected to subtract around a $\frac{1}{4}$ of a percentage point from GDP growth in 2001-02, as the modest build-up in inventories in the second half of 2000 is gradually unwound over 2001, and more generally as firms continue to manage down inventory-to-sales ratios to increase profitability. However, there is a risk that the build-up in inventories may be unwound more quickly, especially if the recent falls in business sentiment are sustained.

Public final demand

In 2001-02, real public final expenditure³ is anticipated to grow by around 2 $\frac{1}{4}$ per cent in year-average terms, similar to the outcome expected in 2000-01, but well below the 5.6 per cent growth recorded in 1999-2000. The moderation relative to 1999-2000 reflects the winding down of expenditure related to the

³ The forecasts of public final expenditure abstract from private sector net purchases of second-hand public sector assets — see footnote 2.

peacekeeping mission in East Timor; the start-up costs associated with tax reform; and the completion of large infrastructure projects in some States (including the Olympics). This has been partially offset at the Commonwealth level by the new spending initiatives on research and development, roads and defence that are expected to commence in 2001-02.

Growth in consumption at the State level is expected to be steady, with a fall in consumption following the Olympics offset by increased spending on roads and wage costs. An expected fall in State underlying investment reflects the completion of a large number of infrastructure projects in 2000-01 and decreased investment spending in 2001-02.

Net exports and the current account balance

The CAD is forecast to decline sharply from 5.3 per cent of GDP in 1999-2000 to around 3 per cent of GDP in 2000-01 and 2001-02. The decline in the CAD relative to 1999-2000 is expected to be driven by a stronger trading performance in volume terms, a rise in the terms of trade and a lower NID. At these levels, the CAD would be well below its average level as a share of GDP during the 1990s, and around half its earlier peaks.

Net exports

Net exports are expected to contribute a large 1¼ percentage points to GDP growth in 2000-01, but slower world growth in 2001 will have a significant impact on exports in 2001-02. However, net exports are still expected to contribute around ¼ of a percentage point to GDP growth in 2001-02, reflecting the assumed lower average exchange rate in 2001-02 and the impact of modest growth in domestic demand on imports.

In 2001-02, export volume growth is expected to be a solid 5 per cent, following an estimated 6 per cent growth in 2000-01. These growth rates are only a little below trend, reflecting the impact of slower world growth in 2001 on Australia's export volumes being substantially offset by a lower average exchange rate. Export growth in 2001-02 is expected to be underpinned by strong growth in non-rural commodity exports, reflecting the continued ramp-up of production from recently completed projects.

Farm production is expected to fall by around 6 per cent in 2000-01 due to adverse seasonal conditions. In 2001-02, farm production is expected to grow strongly, by around 7 per cent (well above trend), due to the assumed return to average seasonal conditions. Rural export volumes are not expected to fall by

as much as farm production in 2000-01, as stocks — particularly wool and wheat — are drawn down to meet demand. As a result, rural export volumes are not expected to rebound as strongly as farm production in 2001-02.

The impact of slower world growth — in particular in Australia's major trading partners — is expected to be most apparent in lower growth in elaborately transformed manufactures (ETMs) and services exports. However, the lower average exchange rate should partially offset this by providing a boost to Australia's competitiveness, enabling Australian exporters to increase their market share. As a result, both services (abstracting from the Olympics) and ETM export volumes are expected to continue to grow solidly in 2001-02, albeit at rates somewhat below trend.

Import volumes are expected to grow by 4 per cent in 2001-02, up from around zero growth in 2000-01, reflecting strengthening — but still below trend — domestic demand growth and more modest growth in import prices in Australian dollar terms than in 2000-01. Nevertheless, in both years, import volume growth is expected to be well below trend growth rates.

The terms of trade

The terms of trade are expected to increase by a strong 4 per cent in 2000-01, to be around the highest level in a decade. Only a slight decline ($\frac{3}{4}$ per cent) from these levels is forecast in 2001-02, despite slower expected world growth. This slight decline reflects a modest fall in the world price of Australia's exports, partly offset by continued weakness in the world price of Australia's imports.

In currency neutral (Special Drawing Rights (SDR)) terms, Australia's non-rural commodity export prices — as measured by the Reserve Bank of Australia's commodity price index — are expected to continue to grow in 2001-02, following strong growth in 2000-01. Underlying this forecast are strong increases in negotiated contract prices for bulk commodities being partially offset by weaker prices for base metals and mineral fuels. Contract prices for steaming coal have recently increased by around 20 per cent in US dollar terms, coking coal by around 11 per cent and iron ore by around 4 per cent.

Some moderation in aggregate rural prices in SDR terms from recent high levels is anticipated, reflecting an expected rise in world agricultural production in 2001-02 (in part driven by the continued high level of agricultural subsidies in developed countries) and continued high levels of world stocks. This points to subdued world prices in 2001-02, particularly for wheat and cotton. Nevertheless, world prices for beef and wool — two of

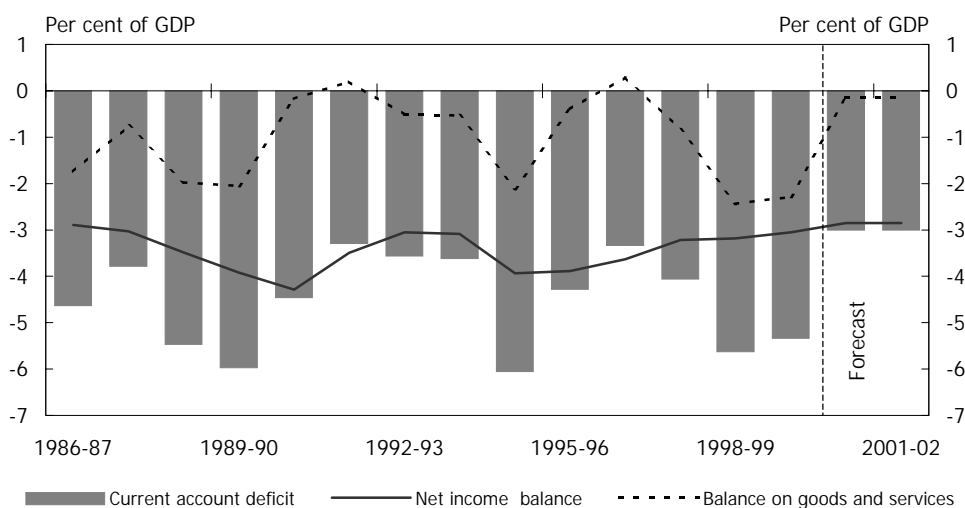
Australia's key rural exports — are expected to increase slightly in 2001-02, building on strong gains in 2000-01, to be at their highest level in two decades in Australian dollar terms. This reflects a relatively tight supply/demand balance in both markets.

In Australian dollar terms, rural commodity prices are expected to remain around historically high levels over the forecast period. While adverse seasonal conditions have seen farm production fall by around 6 per cent in 2000-01, a return to average seasonal conditions is expected to see farm production increase by 7 per cent in 2001-02. The relatively unusual combination of high prices and strong production should see farm incomes increase to historically high levels in 2001-02.

The current account deficit

The CAD is forecast to decline sharply in 2000-01, to 3 per cent of GDP, down from 5.3 per cent of GDP in 1999-2000. The decline in the CAD is expected to be driven by a stronger trading performance in volume terms, a rise in the terms of trade and a lower NID. In 2001-02, the CAD is expected to remain around 3 per cent of GDP.

Chart 8: Contributions to the current account deficit



Source: ABS Cat. No. 5302.0 and 5206.0 and Treasury.

The NID is forecast to remain a little below 3 per cent of GDP, despite a continued (albeit more moderate) build up in Australia's net foreign liabilities as a share of GDP. This outcome reflects lower Australian and world interest

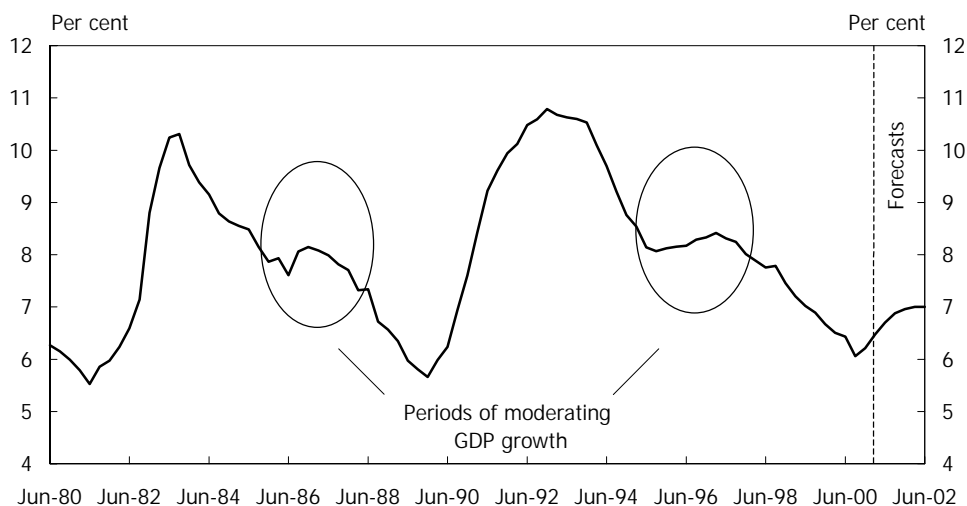
rates, and the significant narrowing in the difference between the yield on foreign investment in Australia and the yield on Australian investment abroad over recent years. Recent trends in the NID are discussed in more detail in the Centenary edition of the *Economic Roundup*.

The labour market

Employment growth in 2001-02 is expected to be slower than in recent years at around 1 per cent in year-average terms and around 1½ per cent through the year. This largely reflects the lagged effects of slower overall economic growth in 2000-01, particularly the downturn in the labour intensive construction sector (Box 2).

Employment in the construction sector declined by around 55,000 in total over the December 2000 and March 2001 quarters, with likely flow-on effects to other sectors, including employment in parts of the manufacturing sector involved in the production of building materials. These effects are expected to be reversed gradually as the construction sector recovers during the course of 2001-02, with the turn around likely to be most apparent in the second half of the year.

Chart 9: Unemployment rate



Source: ABS Cat. No. 6202.0 and Treasury.

The unemployment rate is expected to increase slightly from recent levels, to average around 7 per cent in 2001-02 as a whole and in the June quarter 2002.

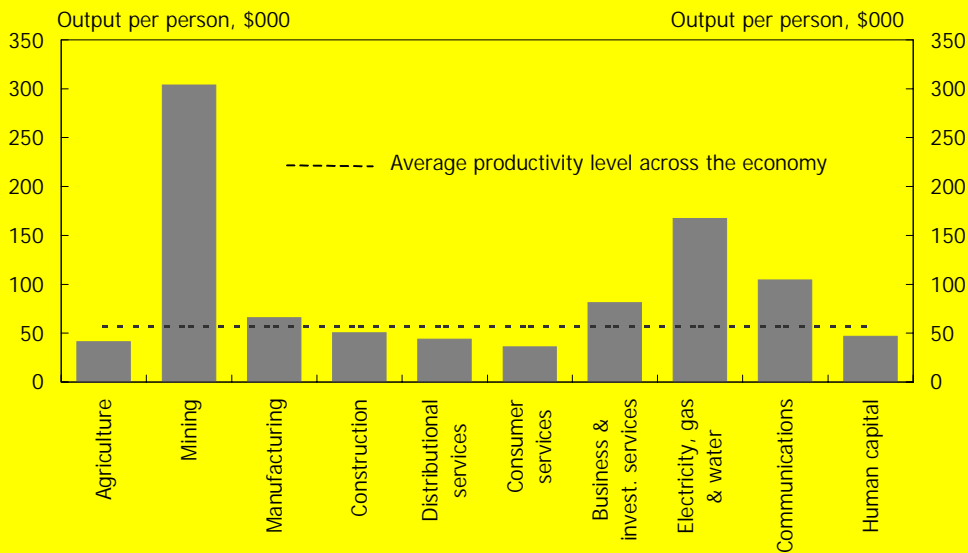
Monthly data are likely to vary significantly around these averages. Recent falls in the various job vacancy series suggest that weak employment outcomes are likely over coming months, which is expected to put some upward pressure on the unemployment rate. However, as in previous short periods of slower GDP growth (identified by the circled periods in Chart 9), the increase in the unemployment rate is expected to be relatively small and quite brief. Continued moderate growth in wages will help to limit the extent and duration of the rise in unemployment. Prospects are sound for a resumption of the downward trend in unemployment over the medium term as the construction sector recovers, overall economic growth strengthens and the benefits from earlier labour market reforms and more general microeconomic reforms, including taxation reform, continue to accrue.

Productivity growth (on a heads basis) is forecast to reach a cyclical low in 2000-01 before rebounding solidly in 2001-02 to 2¼ per cent. Some of the factors likely to influence the medium-term trends in productivity are discussed in *Budget Paper No. 1*, Statement 4.

Box 2: Sectoral differences in labour productivity in Australia

Industries in Australia differ markedly in terms of their labour intensity and therefore their levels of labour productivity (Chart 10). For example, mining accounts for around 5 per cent of total output, but employs just 1 per cent of the workforce and therefore has a high level of labour productivity (output of around \$300,000 per person employed in the industry) and is relatively capital intensive. In contrast, construction is relatively labour intensive with levels of labour productivity (output of around \$50,000 per person employed in the industry) a little below the economy-wide average.

Chart 10: Labour productivity by industry^{(a)4}



(a) The chart shows average levels of productivity over the years 1996-97 to 1999-2000.

Source: ABS Cat. No. 5206.0 and 6203.0.

Continued...

⁴ The following industries are aggregations of 'similar' ABS standard industry classifications: distributional services include wholesale trade, retail trade and transport and storage; business and investment-related services include finance and insurance, and property and business services; consumer services include accommodation, cafes and restaurants, cultural and recreational services, and personal and other services; and human capital services include government administration and defence, education, and health and community services.

Box 2: Sectoral differences in labour productivity in Australia (continued)

In 2000-01, as the composition of economic activity shifted away from relatively labour intensive industries such as construction, and towards relatively capital intensive industries such as mining, the impact of the slower overall economic growth on the labour market was more pronounced. As the construction industry recovers during 2001-02, this effect will be unwound gradually.

Wages

Wages have continued to grow at a moderate pace in 2000-01, consistent with slower economic and employment growth and the moderate increase in unemployment. Importantly, there has been little evidence to date of widespread wage increases in response to price changes following the introduction of *The New Tax System*.

Average earnings growth on a national accounts basis (AENA) is expected to be a moderate 3½ per cent in 2000-01. Abstracting from the increase in the superannuation guarantee charge on 1 July 2000, AENA is expected to grow by 3 per cent in 2000-01.

In 2001-02, growth in AENA is expected to increase to 3¾ per cent, as economic growth strengthens and is reflected in slightly firmer labour market outcomes as the year progresses. The forecast incorporates the recent 'Living Wage Case' decision.

The pace of the pick up in economic activity and the timing of its impact on the labour market represent a key source of uncertainty around the wages outlook.

While the introduction of *The New Tax System* does not appear to have influenced wages growth to date, there remains a residual risk to wages over the forecast period (for example, if union campaigns were to be successful). Recent enterprise bargaining data indicate that the proportion of employees covered by agreements that include inflation-related clauses has increased. However, there is no rationale for higher wages to compensate for the price effects of *The New Tax System*, given the significant personal income tax cuts and increases in benefits contained in the package.

Prices

In 2000-01, 'ongoing' inflation (that is, inflation excluding the impact of *The New Tax System*) is expected to be around 3¼ per cent in both year-average and through-the-year terms. The increase in 'ongoing' inflation relative to the 1999-2000 outcome of 2.4 per cent in year-average terms largely reflects the effect of the increase in petrol prices over calendar year 2000.

The New Tax System is expected to increase the CPI by around 2½ per cent through the year to the June quarter 2001, with this effect having been felt largely in the September quarter 2000. Taking together the estimates of 'ongoing' inflation and the impact of *The New Tax System*, the CPI is expected to increase by 6 per cent in year-average terms in 2000-01 and by 5¾ per cent through the year to the June quarter 2001.

The CPI increased by 1.1 per cent in the March quarter of 2001. This higher than expected outcome largely reflected the effect of flooding in northern New South Wales and southern Queensland on fruit and vegetable prices and the effect of increased world demand for Australian meat products. The sharp rise in fruit and vegetable prices is likely to be at least partly reversed in coming quarters as supply returns to more normal levels. There were also the usual seasonal increases in the price of education, pharmaceuticals and childcare. Petrol prices fell 3.7 per cent in the quarter, in response to lower world oil prices and the Government's decision to reduce excise on petrol (and abolish indexation) in early March. Looking through these influences, the CPI increased by a moderate 0.6 per cent in the March quarter, following the very low increase of 0.3 per cent in the December quarter.

Inflation is forecast to decline in 2001-02, with the headline CPI rising by around 2 per cent in both year-average and through-the-year terms. The abolition of Financial Institutions Duty (FID) and other elements of *The New Tax System* will put downward pressure on consumer prices in 2001-02 and the forecasts also incorporate an allowance for a slight easing in petrol prices in line with an expected downward trend in world oil prices. Wages growth is expected to remain moderate, at around 3¾ per cent, helping to ensure that growth in labour costs remains well contained. The inflation forecasts also make an allowance for some impact on consumer prices of the decline in the Australian dollar over recent quarters.

Measures introduced as part of *The New Tax System* (including the abolition of FID and stamp duty on marketable securities from 1 July 2001, as well as the early introduction of input tax credits for motor vehicles) are expected to reduce the CPI by between a ¼ and a ½ of a percentage point in both

year-average and through-the-year terms. Leaving aside this effect, 'ongoing' inflation is expected to be around 2¼ per cent in the year to the June quarter 2002.

A number of key uncertainties surround the inflation outlook, particularly for 2001-02. If world oil prices or the value of the Australian dollar differ substantially from their assumed levels, this could pose risks to the inflation forecasts on both sides. The inflation forecasts are also based on the historical pass-through from exchange rates into the CPI. However, in recent years, exchange rate movements appear to have had less impact on the CPI than was the case on average over recent decades. If this reduced pass-through from the exchange rate to the CPI were to continue, inflation could be lower than forecast.

Part IV: Uncertainties

From a domestic perspective, a key uncertainty relates to the possibility that the recent downward trend in business and consumer sentiment is sustained over coming quarters. While the relationship between business and consumer sentiment measures and actual growth outcomes can be loose, if the recent falls in these measures were sustained there may be downside risk to the forecasts for business investment and consumption.

On the other hand, there is a possibility that the lower dollar and lower interest rates will provide a greater stimulus to economic growth than has been incorporated into the forecasts. There is also the potential for stronger than forecast investment and consumption in 2001-02 if business and consumer confidence were to rebound sharply from their current levels.

The dwelling sector is expected to rebound strongly in 2001-02, although, there is a greater than normal degree of uncertainty surrounding the timing and extent of this recovery. In particular, while the Government's more generous First Home Owners Scheme and the recent reductions in interest rates should provide a significant boost to activity in the sector, the timing and magnitude of this boost is difficult to assess.

The key international uncertainty is how the US economy will evolve over the next few quarters. The most likely outcome is that growth will slow in the first half of 2001 as excess inventories are unwound and excess capacity is pared back, but will pick up quickly once the adjustment is complete. In this case the impact on the rest of the world would be relatively mild and transitory. However, if falls in consumer and business confidence were to translate into weaker demand then the deterioration in confidence would likely become self-reinforcing and the outcome would be a deeper and more prolonged period of weakness than currently envisaged.

Japan and the non-Japan East Asian region would be adversely affected if a sharp and severe downturn in the US were to occur. The Japanese economy has been weak for some time, unable to gather momentum despite substantial fiscal stimulus. With short-term policy options now limited and unresolved problems in the financial and corporate sectors continuing to weigh heavily on consumer and business sentiment, Japan is exposed to any further deterioration in global economic conditions. Weaker external demand would see a further erosion of confidence and increase the chance that the economy would fall back into recession.

A sharper than forecast slowdown in the US and in Japan would adversely affect several regions, but especially non-Japan East Asia. Asian economies have relied heavily on export-led growth to support recovery over the past few years and are vulnerable to a broad based slowdown in global demand. The Asian economies have also become increasingly integrated with the US economy through the information technology production chain, and are exposed to a weaker US economy through this channel. With several Asian economies facing domestic problems and further progress on structural reforms necessary to strengthen their resilience to external shocks, there is a risk of substantial spillover effects in the region if economic conditions either in the US or Japan were to deteriorate substantially. However, the lower interest rates provide some relief and the gradual decline in oil prices is also helpful for oil importing countries.

A significant slowdown in the US economy, combined with weaker growth in East Asia would result in a more broadly based global slowdown. This would translate into some downside risk to the outlook for Australia's export growth, especially in 2001-02 and hence represents a downside risk to the outlook for Australia's GDP growth in that year.

The following is a reprint of Statement 4, A More Productive Australia — Policy and Technology, from Budget Paper No. 1: Budget Strategy and Outlook 2001-02.

A more productive Australia — policy and technology

There is mounting evidence that the exceptional lift in productivity growth in the United States (US) economy in the late-1990s was largely the result of the productive diffusion of information and communication technology (ICT) throughout the economy. In Australia, a sound macroeconomic policy framework has encouraged competition and created a strong incentive to apply productivity-enhancing ICT advances in the Australian economy. This has created the potential for Australia to experience an extended period of strong productivity growth in coming years.

Part I: Introduction

Productivity growth underpins economic and social advance.

In the second half of the 1990s, the US economy achieved a significant lift in productivity and gross domestic product (GDP) growth, together with unusually low levels of both inflation and unemployment. There is evidence that this exceptional performance was substantially the result of the productive diffusion of ICT throughout the economy supported by highly competitive markets and a favourable investment climate. The US has been able to take advantage of this capital investment — often substituting labour — because of extremely flexible labour markets and the absence of rigidity in employment laws.

Computers and the means to link them in networks have been available for almost half a century, and have long been perceived as the next major ‘general purpose technology’, capable of pervasive application throughout the economy. However, it is only in the 1990s that these technologies have become cheap enough, and have been deployed widely enough in open, low-cost, Internet-based networks, to provide significant benefits to businesses and consumers. Although much of the discussion surrounding this general purpose technology has focused on the production of ICT, historically the greatest benefits of such technologies have come not from their production but from their use throughout the economy.

In the second half of the 1990s, Australia also experienced very strong economic growth by historical and international standards, combined with

low inflation and falling unemployment. As with the US, this performance was underpinned by high productivity growth rates, allowing the economy to grow faster without inflationary pressures emerging.

Despite these broad similarities, the initial improvement in Australian productivity growth in the early-1990s preceded the ICT triggers at work in the US. Australian productivity growth during the early-1990s appears to have largely reflected structural reforms, particularly to improve the performance of government business enterprises (GBEs), many of which were not previously subject to competition.

More recently, the Government has established a sound and responsible macroeconomic policy framework favourable to low inflation, low interest rates and high investment, and continued to implement further major structural reforms, including more flexible labour markets. This has encouraged competition and created a strong incentive to apply productivity-enhancing ICT advances throughout the economy. Indeed, Australia is now among the most extensive users of ICT in the world.

The Government has also promoted the efficient use of ICT directly through a range of policies and institutions, including the recently announced *Backing Australia's Ability – An Innovation Action Plan for the Future*, the largest group of measures ever proposed by an Australian government to foster innovation.

Given Australia's rapid adoption of ICT and sound macroeconomic policy framework, there is strong potential for a further wave of productivity growth in coming years. Such sustained high productivity growth would provide a firm foundation for solid economic growth and rising living standards in Australia over the longer term.

The recent slowdowns in growth in Australia and the US are likely to cause some cyclical slowing in productivity growth. But despite this, and despite the recent falls in equity prices of ICT companies in the US, the potential productivity gains to the entire economy from utilising the recent wave of Internet-based computer applications remains high. As the Organisation for

Economic Cooperation and Development (OECD) noted in its May 2001 Report on The OECD Growth Project⁵, analysing the reasons for improved performance in the US, Australia and a few other OECD economies:

‘... it would be wrong to conclude that there was nothing particularly exceptional about the recent US experience or that of other countries whose potential growth has been lifted.’⁶

Realising that potential will require maintenance of a good investment climate and further structural reforms. In particular, vibrant competition will need to be maintained and labour markets will need to continue to become more flexible to facilitate corporate re-design and the creation of new jobs from productivity-enhancing applications of the new technologies.

⁵ OECD (2001), *The New Economy: Beyond the Hype*, Final report on the OECD Growth Project, Meeting of the OECD Council at Ministerial Level.

⁶ OECD (2001), p 5.

Part II: The United States experience

Following almost sixty years of strong growth since 1913, US labour productivity growth slowed significantly to a little over 1 per cent a year from the early 1970s to the early-1990s. The earlier productivity surge from deploying the great inventions of the late 19th century seemed exhausted.

However, since 1995 the US has experienced a sustained return to very rapid productivity growth, rising incomes, low unemployment, and low inflation.

Economic analysts attribute an important role in the acceleration of US productivity growth to the diffusion throughout the economy of computer and related communication technologies. Economic historians identify ICT as a 'general purpose technology' with the potential for pervasive, productivity-enhancing applications throughout the entire economy, analogous to the application of electricity at the beginning of the last century — see Box 1.

These developments represented such significant changes in economic trends that US economic commentators, academics and officials speak of a 'new economy'.

Box 1: Historical experiences of new technologies and productivity growth surges

Most innovations are incremental, involving steady improvements within the framework of existing technologies. But there is a special class of 'radical technologies', which could not have evolved through incremental improvements in the technology that they displace (for example, synthetic fabrics or the transistor). Within the category of radical technologies, economic historians have identified a very small group of 'general purpose technologies' that have great economic significance because they can be applied to a broad range of sectors within the economy, and have many complementarities with other, existing technologies.

Identification of general purpose technologies is in part subjective, but on one reckoning, there have been only about a dozen general purpose technologies in the history of modern humans (that is, about 40,000 years):

Continued...

Box 1: Historical experiences of new technologies and productivity growth surges (continued)

the domestication of crops; the domestication of animals; bronze; iron; the water wheel and windmill; the three-masted sailing ship; the printing press; automated textile machinery; the steam engine; electricity; the internal combustion engine; and the computer.

The first industrial revolution, the then-unprecedented burst of high productivity growth in the United Kingdom (UK) from 1760 to 1830, arose in part from the diffusion of two general purpose technologies, the steam engine and automated textile machinery. The second industrial revolution in the US from 1913 to 1972 also arose in part from the diffusion of two more general purpose technologies, electricity and the internal combustion engine, together with other major inventions of the late 19th century. (Economic historians have used the label of 'industrial revolution' to refer to any great acceleration of output and productivity growth that is pervasive and economy-wide.)⁷

Getting the most from general purpose technologies requires extensive corporate re-design, often involving extended trial and error and 'learning by doing'. For example, the full benefits from the electrification of factories required a completely new conception of factory layout, of job design, of training to convey relevant skills, and of management of workers and workflow, as epitomised in Henry Ford's production line.⁸ So slow and demanding was the process of diffusion that the productivity pay-offs from the application of electricity and the internal combustion engine, both general purpose technologies of the late 19th century, were still being felt in the middle of the 20th century.

The computer (used here as shorthand for the related group of ICTs including the Internet and the World Wide Web (WWW)) has been the 20th century's only new general purpose technology.

⁷ Gordon, R.J. (2000), *Does the 'New Economy' Measure up to the Great Inventions of the Past?* NBER Working Paper No. W7833, p 17.

⁸ David, Paul, A. (1990), *The Dynamo and the Computer: an Historical perspective on the Modern Productivity Paradox*, American Economic Review, Vol 80, No. 2, pp 355-361.

The United States 'new economy'

The US achieved a major lift in economic performance in the second half of the 1990s:⁹

Productivity growth accelerated considerably, averaging over 3 per cent per year compared to 1.4 per cent for the previous 20 years. In contrast, labour productivity growth in the other G-7 economies slowed over the same period.

Real GDP growth rates averaged above 4 per cent per annum, almost half as fast again as in the previous 20 years.

The unemployment rate fell to below 4 per cent — the lowest level in a generation. Disadvantaged groups have shared in the improvement.

African-American unemployment has fallen from 13 per cent in the early-1990s to under 8 per cent in 2000, and Hispanic unemployment fell from almost 11 per cent to under 6 per cent. In both cases, these are the lowest rates since separate statistics began to be collected in the early-1970s.

Real hourly wages in the private sector rose (after a period of contraction in the late-1980s and early-1990s).

Poverty rates fell across the board, with the largest improvements for the most disadvantaged groups. The incomes of the poorest 20 per cent of households grew slightly faster than the incomes of the richest 20 per cent.

Changes of just a percentage point or two in single-digit growth rates in productivity and GDP might seem small. But their compounded effects on American real incomes and wealth have already been significant.

'Thus the United States today is some 10-15 per cent richer than mainstream economists would have dared to forecast a decade ago. It has an unemployment rate — a hair more than 4 per cent — that is two percentage points lower than mainstream economists would have dared to forecast a decade ago. And it has a much more favourable short-term inflation-unemployment trade-off than the US economy had

⁹ The Annual Report of the Council of Economic Advisers (CEA), *Economic Report of the President*, January 2001.

a decade ago, when a decline in unemployment below 6 per cent set off increases in inflationary pressures reminiscent of the late 1960s or the late 1970s.¹⁰

The role of information and communication technology

The technological key to this strong US performance in the second half of the 1990s has been the rapid rise in ICT investment, together with the intense competition that created the incentive for that investment, and the macroeconomic policy framework that created a favourable investment environment and low interest rates.

This rapid investment in new technology was made possible by the highly flexible nature of product and labour markets in the US. The lack of labour market rigidities in the US, particularly in relation to employment dismissal laws, has allowed existing firms to freely and efficiently substitute labour for capital in areas where there is potential for such decisions to improve the production process. This regulatory framework sends a clear signal that innovation and risk taking is encouraged by reducing unnecessary administrative regulations and instilling positive attitudes towards entrepreneurship. This has been a major factor behind the emergence of the US as a centre for ICT development. In turn, this creates an environment conducive to the creation of innovative startup firms, which contributed to the rapid employment growth seen over the same period.

New technologies that permitted the personal computer (PC), cheaper telecommunications and the Internet have been available for many years. However it was only in the 1990s that diffusion of the Internet and the WWW, accelerating falls in ICT prices and the emergence of user-friendly computer software, has allowed these technologies to interact on an unprecedented scale, and has allowed ordinary people and small businesses to use them productively — see Box 2.

¹⁰ Delong, J. B. (2000), *What Went Right in the 1990s? Sources of American and Prospects for World Economic Growth*, Paper to Reserve Bank of Australia 2000 Conference 'The Australian Economy in the 1990s', p 13.

Box 2: The evolution of information and communication technologies

From at least the onset of the 1972 to 1995 productivity slowdown in the US, economists had pondered what became known as the ‘Solow paradox’: the impact of computers could be seen everywhere except in the productivity statistics.¹¹

A timeline of significant commercial computer and ICT developments helps explain the technological basis to the very slow economic process of diffusion of ICT throughout the economy. The technological foundations were laid in the 1950s for commercial computing, and even for business-to-business (B2B) e-commerce (albeit through expensive, closed and inherently anti-competitive proprietary systems, rather than the cheap and open Internet). But the economic diffusion of ICTs in large, valuable networks that could link most businesses and many households, awaited the remarkably recent development of low-cost, high-powered computers, low cost telecommunications, the Internet and the WWW, and — perhaps most importantly of all — software that made it easy for ordinary people to use computers:

- 1951 UNIVAC I, first commercial mainframe computer goes on sale.
- 1957 SABRE, first proprietary B2B (originally airline reservations within American Airlines, subsequently made available to other airlines).
- 1980 First spreadsheet software.
- 1981 First IBM personal computer.
- 1983 Transition to TCP/IP protocols create the current Internet.
- 1984 Apple Macintosh ‘point and click’ interface.
- 1992 WWW software and protocols launched.
- 1995 Microsoft Windows 95 makes ‘point and click’ available to PC users.
Use of Internet for commercial transactions starts to gain momentum.

Continued...

Box 2: The evolution of information and communication

¹¹ Solow, R. (1997), *We’d Better Watch Out*, The New York Times Book Review, 12 July 1987, p 36.

technologies (continued)

The melding of all these advances into large networks was critical to their economic value. Economists analyse e-commerce and the Internet in terms of 'direct network economies'. A direct network economy arises in two-way communications networks, where each new customer increases the value of the network to all previous customers.

Users of the network receive increasing returns in consumption. For example, the English language is a communications network, and every additional speaker of English increases the value of the language to all existing speakers. So are the TCP/IP protocols on which the Internet rests. So are all applications of the Internet, such as B2B exchanges.

The 2001 Annual Report of the Council of Economic Advisers (CEA)¹² marshals analysis of the last few years in attributing the pick-up in productivity growth to a combination of mutually reinforcing advances in ICT, business practices and economic policies. This need for competitive pressures and good policies to create a positive investment climate has also been important in the previous diffusion of other general purpose technologies.

For example, the original spread of electric power and light through the US economy did not acquire real momentum until the 1920s, although central generating systems for electric power appeared in New York and London in the 1880s. The diffusion of electric technology did not proceed until the fall in regional utility rates for electricity which followed deregulation in 1914 to 1917 (analogous to the accelerated fall in the prices for computers in the mid-1990s). Large investments in both equipment and new human skills were necessary to reap the ultimate advantages of electrification, so a good overall investment climate and a low cost of capital was necessary. This was provided in the expansionary macroeconomic climate of the 1920s.

As with many new general purpose technologies, there was a long initial period of business 'learning by doing' and trial and error in getting the most out of electricity, and the first lessons from isolated successes could not be communicated efficiently to the diffuse range of potential beneficiaries.

¹² CEA (2001).

Competition has been an important factor in driving economic advances from ICT, both within the ICT-using industries and in the ICT industries themselves:

‘... in 1999, some 60 per cent of US spending on computers was sourced from imports, while some 50 per cent of domestically produced computers were exported. International competition has reinforced competition at home. ... Antitrust laws limit corporate conduct that undermines competition and consequently harms consumers. ... Regulatory policies have also promoted competition.’¹³

US research has extensively explored the extent to which accelerated productivity growth has arisen within the ICT sectors themselves, compared to the productivity gains from the use of ICT in the broader economy. Estimates differ in detail because some are constructed from the production side of the national accounts, some from the consumption side and some from the average of the two. Estimates also differ in the amount of the overall productivity acceleration they estimate to be structural, rather than cyclical. But almost all tell the same broad story. The CEA Report is representative in estimating that, of the 1.6 percentage point acceleration in annual productivity growth:

Around 11 per cent can be attributed to total factor productivity (TFP) growth in computer producing industries.

Around 63 per cent can be attributed to TFP improvements throughout the rest of the economy. This implies that improvements in the ways capital and labour are used throughout the economy are central to the recent acceleration in productivity. Some of these gains have likely resulted as firms learn to apply innovative information technology to their particular business and production methods.

Most of the remainder can be attributed to capital deepening, as the non-ICT sectors invested more in ICT.

So the US productivity surge has largely been the result of the productivity-enhancing application of ICT breakthroughs by rapidly restructuring companies, driven by competitive markets and a macroeconomic environment supportive of high investment and low interest rates.

¹³ CEA (2001), p 47.

The NASDAQ bubble — implications for the future of the ‘new economy’?

Between March 2000 and April 2001, the ICT-heavy NASDAQ index fell by around two-thirds of its total value. This extraordinary volatility bears the hallmark of previous stock market ‘bubbles’ with a rapid run-up in values beyond any supporting data on earnings potential, followed by an equally rapid collapse without any obvious trigger. Has the ICT boom run its course, and might its contribution to the US productivity acceleration already have passed?

Some bubbles in asset markets arise merely from excesses of credit, of greed or of both. But most have at their base some plausible hope for profit from burgeoning demand for a new product (such as for tulips in 17th century Holland), or profits from resources from a new frontier, or a new politically-guaranteed monopoly (such as the South Sea bubble in 18th century England), or from a new technology. In short, bubbles frequently arise when the fundamentals become difficult to assess — see Box 3.

Box 3: Stock market ‘bubbles’ and previous radical or general purpose technologies

Most major technological innovations have caused a ‘bubble’ in the prices of equities in associated companies.

There are similarities in the recent enthusiasm for ICT stocks to the railway age from the 1840s to the 1890s. In the UK, vast sums were raised on the stock market to finance new railway lines, but ‘...most railway companies never paid a penny to shareholders, and many went bust, largely because over-investment created excess capacity. The Great Western Railway was for decades the most admired railway company in Britain, yet anyone who had bought shares at its launch in 1835 (at a fraction of their peak in 1845) and held them until 1913 would have seen an annual return of only 5 per cent. Even so, the railways brought huge economic benefits to the economy long after share prices crashed.’¹⁴

In the US alone, there were once 5,000 railway firms, almost all of which have now disappeared. The real beneficiaries of the US railway boom were the small firms and farmers who benefited from the opening up of the continent.

There are also similarities to the more recent productivity surge from the 1890s to the 1950s driven by the diffusion of the late-19th century’s two general purpose technologies, electricity and the internal combustion engine, together with other radical technologies such as radio, sound recording and movies, aeroplanes and industrial chemistry.

Profits and share prices of the early electricity firms were disappointing. During the electrification of American industry, profits actually fell slightly as a share of GDP, as competition drove manufacturers to pass cost savings through to consumers. A few of the ‘new economy’ firms at the beginning of the last century, producing the technologies of the electric age, prospered and have survived into the computer age (such as the archetypical ‘General Electric’, the only company listed in the Dow Jones Industrial Index today

Continued...

¹⁴ Economist, *The New Economy: Untangling E-economics*, Survey, 23 September 2000.

Box 3: Stock market ‘bubbles’ and previous radical or general purpose technologies (continued)

that was also included in the original index in 1896). But references to many other firms and their brand names are now to be found only in the Smithsonian museums. In contrast, the whole-of-economy beneficiaries of the electric age are everywhere.

In the US alone, there were initially 2,000 automobile firms; now there are three, all with ownership links or corporate collaborations beyond US borders. The other firms were all driven out, over the years, through consolidations, while the quality, diversity and cost of motor transport options has improved rapidly.

The more radical or potentially pervasive the new technology, the more difficult it is to reasonably foresee just which firms might profit from it, when, or by how much.

With a radical or a general purpose technology, it is likely that the initial production of the key goods and services embodying the new technology will be undertaken by a specially created firm with no previous history or earnings from any other source. Existing firms in competing areas using earlier technologies typically have a vested interest in maintaining that technology, and are burdened with the cost of servicing the capital tied up in those technologies.

So, frequently the firms exploiting new technologies defy benchmarking by historical record or the usual tools of the equity market analyst. For example, their share price might reasonably be positive — they have some prospect of producing a future stream of earnings — but their actual earnings are zero or negative, so their current price-earnings ratio is undefined, and their effect on the average price-earning ratio for the equities market as a whole is to move it towards new heights, as has been observed of the US market over recent years.¹⁵

With the recent slowdown in the US economy, some slowdown in productivity growth has occurred, as usual cyclical ‘labour hoarding’ occurs. However, that should not be interpreted as the end of ICT-driven productivity growth. There seems to be abundant scope for future ICT efficiencies

¹⁵ Shiller, R. J., *Irrational Exuberance* (2000).

throughout the economy. For example, e-commerce efficiencies have not yet made much of a contribution to productivity growth. On one estimate of the value of business-to-consumer (B2C) and B2B commerce in the US in 1999, and assuming such sales were 10 per cent cheaper than if they had taken place thorough traditional channels, those resource savings may only have accounted for less than 0.1 of a percentage point of the increase in multifactor productivity (MFP) growth in the second half of the 1990s.

As with earlier radical and general purpose technologies, the greatest gains from future ICT applications are likely to flow to the users, not the producers. As noted in the OECD's Report on the Growth Project:

'ICT is important for growth, but having an ICT-producing sector is not a prerequisite. ... Moreover, only a few countries will have the necessary comparative advantages to succeed in ICT output. The key to benefiting from ICT is to focus on policies to foster its use, rather than its production.'¹⁶

For tomorrow's Internet-driven ICT applications in particular, it should be remembered that the Internet is an open system which inherently tends to lower entry barriers and intensify competition. That will be good for companies, workers and consumers who can flexibly change their practices to use the new technologies, but it is unlikely to be a path to riches for many of the investors in the production of the technologies themselves.

¹⁶ OECD (2001), p 9.

Part III: The Australian productivity acceleration

Australia's economic performance in the 1990s and particularly in the second half of the decade was as remarkable as that of the US. Economic growth was strong and sustained, the unemployment rate fell to around the lowest level in a decade, yet inflationary and wage pressures remained subdued.

Following the recession of the early-1990s, gross domestic product (GDP) growth strengthened, with nine years of positive growth. This strong performance included thirteen consecutive quarters of through-the-year growth above 4 per cent — the longest run of such growth recorded in the history of the quarterly National Accounts (since September 1959).

The unemployment rate fell from an historic high of 11.2 per cent in December 1992 to 6.0 per cent in September 2000 — the lowest level in over 10 years.

Inflation averaged 2.3 per cent in the 1990s, compared to over 8 per cent in the 1980s and over 10 per cent in the 1970s.

As was the case in the US, this exceptional performance was underpinned by very strong productivity growth rates.

During the 1990s, productivity growth rates in Australia returned to levels not seen since the late 1960s. The pick-up in productivity growth has been particularly noteworthy because it has occurred across all measures of productivity: labour, capital and MFP — Table 1.

Table 1: Productivity growth rates in Australia (annual average)

	Labour	Capital	Multifactor
Second half of 1990s	3.7	-0.4	2.0
1990s	2.9	-0.7	1.4
1980s	1.4	-1.4	0.4
1970s	2.8	-1.3	1.3
Long term average (since 1964/65)	2.4	-1.1	1.1

Source: ABS Cat. No. 5204.0.

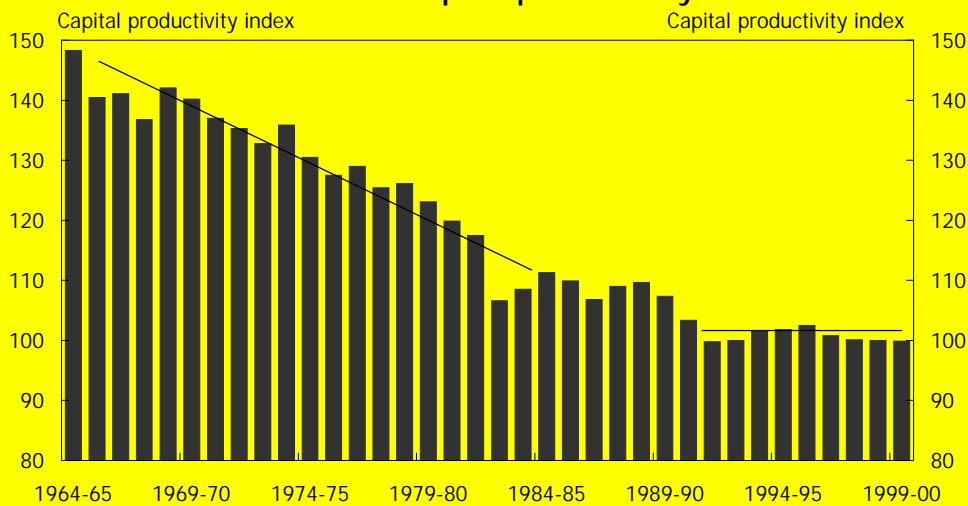
Capital productivity in any modern economy is usually in secular decline, as new investments are added to a slowly growing labour supply. But Australia's capital productivity fell very rapidly from the 1960s to the 1980s, because of inefficiency in allocating and operating investments. In the 1990s, capital productivity declined at a much slower rate than previously, as sharpened

competition and more flexible markets (including labour markets) permitted more efficient resource allocation and more intensive use of the existing capital stock — see Box 4.

Box 4: Capital productivity

Traditionally, capital productivity has declined due to increasing capital intensity. The capital-to-labour ratio has increased in all but a few years since the mid-1960s, reflecting a greater reliance on the use of machinery in the production process. By definition, this has the effect of increasing the relative productivity of workers and lowering the relative productivity of capital.

Chart 1: Capital productivity



Source: ABS Cat. No. 5204.0

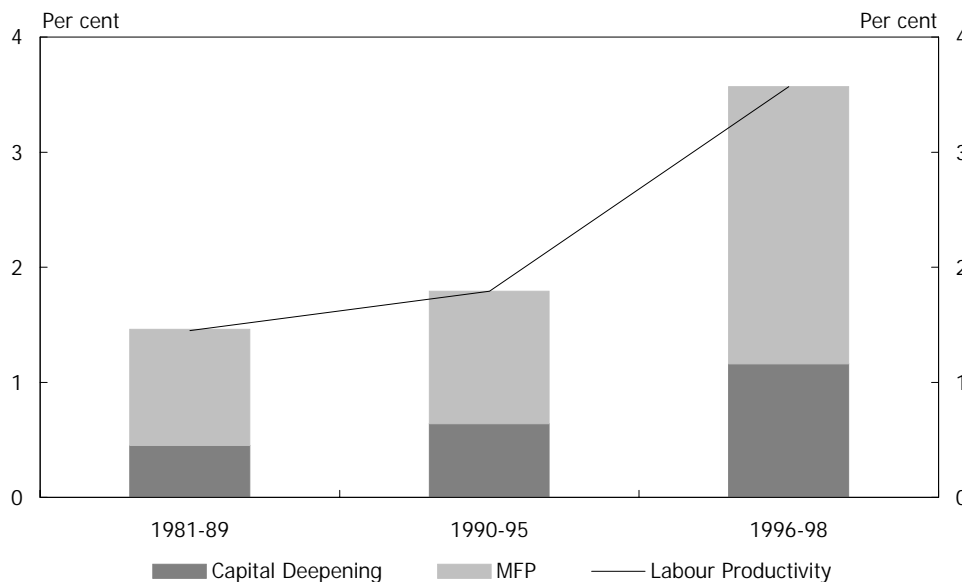
However, in the 1990s capital productivity growth has been relatively stable, a clear break from the downward trend of previous decades.

This moderation in the decline of capital productivity can be attributed to the widespread structural reform that has been implemented since the mid-1980s. It provides evidence that resources are now being directed into more productive and efficient areas, increasing economic returns to investment within the Australian economy, with economic benefits to all Australians.

This strong productivity performance has gained both domestic and international recognition. The May 2001 OECD Report of the Growth Project highlighted Australia as one of only three countries (together with the Netherlands and Ireland), to experience markedly stronger trend growth of GDP per capita in the 1990s, largely as a result of improvements in productivity.

The strong growth in MFP in the 1990s also highlights the fact that Australia’s productivity surge did not simply reflect an increase in capital investment — commonly referred to as capital deepening — Chart 2. Instead, it reflected underlying improvements in the overall efficiency of the economy: the skill with which capital and labour were combined and managed.

Chart 2: Decomposition of Australian annual labour productivity growth



Source: US Federal Reserve Board.

Structural reform and productivity growth

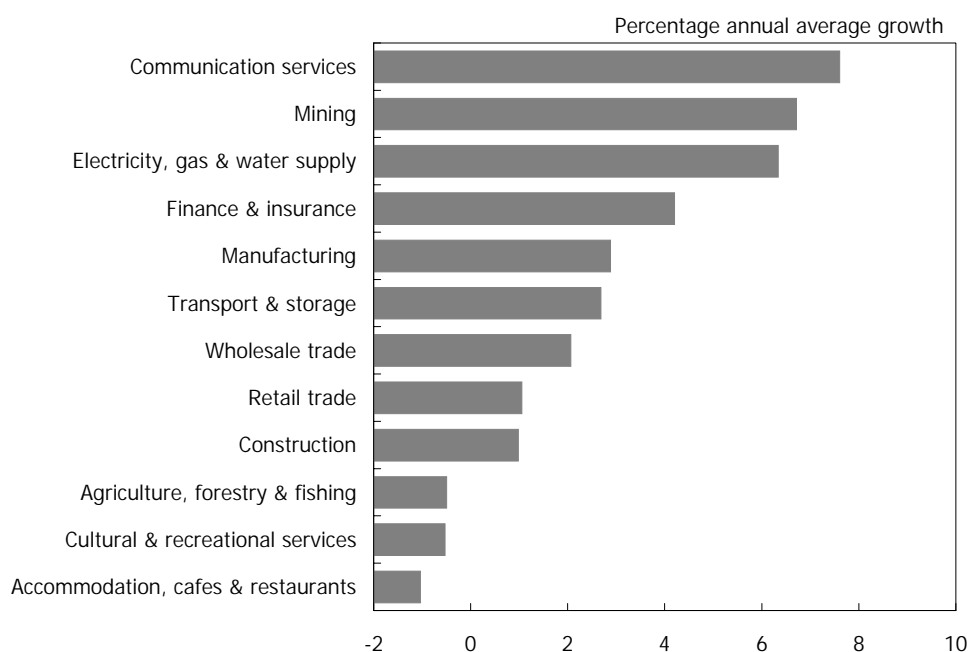
Despite the similarities between the magnitudes of the Australian and US productivity accelerations, there are important differences. Following a period of weak growth in the 1980s, Australian productivity growth accelerated strongly in the early-1990s. This initial surge began too early to have been initiated by the diffusion throughout the economy of those recent ICT breakthroughs that powered the US surge. Instead the Australian

productivity improvement was triggered by a wide-ranging structural reform programme.

Reforms such as the reduction of external barriers to trade and increased access to essential infrastructure through the National Competition Policy (NCP), began the process of increasing competition and improving the underlying efficiency of the Australian economy.

The effects of this reform can be seen by examining an industry breakdown of labour productivity growth rates in the early 1990s. Those sectors that were the primary focus of reform, including financial services and those sectors previously dominated by government owned monopolies, experienced very rapid productivity growth — see Chart 3.

Chart 3: Industry labour productivity growth 1989-90 to 1994-95



Source: ABS Cat. No. 5204.0

In the second half of the 1990s, Australia stepped up the reform process. *The New Tax System* replaced a range of narrowly-based indirect taxes, reducing the distortion of production and consumption choices. Enterprise bargaining replaced the centralised setting of wages and conditions of employment, with wage rises now set in a more competitive, flexible

environment and more dependent on productivity improvements in particular workplaces.

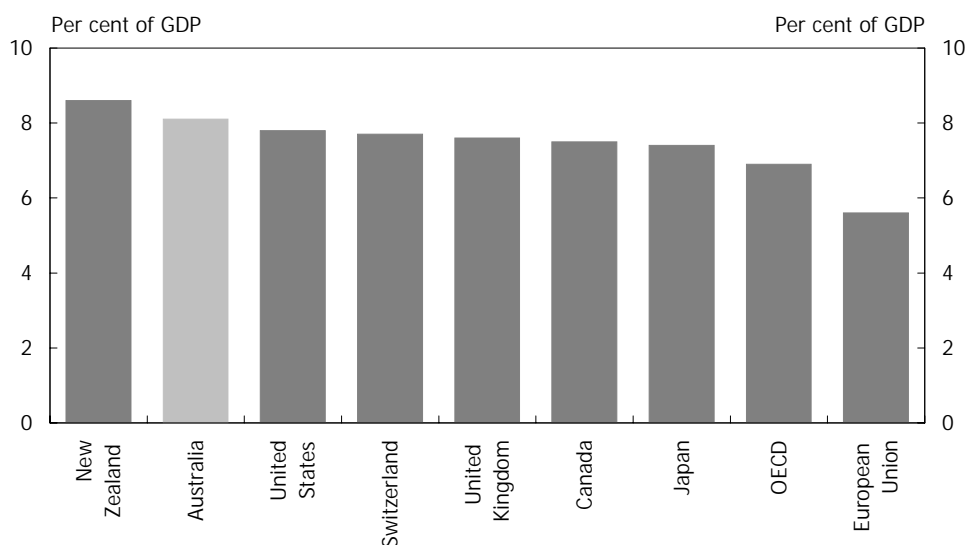
The Government also established a transparent, medium-term macroeconomic policy framework. In August 1996, the *Statement on the Conduct of Monetary Policy* formalised the objective of ‘keeping underlying inflation between 2 and 3 per cent, on average, over the cycle’ and gave the Reserve Bank of Australia (RBA) operational independence in meeting that objective. The Government also adopted a medium-term fiscal objective of achieving underlying budget balance, on average, over the economic cycle. The credibility of fiscal policy was also enhanced through accrual accounting and superior transparency arrangements legislated into the Charter of Budget Honesty.

This combination of a sound and responsible macroeconomic policy framework and ongoing structural reform has continued to directly improve the underlying productivity of the Australian economy by creating a more dynamic and competitive environment.

The role of new technology in Australia

In pursuing productivity improvements within this highly competitive environment, Australian firms have applied new technology. Indeed, Australia is now amongst the most intensive and sophisticated users of new technology in the world, with recent OECD estimates ranking Australian spending on ICT as a percentage of GDP amongst the highest in the OECD — see Chart 4.

Chart 4: ICT expenditure as a per cent of GDP



Source: OECD Science and Technology Outlook 2000.

The OECD noted that Australia trails only the US and Iceland in the density and rate of growth of secure servers (a measure of preparedness for encrypted e-commerce). Of seven leading economies reviewed by the OECD, Australia had the second highest home Internet access among the richest quartile of household incomes, and the highest access among the poorest quartile.

More generally, ICT investment has also been growing rapidly, with the shares of capital income accruing to software and hardware owners in Australia — a measure of the importance of ICT investment in the capital stock — rising rapidly in the 1990s, towards US levels.

In Australia's case, as a result of the reform-driven increases in domestic and international competition, investments in ICT have been practically and commercially focused. Indeed there has been a fundamental interplay between improved competition and the efficient adoption of new technology.

This rapid and efficient adoption of new technology by world standards, combined with Australia's long history of innovation, makes Australia very well placed to experience a second wave of productivity growth, as all sectors of the economy harness the benefits of new technology. As an example of Australia's ability to focus scientific research on new innovations, Australia is

third to only the US and Canada within the OECD in the citation rates of research in patents taken in the US. As the OECD's Report on the Growth Project notes:

'In the United States, Canada and Australia, innovation draws more strongly on scientific research than in France, Germany and Japan.'¹⁷

Early evidence of this can be seen in those industries where ICT has been adopted most heavily. Both the wholesale and retail trade industries experienced very strong productivity growth in the second half of the 1990s. These industries have been quick to adopt new management and ICT techniques (drawing on computers and bar code scanners) in order to cut down on inventories and improve customer service.¹⁸

The benefits of ICT are also being felt in traditional industries such as mining and agriculture. By the end of March 1999, close to half of all farms in Australia owned or used a computer.¹⁹ This technology is being used to help overcome the communication and distribution problems posed by the isolated geographic nature of many of Australia's rural industries. It is also being used to access and compete effectively in new markets, particularly overseas.

These examples of a range of industries across the economy effectively harnessing the benefits of new technology, again highlight the long-run differences between the use and the production of new technology. Australia's small ICT-producing sector is not competing in the 'commoditised' chip production and PC assembling end of the market, but rather in specialised software applications that build on Australia's other commercial comparative advantages. Australia is also benefiting from our openness with the world's best in this intrinsically globalised industry, as illustrated in the recent success of 'Radiata', whose alertness to the world potential for wireless LAN applications would be hard to envisage without its key Australian personnel's own experience in US academia and Silicon Valley.

¹⁷ OECD (2001), p 12.

¹⁸ The application of the ubiquitous bar code scanner together with the computer is another example of how competition drives innovation in unpredictable directions through unforeseeable linkages, with application rather than production being the key. Bar code scanners use lasers. When Bell Laboratories invented the laser in 1957, it did not bother patenting it, regarding it as only a specialised scientific and potentially military tool. The barcode scanner (and other commonplace applications, such as the Compact Disc) awaited the pairing of the laser with complementary developments in the semiconductor industry.

¹⁹ *Use of Information Technology on Farms, 1998-99*, ABS Cat. No. 8134.0.

Australian firms will continue to benefit from applying ICT productively throughout a competitive and flexible economy long after the apparent obsession with Internet start-up companies has faded away. This is the true test of a so-called 'new economy', and in the long-run Australia is well placed to compete in this new global arena.

Part IV: Looking to the future

Is productivity growth slowing?

Following the record growth recorded in the second half of the 1990s, labour productivity growth has slowed somewhat in recent quarters, in line with the pause in overall economic growth (see Statement 3).

Employment growth was particularly strong in the two years leading up to the Sydney Olympics, with this growth focused largely in highly labour intensive sectors of the economy, particularly construction. By nature, these are relatively low labour productivity sectors when compared with highly capital intensive areas such as mining. Combined with the recent pause in economic growth, this has led to lower productivity growth in the short term.

However, despite this cyclical slowing in productivity growth, prospects for productivity growth over the medium to longer term remain sound. As highlighted, the combination of stable macroeconomic policies, ongoing structural reform and the increased usage of new technology should all contribute to a resumption of strong productivity growth.

The role of Government

Government has a key role in providing a policy framework for the private sector, to foster the efficient and practical adoption of new technology. The essential framework involves a vigorous national competition policy and flexible labour markets, in a stable macroeconomic context to create a favourable investment environment.

The Government has initiated technology and educational policies that support Australia's transformation to a modern technology-based economy. The Government released *Backing Australia's Ability — An Innovation Action Plan for the Future* on 29 January 2001. The package invests \$3 billion over five years in a wide range of measures designed to further encourage innovation. This builds on the Government's investment of around \$4.5 billion in major programmes of science and innovation in 2000-01 and on broader support provided in other areas of the innovation system such as education and training. These additional investments demonstrate the Government's recognition of the importance of innovation to national prosperity — see also Budget Paper No. 2 and at <http://www.innovation.gov.au>.

In 1997 the Government also established the National Office for the Information Economy (NOIE). NOIE is helping Australians create a world-class online economy and society through its work developing, overseeing, and coordinating Commonwealth Government policy on electronic commerce, online services and the Internet.

But applying better education and scientific skills are ultimately labour market issues. As the OECD observes in the Report on the Growth Project:

‘Improving skills is not enough — human capital needs to be used efficiently and its interactions with new technology [must] be enhanced. This means a reorganisation of work, since firms that introduce new work practices such as employee involvement, flatter management structures and teamwork tend to enjoy higher productivity gains than other firms. It is essential here to give workers greater voice in the process of change and institutions of labour-management cooperation should be strengthened. This calls for modernisation of traditional systems of collective bargaining and wage formation. In addition, regulation should provide for more flexibility in working hours, allowing new forms of work to flourish.’²⁰

²⁰ OECD (2001), p15.

Part V: Conclusion

This Statement has explored in both the United States (US) and Australia the recent experience of, and the potential for, a sustained period of accelerated productivity growth from exploiting innovation in ICTs through maintaining a good macroeconomic climate for investment, competitive and flexible markets, and open, outward looking trade and investment policies.

The experience of the US and Australia with ICTs, and broader global experience with earlier waves of general purpose technologies, shows that technological advance is not a *deus ex machina*. It does not automatically deliver its benefits as a windfall to the leading producers of the goods or services embodying the new technology.

Inappropriate policies and structural rigidities can hobble powerful new technologies. To give a distant example, by 1400 China had already invented moveable-type printing, the blast furnace and the water-powered spinning machine. If China had then had the right system of property rights and public policies to support the financing, efficient allocation and management of investments in the new technologies, the first industrial revolution could conceivably have occurred in China, 350 years earlier than its actual birth in the UK. Instead, it took until the 18th century for the UK to provide the first conjunction of powerful, general purpose technologies with the social attitudes, policies and institutions that allowed the confidence to invest, the ability to profit, and the 'gales of creative destruction' necessary to displace earlier technologies and change work practices.

Through history, the rewards of major new technologies have repeatedly gone to productive users of new technologies, not to the early producers of them. Productive deployment of new technologies requires large investments and extensive structural changes, both of which depend on a supportive policy framework and in particular, open flexible product and labour markets.

With general purpose technologies such as ICTs, and their potential to raise productivity throughout the economy, the early international winners will be those who can harness the technology through competition in a good investment climate to finance the most competitive, productivity-enhancing uses of the new technologies. If Australia can sustain a supportive macroeconomic environment and vibrantly competitive markets while creating more flexible labour markets, it will be well placed for a second wave of sustained high productivity growth and consequently broader social opportunities.

The growing dependence of East Asian²¹ economies on exports

East Asian economies have become more integrated with the world economy through increased trade and expanded exports of electronic goods.²² Many of these economies are being severely affected by the current global downturn.

Introduction

This article briefly documents the growing dependence of East Asian economies on trade — particularly on exports to the US market for electronic goods — with a view to better understanding the current downturn in these economies.²³

East Asia's increasing reliance on exports for growth

Table 1 shows that East Asia's trade linkages with the rest of the world have increased substantially, reflecting both the growing export-orientation of these economies and the general trend of trade liberalisation in the world. Most countries in the region now have trade levels (when measured as a per cent of GDP) well above global averages.

21 *In this paper, East Asia includes the economies of China, Hong Kong, Indonesia, Republic of Korea, Malaysia, the Philippines, Singapore, Taipei and Thailand, but excludes Japan. Hong Kong refers to Hong Kong (China) and Taipei to Taipei (China).*

22 *In this article, 'electronics' refers to office machines and parts, automated data processing machines, telecommunications and sound recording and reproducing equipment, electrical machinery and apparatus and appliances.*

23 *Data limitations mean that some 'proxy' measures must be used to highlight aspects of discussion.*

Table 1: Exports and imports of goods and services as a per cent of GDP

	1991		1995		2000	
	Exports	Imports	Exports	Imports	Exports	Imports
China	18	16	21	19	23	21
Hong Kong	139	132	149	154	150	145
Indonesia	27	27	26	28	39	31
Republic of Korea	27	30	30	32	45	42
Malaysia	78	81	94	98	125	105
Philippines	30	33	36	44	56	50
Singapore	138	154	142	149	150	146
Taipei	47	43	48	46	54	52
Thailand	36	43	42	48	66	58

Source: CEIC database. Export data for Hong Kong and Singapore include both domestic exports and re-exports. Re-exports are goods that have been imported and are then exported without having undergone any material change while in the exporting country.

In particular, East Asia's exports have increasingly been in high technology industries (see Table 2, which shows the value of exports of electronic goods of East Asian economies as a per cent of total exports, and measured against GDP). As such, East Asia's exports have increasingly depended on the markets of the US and Japan (see Table 3, which shows the value of total exports from East Asian economies that went to the US and Japanese markets, as a share of GDP).

Table 2: Electronic exports as a per cent of total exports and GDP

	% of Total Exports			% of GDP		
	1991	1995	2000	1991	1995	2000
China	n.a	15	25	n.a.	3	6
Hong Kong	n.a	26	34	n.a.	39	51
Indonesia	1	6	15	0	2	6
Republic of Korea	26	34	38	7	10	17
Malaysia	35	48	59	27	45	74
Philippines	26	43	59	8	16	33
Singapore ^(a)	n.a.	34	31	n.a.	48	46
Taipei	n.a	35	45	n.a.	17	24
Thailand	n.a	18	26	n.a.	8	17

(a) Domestic electronic exports only and 1995 figures are 1996 data.

Source: CEIC database.

Table 3: Exports to Japan and US as a per cent of GDP

	Exports to US			Exports to Japan		
	1991	1995	2000	1991	1995	2000
China	2	4	5	3	4	4
Hong Kong	31	32	35	7	12	13
Indonesia	3	4	5	10	7	6
Republic of Korea	7	4	10	4	4	6
Malaysia	13	19	26	12	13	15
Philippines	10	13	17	7	7	7
Singapore	27	26	26	12	11	12
Taipei	14	11	13	6	6	6
Thailand	8	7	14	6	8	10

Source: CEIC database.

Effects of increasing exports on the economies of East Asia

The strong export-orientation in East Asian economies over the past decade has contributed significantly to their rapid recovery from the downturn associated with the 1997-98 crisis. There was relatively little recovery in domestic demand, notwithstanding accommodative fiscal and monetary conditions. As noted above, East Asia's exports have increasingly been IT-related. Morgan Stanley estimates that as much as two-fifths of Asia's total GDP growth last year came from exports of IT to America ('Falling (again)', *The Economist*, 7 July 2001, p 11).

By the same token, this strong export-orientation has increased their vulnerability to the current slowdown in the US and Japan.

Table 4 shows that the value of exports of electronic goods from East Asian economies has turned down sharply since late last year. This is also reflected in the downturn of exports to the US market (Table 5). The use of through-the-year figures may not fully capture the extent of the drop in exports. However, seasonally adjusted quarterly data are not available.

Table 4: Electronic exports, nominal (per cent change, through the year)^(a)

	2000				2001
	Q1	Q2	Q3	Q4	Q1
China	49	43	43	30	28
Hong Kong	32	36	35	22	10
Indonesia	126	144	128	107	n.a.
Republic of Korea	43	43	49	13	-5
Malaysia	21	19	25	10	1
Philippines	7	8	1	3	-4
Singapore ^(b)	10	3	17	2	-0.1
Taipei	13	28	40	3	5
Thailand	28	19	36	35	16

(a) Constant price data are not available and data on a seasonally adjusted basis are not available quarterly.

(b) Domestic electronics exports only.

Source: CEIC database.

Table 5: Exports to the US, nominal (per cent change, through the year)^(a)

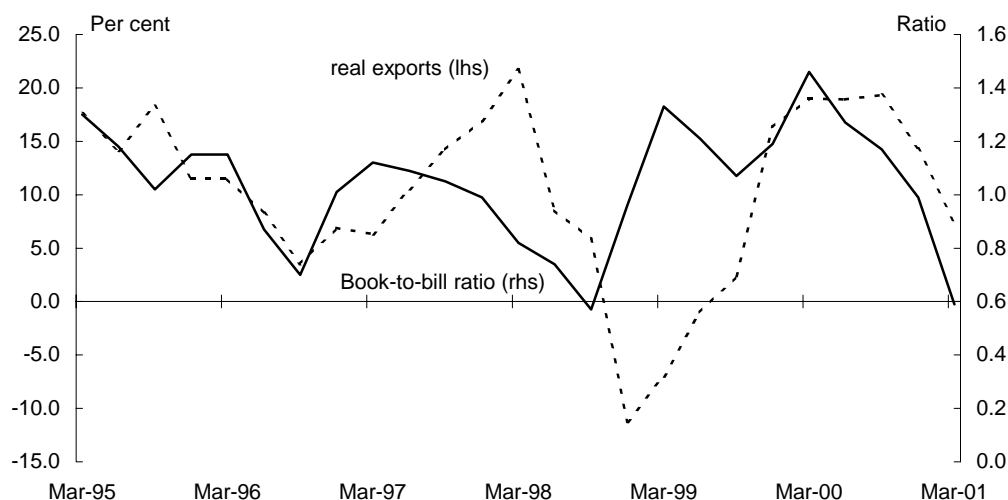
	2000				2001
	Q1	Q2	Q3	Q4	Q1
China	32	29	24	15	11
Hong Kong	19	14	14	11	-1
Indonesia	36	25	21	12	n.a.
Korea	39	25	36	16	-1
Malaysia	11	7	12	6	3
Philippines	8	0	6	23	-8
Singapore	12	-1	13	19	6
Taipei	3	7	16	9	-5
Thailand	26	15	30	22	13

(a) Constant price data are not available and data on a seasonally adjusted basis are not available quarterly.

Source: CEIC database.

The linkage of electronic exports of East Asia to US demand is illustrated in Chart 1 which compares the US semi-conductor book-to-bill ratio (namely, the ratio of new orders to shipments) with real East Asian export growth. Chart 1 shows that East Asian exports recovered strongly following the Asian crisis as a result of buoyant US demand for electronic goods, but that they slowed sharply from late 2000, as the demand for electronic goods faltered in the US.

**Chart 1: East Asia (ex China) real export growth
(per cent, through the year) and
US semiconductor book to bill ratio**



Source: CEIC database, IMF PPP weights (2001) and website economy.com.

While trade between East Asian economies has increased over the past decade (see Table 6), it appears the bulk of intra-regional exports have comprised shipments of components among linked production sites. This trade ultimately reflects a derived demand for final products from more developed countries, particularly the US. The downturn in the US seems to have reduced East Asia's direct exports to that market and is likely to have reduced its intra-regional trade.

Table 6: Intra-regional trade of the five crisis-affected economies^(a)

	Total		% of Total			
	(\$ billion)		Japan		East and Southeast Asia ^(b)	
	Exports	Imports	Exports	Imports	Exports	Imports
1990	151.4	167.4	22	26	23	22
1995	318.6	355.5	16	26	34	21
1996	334.9	376.9	16	23	36	23
1997	351.1	367.2	14	22	36	27
1998	338.5	253.4	12	20	31	31
1999	370.8	295.2	13	22	32	32

(a) Indonesia, Republic of Korea, Malaysia, the Philippines, and Thailand.

(b) China, Hong Kong, Indonesia, Republic of Korea, the Philippines, Singapore, Taipei, Thailand, and Vietnam.

Source: Asian Development Bank, Asia Recovery Report October 2000.

Growth in the volume of world trade has slowed to around 4 per cent this year from 13 per cent last year, the sharpest downturn since 1975 ('Falling (again)', *Economist*, 7 July 2001, p 11). Table 7 shows that total exports from East Asian economies, measured in real terms, have slowed significantly. As exports have slowed, industrial production has begun to slow, investment has begun to slacken, and consumption has also weakened (see Charts 2, 3 and 4), although, as noted above, fiscal and monetary conditions in East Asia have been accommodative. Real GDP has begun to slow markedly (see Chart 5 and Table 8). Singapore is now in a recession, while Thailand, Taipei and the Philippines suffered quarter-on-quarter negative growth in the first quarter of 2001. By contrast, China seems the only economy in East Asia that continues to grow strongly, on the back of very strong growth in domestic investment, especially public works. China has also increased its market share in the US and EU markets (Asian Economic and Strategy Perspectives, UBS Warburg, June 2001).

Table 7: Real Export Growth (per cent, through the year)^(a)

	2000				2001
	Q1	Q2	Q3	Q4	Q1
China ^(b)	39	38	25	15	15
Hong Kong	20	18	17	13	4
Indonesia	15	21	14	14	12
Republic of Korea	27	21	22	16	8
Malaysia	21	17	20	8	7
Philippines	12	16	17	25	19
Singapore	17	13	22	15	8
Taipei	13	19	24	14	2
Thailand	22	16	19	7	-2

(a) Seasonally adjusted quarterly data are not available for most East Asian countries.

(b) In nominal terms.

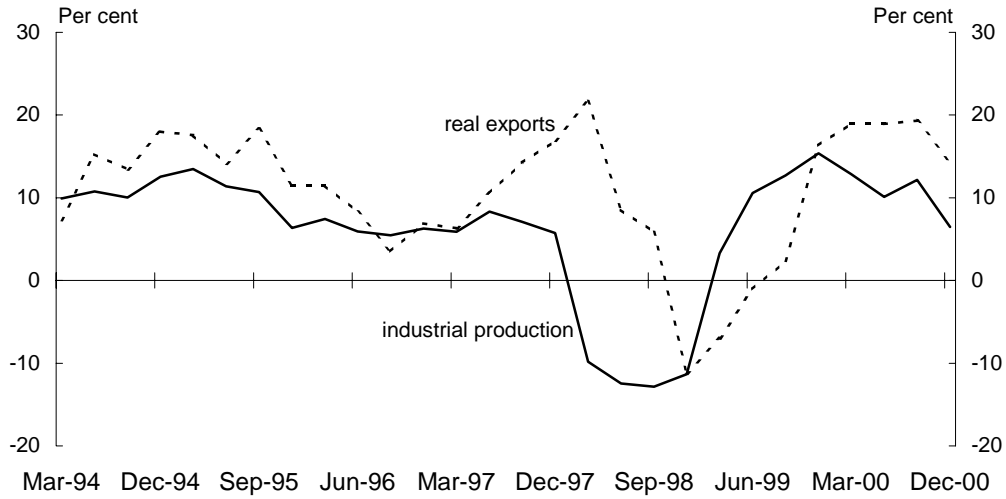
Source: CEIC database.

Table 8: Real GDP Growth (per cent)

	Through the year				Quarter-on-quarter, sa	
	2000				2001	2001
	Q1	Q2	Q3	Q4	Q1	Q1
China	8.1	8.3	8.2	7.4	8.1	n.a.
Hong Kong	14.1	10.7	10.8	6.9	2.5	0.3
Indonesia	4.2	5.2	4.4	5.3	4.0	2.6
Republic of Korea	11.1	9.4	9.1	5.2	3.8	0.3
Malaysia	11.7	8.0	7.6	6.3	3.2	1.6
Philippines	3.4	4.2	4.6	3.9	2.6	-0.5
Singapore	9.8	8.3	10.4	11.0	4.4	-3.0
Taipei	7.9	5.4	6.6	4.1	1.1	-0.4
Thailand	5.2	6.3	3.1	3.2	1.8	-0.2

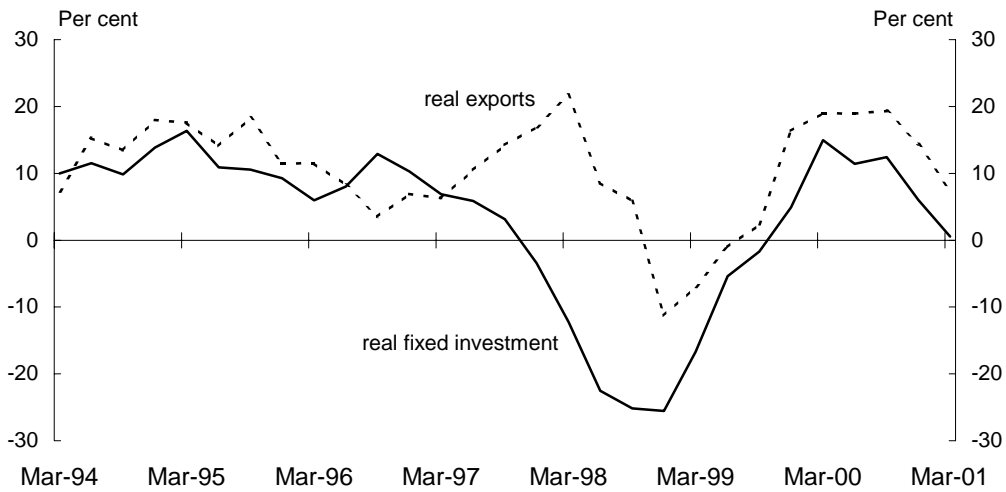
Source: CEIC database. Quarter-on-quarter figures for Indonesia, Taipei and Malaysia are seasonally adjusted by Treasury.

Chart 2: East Asia (ex China) real export growth and industrial production (per cent, through the year)



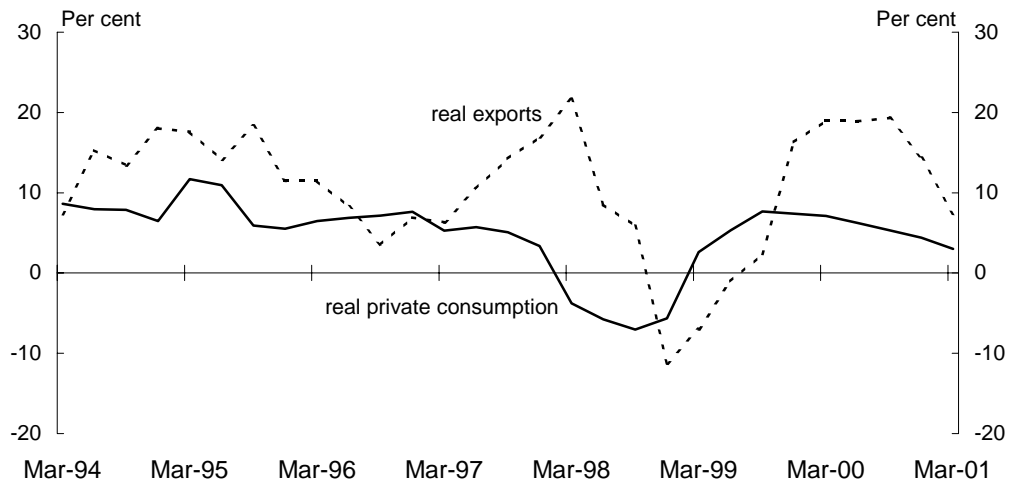
Source: CEIC database and IMF PPP weights (2001).

Chart 3: East Asia (ex China) real export growth and investment growth (per cent, through the year)



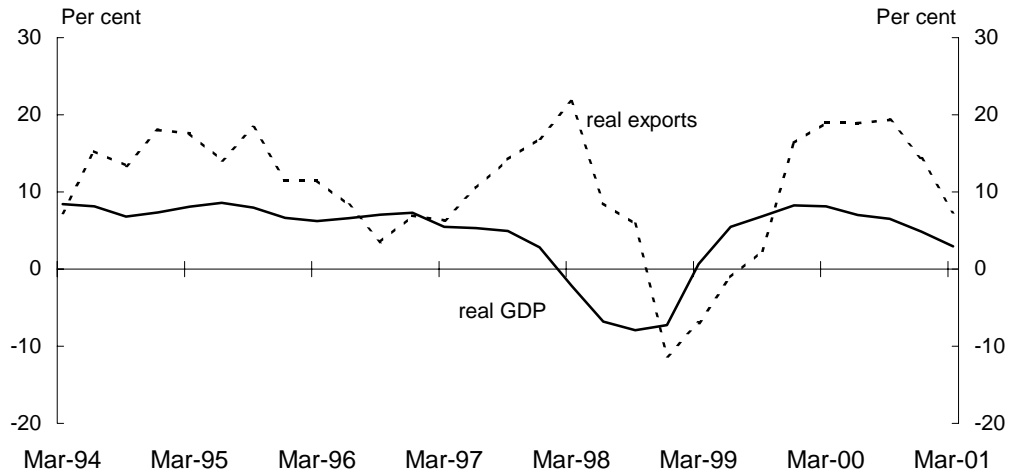
Source: CEIC database and IMF PPP weights (2001).

Chart 4: East Asia (ex China) real export growth and private consumption growth (per cent, through the year)



Source: CEIC database and IMF PPP weights (2001).

Chart 5: East Asia (ex China) real export growth and GDP growth (per cent, through the year)



Source: CEIC database and IMF PPP weights (2001).

Conclusion

East Asia's increasing reliance on exports, and particularly high technology exports, helped most of the region to recover from the 1997-98 crisis. It now exposes the region to greater risk, as world demand for such exports, and for exports more generally, is slowing sharply.

Growth in the US is expected to recover later this year. However, given the apparent heavy over-investment of US firms in information and communication technology in recent years, this recovery may not be accompanied by a revival in spending on such products, thereby resulting in a slower recovery in demand for East Asian electronic exports.

Financial capital and taxation policy: the way forward

This paper was presented by Mr. Richard Wood (Budget Group) to a Seminar for Staff and Senior Students at the University of Newcastle on 8 June 2001.*

The establishment of the joint ATO/Treasury Taxation of Financial Arrangements (TOFA) project was announced in the 1992-93 Budget following representations by industry concerning the uncertainty, complexity and incoherency of relevant tax legislation.

Extensive consultations with industry have been based on:

- *'Taxation of Financial Arrangements: A Consultative Document', 1993;*
- *'Taxation of Financial Arrangements: An Issues Paper', 1996;*
- *'A Platform for Consultation', February 1999, Chapters 5, 6 and 7; and*
- *'A Tax System Redesigned', July 1999, Recommendations 6.8, 9.1 to 9.12, and 12.11.*

The debt/equity tax borderline reform (developed as part of the TOFA project) has been introduced into Parliament with effect from 1 July 2001. Consultations on the remainder of the TOFA project will continue before any recommendations are prepared for Government consideration.

Introduction

Price instability, banking and financial crises, large current account imbalances, speculative capital movements, the tendency for exchange rate overshooting and variable rates of unemployment have all contributed to uncertainty and to market volatility over recent decades. At the same time, financial innovation — designed to better manage price volatility and risk, and to exploit tax arbitrage opportunities — has contributed to an explosion in the use of derivatives, hedging techniques and other financial instruments. In

* This paper incorporates the views of the author only. These views are not necessarily shared by the Treasury (his employing organisation) or the Australian Government.

Australia, overall financial market turnover exceeded \$38,000 billion in 1999-2000.

Sufficient depth and the efficient functioning of financing and investment markets are preconditions for balanced and sustained economic expansion. The functions, inter-dependencies, contingencies and applications of financial instruments have all become more complex in the wake of financial engineering and globalisation. Financial markets increasingly provide a platform — particularly within an innovative and more integrated global financial environment — for the more efficient allocation of risk. Financial instruments are now constructed to strip-out, repackage and reallocate different risks and cash flows; alter contingencies and risk profiles through time; mix debt and equity together; embed one instrument (an option, say) within another instrument (debt); replicate debt from a portfolio of both equity and derivatives, and so on.

Conventional tax distinctions and classifications — developed for the industrial revolution — were not designed for such diversity. The 'old' tax policy paradigms (based on the fixed/contingent dichotomy and legal form) are proving increasingly inadequate in the face of financial innovation and the increased complexity in instrument design. Tax-driven discontinuities, mismatches, distortions, uncertainties, asymmetries, mis-pricing and prohibitions are encroaching on the effectiveness of financial equivalences and the efficient allocation of capital. The traditional taxation architecture in Australia has not been able to cope with newer debt/equity hybrid instruments, does not adequately address synthetic arrangements, results in post-tax mismatches of pre-tax matches, has created taxpayer uncertainty in a number of other areas including in respect of foreign currency gains and losses, does not facilitate efficient hedging, risk management, fund raising, market-making and price formation, and strains to prevent tax arbitrage and erosion of the business tax base. In Australia, some of the markets for hybrid instruments remain relatively illiquid, particularly in respect of longer dated issues.

Reflecting the inherent complexity of the subject matter, and despite more than a decade of serious intellectual endeavour (particularly in the United States), there is no 'consensus' framework for taxing financial arrangements. Only a few countries have attempted to confront the underlying tax policy challenges in a systematic manner. A broad-based accruals taxation system for financial arrangements was introduced in New Zealand in March 1987. In the United Kingdom, after more than eight years of consultations, the taxation of financial instruments was reformed in three stages: foreign exchange in 1993, derivatives in 1994, and gilts and bonds in 1996. The U.K. Inland Revenue

announced a further review of the operation of these three pieces of legislation and of the likely benefits from their possible consolidation in November 2000.

Some other countries, including Australia, have added defensive, ad hoc, anti-avoidance provisions to existing law (creating new layers of complexity) rather than implementing broadly-based reform of the underlying taxation structure. A number of countries have few, if any, or only partial, tax laws specifically relating to derivatives and the more complex financial instruments.

To be best able to cope with product innovation and future financial engineering it is desirable, then, that certain traditional form/instrument-based distinctions, anomalies and distortions be replaced, or minimised. Such adjustments could make room for new, restructured tax architecture centred around economic substance and the functional applications of financial arrangements. Ideally such a framework would minimise the influence of the existing capital/revenue distinction and be capable of separating 'tax-timing' from 'deductibility/frankability' tax treatments. This separation would provide some of the extra degrees of freedom needed to better cope with financial innovation and the larger number of contingent/non-contingent permutations built into the principal/periodic return structures of modern instruments. It is arguable that such an approach would provide greater coherency, consistency, robustness and durability to the tax policy design.

Alternative frameworks

In respect of financial capital it is generally undesirable to rely on common law and court decisions to determine tax treatments. The uncertainties, distortions and costs associated with that approach, and the tax planning opportunities created, are simply too great. A firm analytical basis for a legislative policy regime is required and a number of alternative policy frameworks are conceivable. Each has to be considered in light of policy objectives, constraints and likely economic and behavioural consequences. A list of conceivable framework components, together with their principal weaknesses, is reported in Box 1. Tax-timing and debt/equity treatments represent the central mechanisms that need to be restructured.

Box 1: Alternative framework modules

General

1. **A legal-form/transaction-by-transaction-based approach:** cannot deal adequately with financial engineering, innovation and complex portfolios in a tax system differentiated by debt/equity, capital/revenue and tax-timing distinctions; fails to establish consistency as economic substance is not the basis for tax; results in uncertainty and provides excessive opportunities for tax arbitrage and avoidance.
2. **'Bifurcation' (splitting into basic components) or its opposite, 'integration':** while these methodologies can be applied to specific arrangements — for example, to hybrids and synthetics, respectively — they cannot provide all encompassing, general solutions.
3. **An institutional-based two-code approach, one code for banks and a different code for non-banks:** would create non-neutralities and the integrity of the tax policy design would not survive amid on-going institutional restructuring.
4. **Tax financial instruments according to their commercial accounting treatments:** in a substantial number of countries (including Australia) accounting measurement standards are inadequately developed and commercial accounting treatments are in a state of flux, and would often prove to be too uncertain and imprecise as the base for taxation.
5. **A formal general hedging regime:** arguably excessively complex and involves high administration costs for governments and high compliance burdens particularly for smaller companies.

Tax-Timing

6. **A comprehensive, mandatory mark-to-market system:** would tax gains that may never be realised; may require full loss offsets or loss carry-back; may be destabilising to after-tax profits and tax revenue during economic cycles and periods of market disturbance and encounters potential 'valuation' problems.

Continued...

Box 1: Alternative framework modules (continued)

7. **A mandatory mark-to-market system restricted to 'trading/market-making' activity:** difficult to apply because of practical problems encountered due to on-going institutional change and from attempts to separate 'investment' from 'trading' activities.
8. **Taxing instruments with 'fixed' returns on an accruals/debt basis and instruments with 'contingent' returns on a realisation/equity basis:** too rigid, cannot cope with modern financial engineering (financial equivalences/replication) and other situations where instruments include a mixture of both fixed and variable returns.

Debt/Equity

9. **Imputing a standard return or a debt component (prospectively or retrospectively) to all financial arrangements involving expected returns:** has certain theoretical attractions but has high compliance costs and could be distorting and inequitable, involving greater complexity and tax on imputed returns that may not be realised. There has been little experience with retrospective methods.
10. **Taxing debt as equity, taxing equity as debt or combining debt and equity servicing costs and applying a percentage deduction to the combined servicing costs:** the first method could be potentially destabilising to cross-border capital flows particularly for a small, open, capital importing country should it attempt to adopt such an approach unilaterally. The second method could potentially diminish the size of the corporate tax base. The third method is untested and, depending on its form, may discriminate against riskier activities and introduce other biases, particularly for smaller capital import dependent countries.
11. **A bifurcation approach, splitting out debt and equity components of hybrid instruments:** addresses embedded arrangements; provides a relatively high degree of linearity to hybrids so that tax treatments change relatively smoothly as the instrument moves along the debt/equity spectrum. However the approach is arguably complex as it may involve what are perceived as relatively novel technical financial measures (such as 'delta') and potential valuation difficulties.

Practicable tax-timing treatments

At the highest level of abstraction, the desirable paradigm for determining the tax-timing treatment of modern financial instruments could be centred around two basic organising concepts, *the time value of money* and *the relative certainty of expected returns*. These concepts — which are inherent in the pricing of all financial instruments — could provide the analytical hub²⁴ for determining a consistent structure of taxation arrangements.

Complete neutrality is impossible to establish for complex innovative financial instruments in a differentiated business income tax system. However, if an appropriately balanced set of interfacing tax-timing treatments could be struck one could have greater confidence that most market-making, price-setting, and hedging activities could proceed with minimal taxation-induced distortions. Purchase and disposal decisions bearing on financial instruments would be less likely to be influenced by taxation, ‘lock-in’ distortions would be reduced and financial flows would be spread more efficiently through time. Generally, decisions about the structure of financing vehicles and the future allocation of investment and other resources would be improved. In light of the potential for tax deferral driven by the time value of money, the scope for tax arbitrage, income deferral and loss crystallisation would be reduced.

The tax-timing rules could be based on three simple principles:

- (i) taxpayers could elect to have returns taxed on a ‘mark-to-market’ basis where that basis is used for financial accounting purposes. Otherwise;
- (ii) tax returns that are relatively certain on an ‘accruals’ basis; and
- (iii) tax returns that are relatively uncertain on a ‘realisations’ basis.

The mark-to-market regime

The first principle provides the basis for the optional mark-to-market regime. Within this regime tax would be levied on the change in the market value from

24 The technical literature identifies two tax principles — ‘linearity’ and ‘continuity’ — which bear on whether or not a tax system imparts neutrality across the range of different financial instruments and portfolios. A tax system is *linear* when the tax on any transaction equals the sum of the taxes on any collection of subtransactions that comprise the transaction. *Continuity* exists when portfolios that are nearly identical have nearly identical tax outcomes. See Jeff Strnad, ‘Taxation of New Financial Products: A Conceptual Framework’, Stanford Law Review, February 1994.

one tax period to the next. As such all tax-timing distortions are automatically removed. This regime could be expected to be selected by taxpayers whose portfolios are generally fully hedged and where, as a consequence, pre-tax returns may be assumed to be known with certainty. The sophisticated market-makers (mainly banks and other 'traders') that would opt into the mark-to-market regime would not wish to see tax-timing distortions impact adversely on the efficacy of their pre-tax hedges.

The distinction between 'accruals' and 'realisation' regimes

In relation to the second and third aforementioned principles, the use of the 'relatively certain/relatively uncertain' dichotomy (to draw the distinction between the accruals and realisation regimes) is designed to ensure that the accruals taxation method is applied only in appropriate circumstances. These circumstances occur:

- (i) where payments need to be spread across time (because they are either deferred or advanced in time) and,
- (ii) where the difference between the overall *ex ante* expected and *ex post* actual returns attaching to the instrument is likely to be non-existent or very small.

The second condition reflects a judgement that the accruals method should not be applied or imposed where the difference between *ex ante* expected returns and *ex post* actual returns becomes excessive²⁵ thereby reducing the likelihood that gains will be taxed that may never be realised. These guiding principles go far in the direction of meeting both efficiency and equity objectives.

Given the pervasive influence of 'the time value of money' and 'risk' on taxpayers' decision-making, it is impossible to avoid drawing a line between

25 Differences between *ex ante* expected returns and *ex post* actual returns are mainly the result of unexpected price volatility: all basic financial instruments are subject to price volatility. Share prices (and dividends) are particularly volatile, but bond and bill prices (and interest rates) may be equally highly volatile. However, if a bond or a bill is held to maturity the *ex ante* (expected) return will equal the *ex post* (actual) return, notwithstanding volatility in market prices and interest rates. This follows because the distinguishing feature of debt is the commitment to the return of principal.

The volatility of commodity prices and exchange rates, while still substantial, is generally lower than for share prices. The Consumer Price Index is less volatile than general indexes of commodity prices. The future behaviour of the Consumer Price Index can generally be foreseen with greater certainty (ie the unexpected volatility of the Consumer Price Index is generally relatively low compared to commodity price indexes and financial market prices where non-accommodating macroeconomic policies are pursued).

the 'accruals' and 'realisation' tax regimes. Precisely where the line is drawn in practice, and whether it should be a clear bright line or a grey flexible border zone, are matters that can only be resolved on the basis of logic, judgement and experience. Ideally the line would be located where there is a relatively sparse clustering of substitutable instruments. Such a location would tend to 'minimise' the distorting impacts of the discontinuity on capital markets and reduce the scope for gaming across the line.

To operationalise the 'accruals/realisation' distinction, high level policy guidance would be required to determine those returns that would be classified as 'relatively certain' and those which would be classified as 'relatively uncertain'³. As well, when relevant in order to apply an accruals method to spread returns, it is assumed that the relevant financial instrument is to be held to maturity and that the credit-worthiness of the issuer does not change during the term of the instrument.

Where all the cash flows from a financial arrangement are known the *ex ante* expected overall return on the financial arrangement will equal the *ex post* actual return. In such circumstances the accruals method would provide an appropriate mechanism to spread the returns over the time periods to which they relate. For instance, interest payments on fixed interest securities are known with certainty (on the above assumptions). The interest payment attaching to a deferred interest security (eg, a zero coupon bond where interest is paid as a lump sum at the time the principal is returned to the taxpayer) is also known. The application of the accruals tax method in these cases would ensure appropriate spreading of returns on such securities including any payments which straddle the end of a tax year or any discount or premium.

Where all the cash flows are not known but periodic returns are determined and set in advance of the period to which they relate and paid in arrears (as is generally the case with interest on a variable rate debt instrument) it is judged appropriate to accrue that part of the periodic payment which represents a return on the investment over the period to which it relates.

In the case of typical vanilla interest rate swaps, the relevant fixed and floating rates are determined at the Reset Dates which occur at the beginning of each of

3 The genesis of the 'relatively certain/relatively uncertain' dichotomy derives from 'expected value taxation' (see Reed Shuldiner 'A General Approach to the Taxation of Financial Instruments', Texas Law Review, December 1992). Under the 'relatively certain/relatively uncertain' dichotomy the return on a preference share could be accrued even though it is a return to equity (although under an imputation system the benefits of accruing such returns may be marginal, at least where the returns are paid annually).

the Calculation Periods while payment is not usually required until the end of the relevant period. The amount of the periodic payments is certain from the beginning of the Calculation Period (see Box 2). Consequently, an accruals method is judged an appropriate method for taxing the periodic returns from such swaps.

Where future cash flows are not known with complete certainty but are made by reference to a price or price index with relatively low volatility (eg, the consumer price index) it is considered that any difference between *ex ante* and *ex post* returns would be relatively small. It would, therefore, be practicable to project the future payments and accrue (spread) the gains. Any residual difference between *ex ante* and *ex post* returns would then be taxed on a realisations basis by way of what is termed a 'base price adjustment'.

Classical synthetic debt arrangements involve a perfect hedge, and result in completely certain returns, and could, on the basis of assumptions underlying the *Black-Merton-Scholes* option pricing methodology⁴, be taxed on an 'accruals' basis⁵ on the presumption that the *integrated arrangement* earns a risk-free rate of interest.

Where all the cash flows from a financial arrangement are not known and where some significant future returns will be determined at the discretion of the issuer (for example dividends on a share), or relate to, or are linked to, a relatively volatile price (for example to exchange rates⁶, shares or to commodity prices or to indexes thereof), it is unlikely that the *ex ante* expected overall return on the financial arrangement would closely approximate the *ex post* actual return. In these circumstances, an accruals method would arguably be judged to be inappropriate from an efficiency, complexity and compliance cost perspective and unnecessary from a tax avoidance viewpoint assuming appropriate anti-avoidance rules are in place. In such cases tax would be applied on a realisations basis.

4 When risk and uncertainty are completely removed the value of any portfolio depends principally on the risk-free rate of interest. See Fischer Black and Myron Scholes, 'The Pricing of Options and Corporate Liabilities', *Journal of Political Economy*, Vol 81, Number 3, May/June 1973.

5 Alternatively, reflecting strong linearity within the proposed tax framework, the exact same taxation result could be achieved (in this limiting case) by first bifurcating the composite arrangement and then 'marking-to-market' the *component instruments*.

6 See Appendix.

The overall return on certain derivative instruments, for example, an option or a forward or futures contract are similarly uncertain, and should, on the basis of the same logic, also be taxed on a realisations basis. In the case of a Forward Rate Agreement, for instance, the amount to be paid by either party is not known until the settlement date and prior to this date the gain or loss is uncertain (see Box 2).

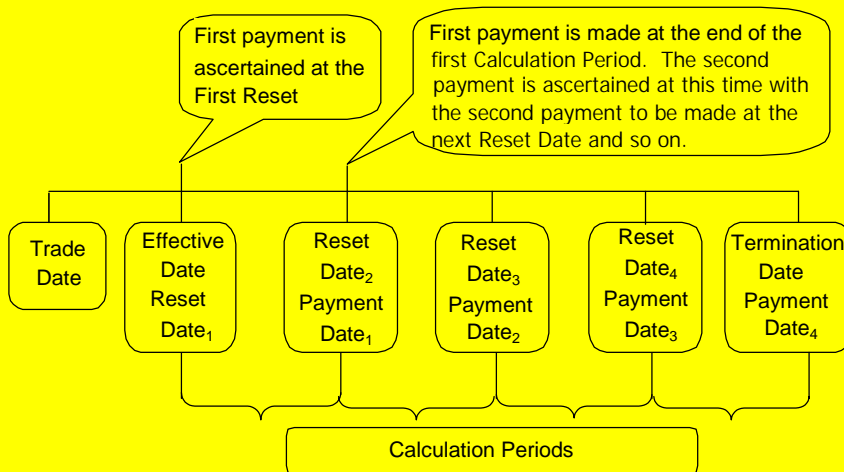
As mentioned above, the application of the accruals method is based on the 'holding to maturity' and 'no change in creditworthiness' assumptions. Where these assumptions do not hold true, it is unlikely that the *ex ante* expected return and the *ex post* actual return would be equal. This is so because the unanticipated early disposal may be associated with changed market interest rates (and prices) and/or changes in creditworthiness. In such cases, the related gains or losses would be uncertain and largely unanticipated and for that reason are not suited to an accruals tax method. For example, the capital gain or loss on a fixed rate debt instrument cannot be determined in advance where such instruments are disposed of prior to maturity. For this reason the gain or loss on the disposal of a fixed rate debt instrument prior to maturity should be taxed on a realisations basis (as well as any unwinding of a swap transaction involving a capital payment).

Ideally, the tax distinction between 'accruals' and 'realisation' should be capable of application to all known instruments and to all instruments and structures that might be invented. Such general application would appear possible and practicable under the proposed approach. This follows because the 'relatively certain/relatively uncertain' dichotomy could, if deemed appropriate (taking into account distortions, compliance and administrative costs), be applied to determine the tax-timing treatment of any hybrid instruments incorporating both relatively certain and relatively uncertain returns. An example of such an instrument would be one that combined a fixed interest component set in advance and a variable return contingent on the movement in a share price index. The 'relatively certain/relatively uncertain' dichotomy could be applied to this instrument by splitting (bifurcating) the overall returns into those which are relatively certain and those which are relatively uncertain.

For purposes of illustration, then, lists of 'relatively certain' and 'relatively uncertain' returns might include those set out in Box 3.

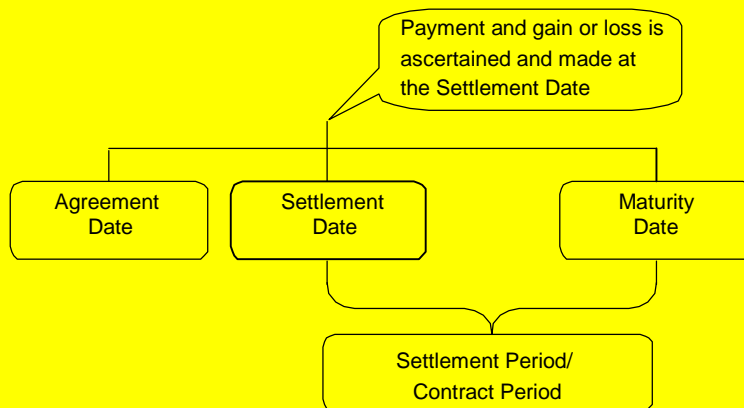
Box 2: Examples of ‘relatively certain’ and ‘relatively uncertain’ payments

(a) **Interest rate swap:** Periodic payments are set in advance and the gain or loss is therefore ‘relatively certain’.



Note: Under a vanilla interest rate swap, the future payments — consisting of either the gross payments or, where netting occurs, the net payments — are known from the previous Reset Date. The fixed rate is determined at the outset of the arrangement while the variable rates are known at the relevant Reset Dates, which occur at the beginning of each Calculation Period. The Calculation Period runs from the Reset Date to the relevant Payment Date.

(b) **Forward rate agreement:** As the value of the payment is not known until Settlement Date, the gain or loss is ‘relatively uncertain’.



Note: Under a forward rate agreement the amount to be paid is based on the difference between the contract rate and the interest settlement rate. The contract rate is the forward rate of interest determined at the Agreement Date (the date of entering into the contract). The interest settlement rate is determined on the Settlement Date. The payment amount is the difference between the interest settlement rate and

the contract rate applied to a notional principal amount and the number of days in the Settlement Period. The amount to be paid is not known until the Settlement Date.

Box 3: 'Relatively certain' and 'relatively uncertain' instruments/returns

Examples of financial assets with 'relatively certain' returns; taxed on an accruals basis:

- Zero coupon bonds
- Bills of exchange
- Promissory notes
- Fixed interest bonds and loans
- Variable interest bonds and loans
- Bonds the returns on which are based on prospective changes in the consumer price index.
- Interest rate swaps
- Preference shares with fixed dividends
- The return on synthetic debt

Examples of financial assets with 'relatively uncertain' returns: taxed on a realisations basis:

- Ordinary shares
- Preference shares
- Forwards and futures
- Foreign currency gains and losses
- Options (except where the return on the option is certain)
- Warrants
- Instalment receipts over shares
- Financial assets and liabilities where all future payments are calculated by reference to prospective changes in exchange rates, commodity prices and share prices (including indexes thereof).
- The gain or loss incurred at the point of disposal of a fixed return debt instrument.

Tax treatments of debt, equity and debt/equity hybrid instruments

The logic underpinning the differences in the tax treatment of debt and equity is increasingly questionable in a world of financial engineering and contract innovation. However, the reality is that the forces of globalisation and tax

competition make it more difficult for small, capital-importing countries seeking to retain a corporate tax base to take action, unilaterally, to remove the distinction.

As things currently stand, there is no universally accepted view as to how best to distinguish 'debt' from 'equity' for tax purposes or how to tax hybrid (part debt and part equity) instruments. Some countries legislate the debt/equity distinction on 'legal form' and others base it more on the 'economic substance' of the arrangements. Some rely on court decisions based on traditional risk-based ownership interpretations.

There is often great complexity/uncertainty surrounding the mechanics/interpretation of debt/equity tax rules and the multitude of individual 'facts and circumstances' that may be taken into account. Most approaches do not cope efficiently or effectively with hybrid instruments and other modern financial inventions, resulting in tax distortions and socially unproductive tax structuring. In Australia, for instance, there are a number of different definitions of 'debt' in the current tax law and an unacceptable level of uncertainty at the debt/equity borderline.

The location of the borderline may also influence measured corporate indebtedness and the size of the corporate tax base. Where different countries locate the debt/equity tax borderlines at different points along the debt/equity spectrum an uneven international playing field is established, thereby impacting on patterns of financial competitiveness, cross-jurisdictional cherry picking and international capital movements.

Approaches which could be used for distinguishing debt from equity include an '*unweighted multi-dimensional facts and circumstances*' approach, *bifurcation* or *unitary (blanket) taxation*, and *legal form*. It is questionable whether the approaches adopted in some countries are technically adequate or sufficiently stable in the face of sophisticated financial engineering. Reforms in this area can take considerable time to develop and implement.⁷

In the TOFA framework, to achieve one of the principal objectives — removing the excessive uncertainty (inherent in current arrangements) identified as a major problem by taxpayers — a single organising concept is deployed as the

7 It is reported that the United States Treasury 'labored on Section 385 regulations for more than a decade before they were issued in 1980.' Those tax regulations, which distinguished between debt and equity, were subsequently withdrawn. See Katherine Pratt, 'The Debt-Equity Distinction in a Second-Best World', *Vanderbilt Law Review*, Vol 53, No 4, May 2000.

central mechanism at the debt equity borderline. On this basis something is 'debt' if the return of principal (whether through periodic or non-periodic returns) is not contingent on the profitability of an enterprise so that there is a legal/commercial obligation to return at least the value of the initial investment amount.

Thus, making allowance in policy design to achieve minimal compliance costs and simplicity, to determine whether an interest in an entity is 'debt' it would be necessary to identify the non-contingent returns and ask if they equal or exceed the value of the principal:

- measured in 'nominal' terms for instruments of not more than 10 years duration; and
- measured in 'present value' terms for other instruments.

If the answer is 'yes' the whole instrument is treated as debt (and the servicing cost is generally deductible), otherwise the whole instrument is treated as equity (and frankable). Based on this single central organising concept⁸, Box 4 sets out the tax treatments of an illustrative list of hybrid instruments.

It is inevitable that a discontinuity will arise whenever debt and equity are subject to different tax treatments. In such circumstances, careful policy design is required to strike an appropriate balance between competing taxpayer tensions represented by the desire by some for more deductible equity and the desire by others for more frankable debt. In the approach outlined above there is, for instance, a discontinuity at the 10-year point, which separates the nominal value test from the present value test. There is, therefore, the potential for some capital market imperfections to develop around that dividing point. It is arguable, however, that when account is taken of investor preferences, transaction costs and behavioural responses in the market place, the magnitude of any such effects — and their possible adverse impact on taxation revenue — is likely to be constrained and relatively small. The advantage of the 10-year distinction is that taxpayer compliance costs (the need to compute present values) are minimised.

⁸ In addition to the central organising concept, additional rules are required for operationalisation of the concept. For example, a rule would be required to ensure an artificial, contrived or manifestly remote contingency was not used to convert a debt instrument into an equity instrument.

Box 4: Debt/equity tax treatment of illustrative hybrid instruments

Debt (and generally deductible)	Equity (and generally frankable)
Redeemable preference share (compulsory redemption in 10 years* for issue price)	Redeemable preference share (compulsory redemption in over 10 years for issue price)
Perpetual subordinated cumulative ** Income Security (interest exceeds relevant discount rate)	Perpetual subordinated non-cumulative Income Security (interest contingent on profits)
Convertible note (option to receive issue price in 5 years or convert into ordinary shares at a small discount)	Converting preference share before conversion (unless equity component is negligible)
Perpetual cumulative** preference share (dividends exceed relevant discount rate)	Perpetual non-cumulative preference share
Resettable preference shares with (negligible value) option to convert at year 5: where buy back is inevitable	Resettable preference shares with a real option to convert at year 5: issuer has power to buy back at face value and re-sale facility eg PERLs
Perpetual cumulative** convertible notes (interest exceeds relevant discount rate)	Mandatory converting notes
* 'Present value' test of return of initial investment is applied to instruments with terms greater than 10 years.	
** Cumulative means that unpaid returns accumulate and become an obligation owing at a specified time (with interest).	

The capital/revenue distinction

Under the capital/revenue distinction some instruments are assessed on capital account (and losses are offset against capital gains) while others are treated as ordinary income on revenue account (and losses are deductible). Whatever its original justification (in terms of capital accumulation, say), this distinction sits awkwardly with the operation of financial markets and adds very considerable complexity.

At the highest tax policy design level, therefore, one should aim to minimise the influence of this anachronistic distinction on the operation and costs of the financial system. Arguably, all financial instruments should be taxed on a consistent basis, on revenue account. This approach is essentially that which has been adopted by the architects of the financial arrangements taxation

reforms adopted over recent decades in New Zealand and generally in the United Kingdom (except for deferral relief on exchange gains and losses).

In some existing tax systems (for example in Australia's case) equity and some other assets are currently taxed on either the revenue or the capital account, depending on attendant circumstances. In that situation, and under the general framework discussed in this paper, to the extent then that some derivatives are hedging relevant equity instruments (or some other asset which is on capital account) 'matching' principles may be required so that the relevant derivative would also be taxed on a capital basis.

The central components of a workable framework

Based on the core organising principles (tax-timing and debt/equity) discussed thus far — and adding disposal rules and limited hedging and synthetic rules to facilitate efficient risk management within the differentiated tax system — the central framework components of a financial arrangements tax system might be summarised as in Box 5. One might expect that this relatively simple set of interrelated principles, embroidered with all necessary safeguards and relevant safe harbours, could deliver the required degree of consistency, certainty, coherency, and simplicity in tax design with relatively moderate compliance costs.

Box 5: Seven components of a framework for taxing gains/losses from financial capital

- Separation of 'tax-timing' from 'interest/dividend' determination.
- An elective mark-to-market regime to facilitate efficient trading and price setting.
- An accruals regime for taxing 'relatively certain' returns.
- A realisation regime for taxing 'relatively uncertain' returns.
- For hybrid instruments: 'deductibility' or 'frankability' treatment is based on a single organising concept that debt (interest) treatment requires the return of the investment amount.
- Limited tax hedging rules to maintain, post-tax, the effectiveness of risk management assessed in pre-tax terms.
- Rules for synthetic arrangements, disposals and extinguishments.

Implications for the functioning of financial markets and the economy

It is not feasible to quantify the extent of all financing, investment, risk management and market-deepening impacts of the tax reforms outlined above. These impacts would naturally vary across different instruments, different functional applications and different sectors of the economy, some being relatively smaller and some relatively larger.

However, some qualitative comment is possible.

- At the broadest level, it is clear that the direct benefits of the proposed approach (compared to various possible alternative approaches, or simple neglect) would flow well beyond the banks, the stock market, derivatives exchanges, superannuation, insurance, other investment fund managers and the other financial institutions that are most active in financial and derivative markets. Direct benefits would also flow to the financing, investment, hedging and other risk management activities of grains, cotton, wool, oil, gold and other commodity producers, electricity and gas suppliers and general manufacturers; to exporters, importers and investors exposed to exchange rate and commodity price risk; and generally to all businesses with national or international operations employing derivatives and other financial instruments. Direct and indirect functional improvements — deriving from improved specialisation in risk bearing and exchange rate management, enhanced market liquidity, lower risk premiums and higher investment returns for given price volatilities, smoother income and capital flows, increased foreign trade, reduced uncertainty and, potentially, a lower cost of capital — would, in a competitive environment, ultimately spread into other sectors of the economy and to producers, investors, and savers more generally.
- The framework principles summarised in Table 3 would work to reduce the incongruity between the tax treatment and the commercial accounting treatment of certain classes of financial instruments, reducing compliance costs for financial and non-financial enterprises alike.
- The adoption of an elective mark-to-market tax system would result in 'trading efficiencies', better risk management, lower costs and improved price discovery/market-making capacity in the markets for financial instruments.

- Traders of financial instruments often hedge long duration positions with relatively short duration hedging instruments. Under a differentiated 'realisation/accruals' regime (without a mark-to-market facility) these hedges would be subjected to tax-timing mis-matches which would mean that it would generally not be possible to efficiently achieve post-tax matching of hedges that are matched on a pre-tax basis. Such tax mismatches would disturb the process of market pricing and risk management and would work to raise the cost of capital. The joint operation of an elective mark-to-market regime and an accruals/realisation systems system would ensure that such mis-matches can be largely avoided and that market-making and price-setting could be made more efficient in that they are not disturbed and distorted by such taxation mismatches.
- Because the proposed mark-to-market regime is elective, and not mandatory, it would be entered voluntarily, and therefore taxpayers would not be forced to pay taxes on gains (due to market movements) that may never be realised. The likely efficiencies resulting from an election into the mark-to-market system are potentially significant for certain taxpayers. It is also likely that those financial institutions that elected to have relevant transactions taxed on a mark-to-market basis would have much greater stability in their year-to-year trading profits trajectory than those which did not. Such stability would lower risk and add to credit worthiness and shareholder value.
- Where the reach of an accruals tax system is appropriately struck — that is, extending to all investment, financing and speculative activities where returns may be anticipated with a relatively high level of certainty — relevant gains and losses can be appropriately spread through time for taxation purposes and tax avoidance opportunities minimised. Under the proposals discussed in this paper, therefore, greater consistency in tax-timing treatments could be achieved across all financial arrangements, facilitating risk management, the efficient allocation of investment through time and lower funding costs.
- Under the tax-timing framework discussed above, hedging activity could be facilitated without resort to comprehensive and complex formal hedging rules. Within the elective mark-to-market system substantial tax-timing matching for hedges is automatically achieved. Within the accruals/realisation regimes (outlined earlier) a substantial degree of pre- and post-tax matching of the hedged and hedging instrument would be feasible given the range of hedging instruments now available. For instance, an option (taxed on realisation) may hedge a share (also taxed on

realisation) and a swap (taxed on accruals) may be used to hedge a debt instrument (also taxed on an accruals basis). Efficient hedging can potentially reduce the impacts of price instability — including, for example, in relation to raw materials and commodities, energy, exchange rates and interest rates — on profits, production, financing and investment.

- Assume there did exist three different tax-timing treatments (elective mark-to-market, accruals and realisation). In this system the financial institution would account for the 'loans' book on an accruals basis while 'trading' transactions would be accounted for on a mark-to-market basis. This system would result in a post-tax mismatch as the proportion of the activity undertaken by the trading desk to hedge the loans desk exposure would be taxed on a mark-to-market basis, while the underlying exposure (loans) would be taxed on an accruals basis. An 'internal hedging rule' could be used to remove this tax-timing mismatch.
- 'Internal hedging' rules (where the tax authority recognises an internal swap transaction between the loans and trading desks) would enable the risk in the accruals (loan) books of financial institutions and the risk in their mark-to-market (trading) book to be combined and hedged externally. This would reduce the number and value of external hedging transactions, lower related risk management costs (due to lowered risk and volatility in franking credits and dividend policy), reduce costs imposed by capital adequacy regulations and minimise the bid-offer spread paid to non-residents. The cost savings and potential enhancements to national economic welfare are likely to be significant.
- Bringing greater coherency and clarity to the tax treatments of hybrid and synthetic arrangements would deliver greater certainty to market-makers, hedgers, financiers, investors and to issuers and holders, and would facilitate desirable financial innovation. Tax arbitrage opportunities would be reduced and current punitive provisions (46D and 82SA) could be removed.
- Finally, simplification and modernisation of taxation policy as it relates to financial capital would contribute toward strengthening Australia's role as a regional financial centre. This could be achieved as a result of reducing uncertainty and removing other taxation impediments to the retention and attraction of global financing and investment activity and by facilitating greater financial innovation, market completion, and deeper and more dynamic domestic markets. The location in Australia of treasury operations and additional innovative activity in product creation would be

encouraged, and the provision of locally supplied financial, hedging and risk management services should also be enhanced.

Concluding comment

The TOFA reforms aim to restructure and simplify relevant tax treatments. The expected net impact on the Commonwealth's fiscal position is broadly neutral, involving a relatively small one-off revenue gain mainly due to the advance of income in the first year following the broadening of the accrual base. Some advance of revenue may also be likely following the introduction of rules to tax synthetic arrangements although its magnitude is uncertain, and unquantifiable. The introduction of the elective mark-to-market system is unlikely to result in any systematic revenue impact overall.

The inter-locking systems for taxing gains and losses from financial capital discussed in this paper could contribute toward greater overall coherency, clarity, and greater simplicity and reduced uncertainty. While the magnitudes of all quantitative impacts on market efficiency would be difficult to estimate, their likely directions are clearer as the reforms represent the antithesis of 'throwing sand in the wheels'. Market efficiency and competitiveness should generally be enhanced, hedging and financing costs reduced, future product innovation facilitated and the revenue base protected.

The taxation of foreign currency gains and losses

Foreign currency gains and losses — which arise due to fluctuations in exchange rates — could be taxed in a variety of ways:

‘Accruals’: This approach would assume that a foreign currency denominated instrument is equivalent to a variable rate debt instrument with the exchange rate at each balance date (either the ‘spot’ or the ‘forward rate’) being used to estimate the Australian dollar value of future cash flows.

‘Retranslation’: This method would bring to account changes in the value of foreign currency denominated assets and liabilities at balance date in terms of local currency values. This method does not account for changes in the value of the debt that results from interest rate movements or changes in credit risks.

‘Realisation’: This method brings to account at payment date or termination all changes in value attributable to changes in the exchange rate.

‘Hedging Treatment’: Under this method where a foreign currency arrangement hedges an underlying position/asset/liability the tax treatment of the foreign currency arrangement is made consistent with that of the underlying position/asset/liability.

The choice between the ‘accruals’, ‘realisation’ and ‘retranslation’ methods for taxing foreign currency gains and losses essentially reflects a judgement about the desirable location of the borderline separating ‘relatively certain’ from ‘relatively uncertain’ returns. Commercial accounting treatments, compliance cost implications and measurement considerations may also have a bearing.

It is technically possible to use the forward exchange rate curve to project expected income from foreign currency movements and utilise this projected income stream as the basis for the accruals method. However this approach relies on the uncovered and covered interest rate parity interpretations of exchange rate determination in contrast with competing explanations, for instance, purchasing power parity, commodity price, current account (domestic savings/investment) imbalances or random walk based explanations. The use of the forward curve also draws on rational expectations

and the efficient markets hypothesis and a related assumption that the methodology allows one to calculate a sufficiently certain estimate of expected income.

The general view taken in this paper is that currency movements are relatively volatile, that unexpected foreign currency gains and losses are probably large relative to anticipatable gains and losses and that, therefore, overall foreign currency gains and losses are inherently too uncertain to be taxed by the accruals method. It is recognised, however, that special tax rules may be able to be justified to cope with synthetic domestic currency borrowings arising from fully hedged foreign currency borrowings. As well, under Australian commercial accounting treatments foreign currency gains and losses are treated on a retranslation basis and, mainly for that reason, an option to use that method for tax purposes could be supported if it can be shown to reduce overall compliance costs for some taxpayers.

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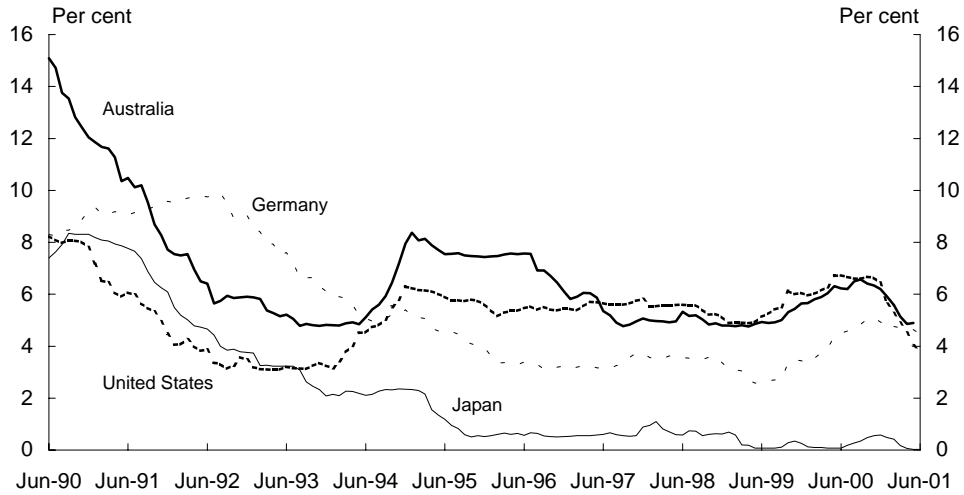
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Key to tables

- n.a. not available
n.y.a. not yet available
.. change less than 0.05 per cent

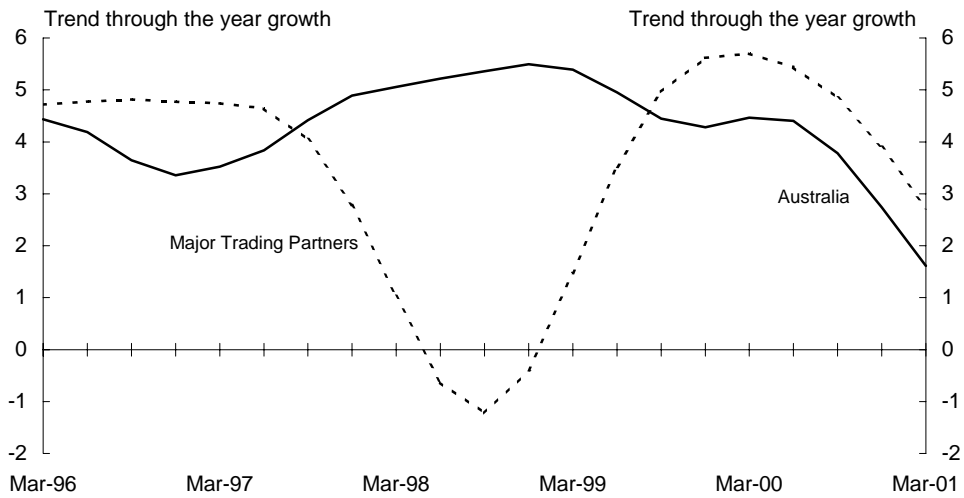
Chart 1: Selected international indicators
Panel A: Short-term interest rates^(a)



(a) Short-term interest rates are monthly averages and are defined as follows: US — 3 month certificates of deposits, Japan — 3-month certificates of deposit, Australia — 90 day bank accepted bills and Germany — 3 month FIBOR.

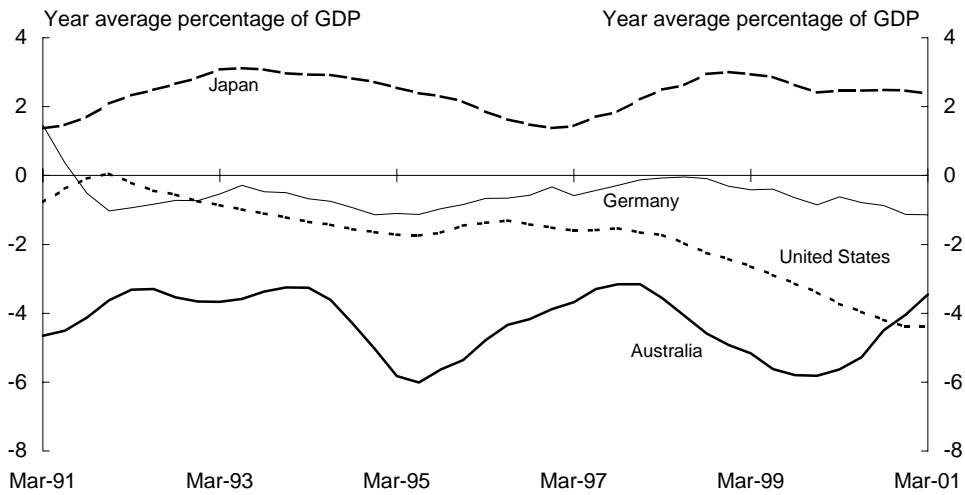
Source: OECD Main Economic Indicators.

Panel B: Real output^(a)



(a) Seasonally adjusted real GDP growth for each major trading partner is weighted by their respective shares of total Australian merchandise exports averaging from 1996-97 to 1998-99. The major trading partners are composed of the OECD and Asian major trading partners. Major trading partners from the OECD comprise the G7 (US, Japan, Germany, France, UK, Italy and Canada) and New Zealand. Asian major trading partners consist of South Korea, Taiwan, Hong Kong, Singapore, China, Malaysia, Indonesia, Thailand and the Philippines.

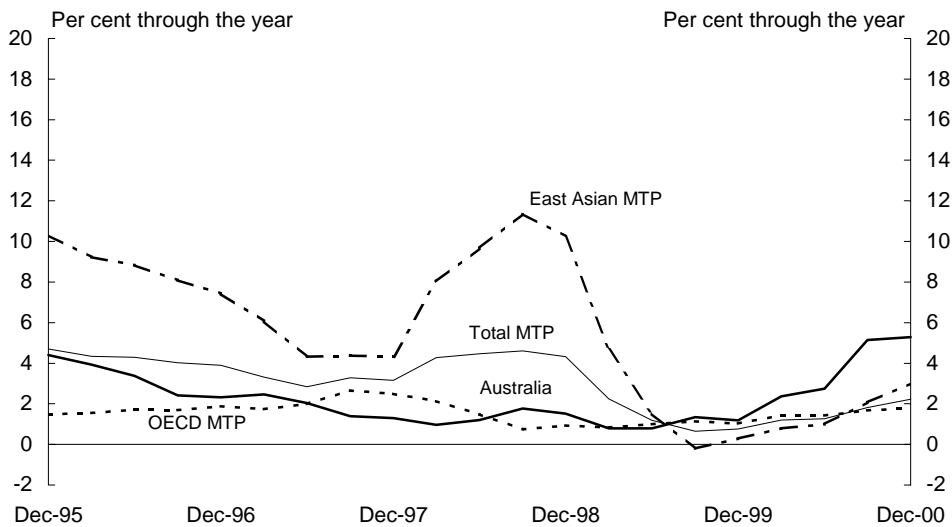
Panel C: Current account balances^(a)



(a) Data are seasonally adjusted. Germany refers to Western Germany until June 1990, and unified Germany thereafter.

Source: Data are sourced from statistical agencies of respective countries, except for data from Germany which is sourced from the OECD Main Economic Indicators.

Panel D: Consumer price inflation^(a)



(a) The aggregate inflation rates are derived from the weighted average of inflation rates of individual trading partners, with the weights being their respective shares of Australian total merchandise trade from 1996-97 to 1998-99.

Source: Major trading partners consist of US, Japan, Germany, UK, New Zealand, Canada, South Korea, Singapore, Indonesia, Taiwan, Hong Kong, France, Italy, China, Malaysia, Thailand and the Philippines. Data for US, Japan, Germany, UK, New Zealand, Canada, South Korea, Singapore, Indonesia, Taiwan and Hong Kong are sourced from the ABS All Groups CPI (excluding housing) measure. For the rest of Australia's MTP (France, Italy, China, Malaysia, Thailand and the Philippines), the CPI are sourced from each country's respective all groups CPI series which exclude the effects of mortgage interest rate changes.

**Chart 2: Contributions to trend quarterly GDP growth
(Average 1997-98 prices)**

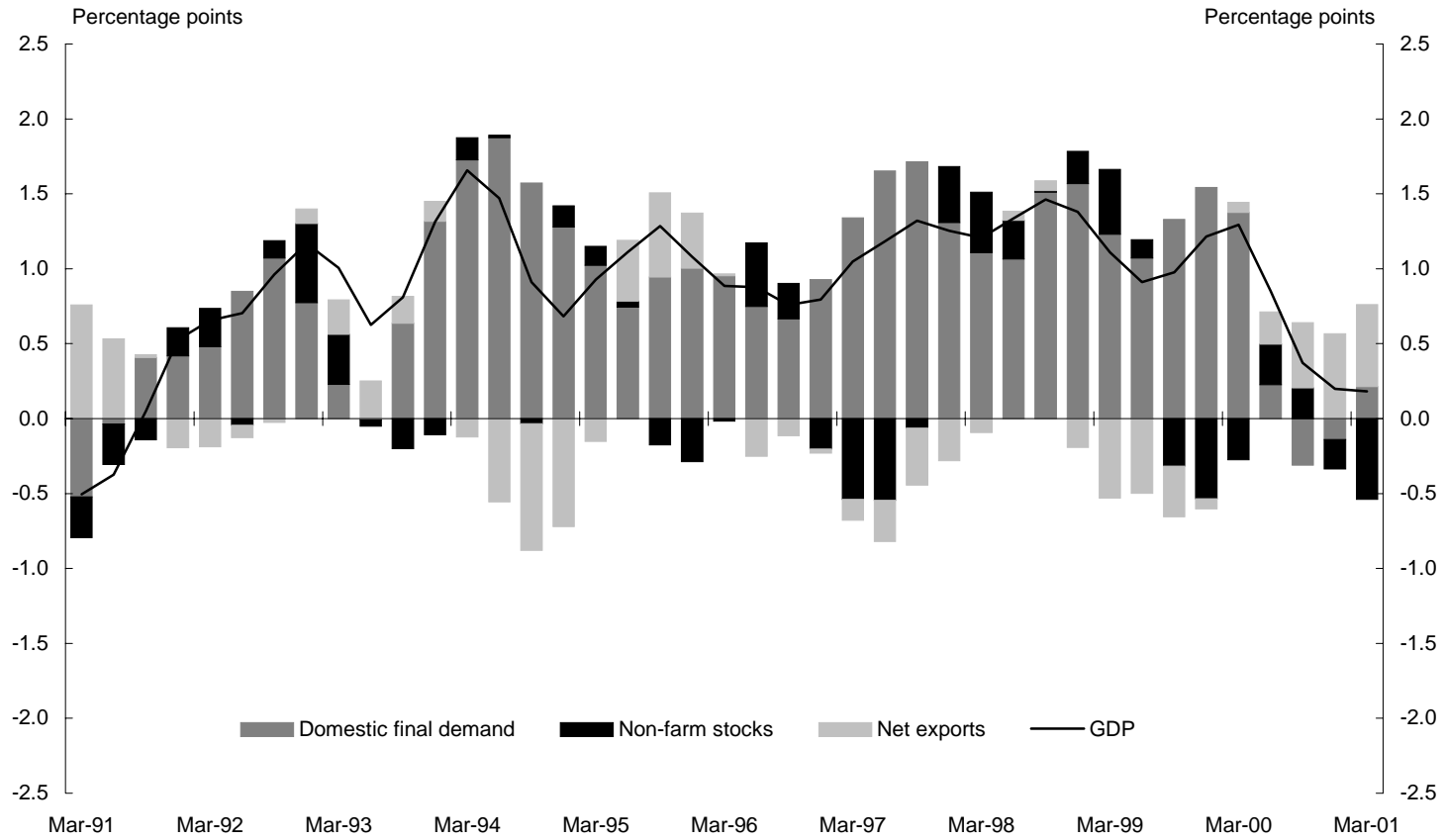


Table 1: Components of Gross Domestic Product (chain volume measures)

		Final domestic demand								
		Household consumption	Private investment in dwellings	Private business fixed investment	Private final demand	Public final demand	Total final demand	Exports	Imports	GDP
Year		(Percentage change on preceding year)								
	1997-98	4.8	14.5	14.0	7.0	1.2	5.7	3.7	9.7	4.8
	1998-99	5.0	11.0	2.0	4.8	7.3	5.3	2.0	4.9	5.4
	1999-00	4.5	12.4	6.5	5.5	4.1	5.2	9.2	12.5	4.4
Quarter		(Percentage change on preceding quarter - Trend)								
	2000 Mar	1.0	5.8	1.5	1.5	0.9	1.3	2.9	2.2	1.3
	Jun	0.6	-2.4	0.4	0.3	0.0	0.2	2.0	0.8	0.9
	Sep	0.6	-10.9	0.1	-0.4	0.1	-0.3	1.1	-0.9	0.4
	Dec	0.9	-13.5	-0.6	-0.4	0.6	-0.1	0.7	-1.9	0.2
	2001 Mar	1.1	-12.8	-0.2	0.1	0.7	0.2	0.4	-2.1	0.2
Quarter		(Percentage change on preceding quarter - Seasonally adjusted)								
	2000 Mar	0.6	8.1	-8.0	-0.3	8.9	1.6	1.6	3.7	1.2
	Jun	0.8	9.2	0.6	1.4	-2.9	0.4	2.9	-0.5	1.3
	Sep	0.4	-24.0	6.1	-0.9	0.5	-0.6	4.1	0.1	0.4
	Dec	0.4	-13.7	-8.6	-2.0	1.3	-1.3	-2.7	-2.3	-0.6
	2001 Mar	2.2	0.8	1.8	2.1	2.9	2.3	0.5	-3.3	1.1
Quarter		(Percentage change on a year earlier - Trend)								
	2000 Mar	4.5	15.2	3.2	5.1	6.0	5.3	10.5	13.1	4.5
	Jun	3.9	11.5	3.2	4.4	4.7	4.4	11.4	10.3	4.4
	Sep	3.4	-2.3	2.8	2.8	2.7	2.8	9.8	5.3	3.8
	Dec	3.1	-20.4	1.5	0.9	1.8	1.1	6.8	0.1	2.7
	2001 Mar	3.2	-34.4	-0.3	-0.5	1.6	0.0	4.2	-4.1	1.6

Source: ABS Cat. No. 5206.0.

Table 2: Contributions to change in Gross Domestic Product (chain volume measures)

	Final domestic demand					Change in inventories			Net exports	GDP
	Household consumption	Private investment in dwellings	Private business fixed investment	Private final demand	Public final demand	Total final demand	Private non-farm	Farm & public authority		
Year	(Contribution to change in GDP)									
1997-98	2.9	0.7	1.7	5.4	0.3	5.7	-0.4	0.7	-1.2	4.8
1998-99	3.0	0.6	0.3	3.8	1.6	5.4	1.0	-0.2	-0.7	5.4
1999-00	2.7	0.7	0.9	4.3	0.9	5.2	-0.6	0.0	-0.9	4.4
Quarter	(Contribution to change in GDP - Trend)									
1999 Dec	0.7	0.3	0.1	1.2	0.4	1.5	-0.5	0.0	-0.1	1.2
2000 Mar	0.6	0.3	0.2	1.2	0.2	1.4	-0.3	-0.2	0.1	1.3
Jun	0.3	-0.1	0.1	0.2	0.0	0.2	0.3	-0.1	0.2	0.9
Sep	0.4	-0.6	0.0	-0.3	0.0	-0.3	0.2	0.0	0.4	0.4
Dec	0.5	-0.7	-0.1	-0.3	0.1	-0.1	-0.2	0.2	0.6	0.2
2001 Mar	0.6	-0.6	0.0	0.1	0.2	0.2	-0.5	0.1	0.5	0.2
Quarter	(Contribution to change in GDP - Seasonally adjusted)									
1999 Dec	1.0	0.1	1.2	2.3	-1.1	1.2	-0.4	-0.1	0.4	1.1
2000 Mar	0.4	0.4	-1.1	-0.2	1.9	1.7	-0.4	0.1	-0.5	1.2
Jun	0.5	0.5	0.1	1.1	-0.7	0.4	0.1	0.0	0.7	1.3
Sep	0.2	-1.5	0.8	-0.7	0.1	-0.6	0.9	-0.5	0.8	0.4
Dec	0.2	-0.7	-1.2	-1.6	0.3	-1.3	-0.1	1.0	0.0	-0.6
2001 Mar	1.3	0.0	0.2	1.6	0.7	2.3	-1.6	-0.3	0.8	1.1

Source: ABS Cat. No. 5206.0.

Table 3: Gross value-added by industry (chain volume measures)

Year	Agriculture, forestry & fishing	Min- ing	Manu- facturing	Electr- icity, gas & water	Cons- truction	Whole- sale trade	Retail trade	Accomm- odation, cafes & restaurants	Transport & storage	Commun- ication services	Finance & insurance services	Property & business services	Gov. administ- ration & defence	Edu- cation	Health & community services	Cultural & recre- ational services	Personal & other services	
	(Percentage change on preceding year)																	
1997-98	-0.4	4.6	3.1	4.1	7.2	6.3	4.4	3.2	2.4	10.7	7.6	9.6	-0.7	3.0	0.9	5.7	4.7	
1998-99	8.0	-2.8	3.9	1.9	12.9	5.7	3.4	8.2	2.6	10.3	13.6	9.2	-2.2	2.4	1.5	2.4	2.2	
1999-00	3.9	10.1	2.8	2.8	2.8	5.6	2.8	6.4	3.4	12.9	9.3	8.2	0.2	-0.8	-0.9	0.8	6.6	
Quarter	(Change on previous quarter - Trend)																	
1999 Dec	0.5	3.2	1.3	1.0	1.5	1.9	0.6	0.8	0.7	2.8	2.0	1.6	0.5	-0.8	-1.0	-1.0	1.9	
2000 Mar	0.1	2.9	1.8	1.8	0.4	1.5	0.1	0.1	0.7	3.0	1.8	1.8	0.8	-0.5	-0.4	4.0	1.4	
Jun	-0.2	1.9	0.8	1.4	-4.3	0.2	-0.4	-0.3	0.7	2.4	1.3	2.6	0.9	0.4	1.5	6.1	1.3	
Sep	-1.3	1.4	-0.7	0.7	-8.3	-0.8	0.2	-0.2	0.4	2.0	1.1	2.8	0.8	1.1	3.1	1.7	1.7	
Dec	-1.5	1.2	-1.4	0.3	-8.5	-1.0	0.7	0.3	0.1	2.1	1.3	2.3	0.5	1.0	2.8	-3.1	2.0	
2001 Mar	-0.5	0.8	-1.3	0.3	-6.4	-0.9	0.8	0.7	0.2	2.3	1.4	1.5	0.3	0.7	2.0	-5.7	1.9	
Quarter	(Change on previous quarter - Seasonally adjusted)																	
1999 Dec	-4.0	3.9	0.0	1.3	-0.1	2.2	2.8	1.2	-1.3	3.0	2.6	3.4	0.6	-0.9	-2.4	1.5	2.3	
2000 Mar	6.3	2.1	3.8	2.3	1.0	1.6	-2.1	0.3	1.6	3.0	1.2	-0.4	0.3	-0.8	-1.0	1.3	1.3	
Jun	-4.2	2.7	0.5	0.9	1.7	-0.5	0.6	-0.9	1.5	3.0	2.2	3.3	1.3	0.0	2.1	0.8	0.2	
Sep	0.9	0.2	-1.6	1.5	-15.9	0.4	-0.6	0.3	-0.1	1.4	0.4	3.9	1.1	2.7	3.2	23.0	2.8	
Dec	-3.6	2.3	-0.6	-0.9	-9.3	-2.8	1.4	-0.7	-0.8	1.2	1.1	2.1	0.0	-0.2	4.0	-20.6	1.8	
2001 Mar	0.8	0.5	-2.2	1.2	2.4	0.5	0.9	2.3	1.5	4.2	2.5	0.4	0.5	1.0	0.2	-0.2	2.0	
Quarter	(Change on year earlier - Trend)																	
1999 Dec	5.2	9.6	1.7	2.1	3.5	5.5	3.3	8.4	3.3	13.6	10.0	8.3	-0.6	-0.6	-1.7	-1.0	6.6	
2000 Mar	1.7	11.9	2.8	3.4	2.2	6.0	2.3	5.4	3.3	12.5	8.7	7.7	0.9	-1.2	-2.2	2.4	7.2	
Jun	0.4	11.5	3.9	4.7	-2.6	5.2	1.1	2.3	3.0	11.3	7.5	8.2	2.3	-1.0	-0.6	8.9	6.9	
Sep	-1.0	9.8	3.2	5.0	-10.7	2.8	0.5	0.3	2.6	10.5	6.4	9.1	3.0	0.2	3.2	11.1	6.5	
Dec	-2.9	7.6	0.5	4.3	-19.5	-0.1	0.6	-0.2	2.0	9.8	5.7	9.9	3.1	2.0	7.1	8.8	6.6	
2001 Mar	-3.5	5.4	-2.5	2.8	-24.9	-2.4	1.3	0.4	1.4	9.1	5.3	9.7	2.6	3.2	9.7	-1.4	7.1	

Source: ABS Cat. No. 5206.0.

Table 4: Real household income^(a)

	Non-farm employees	Non-farm average earnings	Non-farm compensation employees	Gross mixed income	Household income	Household disposable income
Year	(Percentage change on preceding year)					
1997-98	0.8	2.2	3.1	5.9	2.8	2.5
1998-99	2.6	3.4	6.1	4.5	5.3	5.2
1999-00	2.9	1.8	4.7	5.7	5.5	4.9
Quarter	(Percentage change on preceding quarter - Seasonally adjusted)					
2000 Mar	0.3	0.3	0.7	3.9	0.9	0.4
Jun	1.6	0.3	1.8	0.6	2.0	2.1
Sep	1.2	-1.6	-0.5	-4.2	-0.3	1.6
Dec	-1.2	0.6	-0.6	-1.8	-1.3	-1.6
2001 Mar	0.6	0.8	1.4	1.2	1.3	0.6
Quarter	(Percentage change on year earlier - Seasonally adjusted)					
2000 Mar	2.3	2.3	4.6	7.7	5.4	4.0
Jun	3.9	1.7	5.7	7.6	6.6	5.6
Sep	4.8	-0.4	4.4	2.2	4.0	5.1
Dec	1.9	-0.5	1.4	-1.6	1.3	2.4
2001 Mar	2.2	0.0	2.2	-4.2	1.6	2.6

(a) Deflated by the implicit price deflator for private final consumption expenditure.

Source: ABS Cat. Nos. 5204.0 and 5206.0.

Table 5: Wages, labour costs and company income

Year	Average weekly earnings (survey basis)			Unit labour costs		Factor shares	
	Full-time adult ordinary time earnings ^(a)	All persons total earnings ^(a)	Non-farm average earnings (national accounts basis) ^(a)	Nominal ^(b)	Real ^(c)	Wage share ^(d)	Profit share ^(e)
	(Percentage change on preceding year)				(Index)	(per cent)	(per cent)
1997-98	4.2	3.1	3.5	0.3	96.1	53.8	24.1
1998-99	3.7	2.4	4.0	0.5	96.6	54.6	23.3
1999-00	3.3	2.2	2.8	1.3	95.5	54.1	24.2
Quarter	(Percentage change on preceding quarter - Seasonally adjusted)						
2000 Mar	1.3	1.3	0.8	0.5	94.7	53.5	24.7
Jun	1.5	2.3	0.7	0.3	94.7	53.8	24.6
Sep	1.7	1.7	1.1	1.5	94.1	53.7	25.3
Dec	0.6	-0.2	0.8	0.9	96.5	54.6	24.0
2001 Mar	0.8	1.7	1.6	0.9	95.7	54.2	24.7
Quarter	(Percentage change on year earlier - Seasonally adjusted)						
2000 Mar	4.1	2.8	3.2	1.8			
Jun	4.3	3.9	2.9	1.1			
Sep	6.1	6.8	3.4	2.3			
Dec	5.1	5.1	3.5	3.2			
2001 Mar	4.6	5.6	4.3	3.7			

(a) All numbers derived from seasonally adjusted data.

(b) Ratio of nominal hourly labour costs (non-farm compensation of employees, plus payroll tax and fringe benefits tax less employment subsidies, per hour worked by non-farm wage and salary earners) to average hourly productivity (real gross non-farm product per hour worked by all employed persons).

(c) Nominal unit labour costs as defined in footnote (a) deflated by the derived implicit price deflator for gross non-farm product. (Base for index: 1998-99 = 100.0).

Compensation of employees as a share of total factor income.

Gross operating surplus of corporations as a share of total factor income.

Sources: ABS Cat. Nos. 5204.0, 5206.0 and 6302.0.

Table 6: Prices

	Consumer price index ^(a)		Implicit price deflators ^(b)	
	All groups	All groups excl housing	Gross non-farm product	Household final consumption expenditure
Year	(Percentage change on preceding year)			
1996-97	1.3	2.3	1.8	1.7
1997-98	0.0	1.2	1.3	1.4
1998-99	1.2	1.2	0.3	0.5
1999-00	2.4	2.0	1.8	1.0
Quarter	(Percentage change on preceding quarter)			
1999 Jun	0.4	0.5	0.0	0.1
Sep	0.9	0.8	0.6	0.3
Dec	0.6	0.2	0.1	0.1
2000 Mar	0.9	0.9	1.3	0.4
Jun	0.8	0.8	0.3	0.5
Sep	3.7	3.1	2.5	2.8
Dec	0.3	0.4	-0.3	0.2
2001 Mar	1.1	1.2	1.1	0.8
Quarter	(Percentage change on a year earlier)			
1999 Jun	1.1	0.8	0.7	0.5
Sep	1.7	1.3	1.6	0.7
Dec	1.8	1.2	1.3	0.7
2000 Mar	2.8	2.4	2.0	0.8
Jun	3.2	2.7	2.3	1.2
Sep	6.1	5.1	4.2	3.8
Dec	5.8	5.3	3.8	4.0
2001 Mar	6.0	5.6	3.7	4.4

(a) Based on the weighted average of eight capital cities consumer price index.

(b) Quarterly figures are derived from seasonally adjusted data.

Sources: ABS Cat. Nos. 6401.0 and 5206.0.

Table 7: Labour market

	ANZ Bank job advertisements series	Employed persons			Unemployment		Participation rate (per cent)
		Full-time	Part-time	Total	Rate (per cent)	Persons ('000)	
Year ^(a)	(Percentage change on preceding year)						
1997-98	13.2	0.8	2.9	1.4	8.0	737.8	63.1
1998-99	15.2	1.6	3.7	2.2	7.4	691.7	63.1
1999-00	15.9	2.5	3.4	2.7	6.6	634.5	63.4
2000-01	-22.5	1.5	3.8	2.1	6.4	625.5	63.7
Quarter ^(a)	(Percentage change on preceding quarter - Seasonally adjusted)						
2000 Sep	-11.9	0.7	1.9	1.0	6.1	589.7	63.8
Dec	-8.4	-0.3	-0.6	-0.4	6.2	602.8	63.5
2001 Mar	-8.6	-0.2	1.2	0.2	6.5	631.7	63.6
Jun	-11.6	-0.5	2.6	0.3	6.9	675.7	63.9
Quarter ^(a)	(Percentage change on a year earlier - Seasonally adjusted)						
2000 Sep	-10.1	3.2	4.4	3.5			
Dec	-20.2	2.0	2.9	2.2			
2001 Mar	-25.2	1.2	2.9	1.6			
Jun	-34.8	-0.3	5.1	1.1			
Month	(Percentage change on preceding month - Seasonally adjusted)						
2000 Jul	-2.1	0.2	2.2	0.7	6.1	591.4	63.8
Aug	-4.1	0.1	1.1	0.3	6.1	595.6	64.0
Sep	-17.8	0.2	-1.5	-0.3	6.0	582.2	63.7
Oct	11.6	-0.3	0.6	-0.1	6.0	587.5	63.6
Nov	-7.6	-0.1	-1.7	-0.5	6.3	606.0	63.4
Dec	1.4	-0.3	1.8	0.2	6.3	614.8	63.5
2001 Jan	2.2	-0.2	1.6	0.3	6.3	616.9	63.6
Feb	-10.0	0.3	-1.3	-0.1	6.6	645.7	63.6
Mar	-7.9	0.2	-0.7	0.0	6.5	632.6	63.5
Apr	-3.2	-0.6	3.3	0.4	6.8	670.8	63.9
May	1.1	0.1	-0.6	0.0	6.9	675.7	63.9
Jun	-1.7	-0.6	1.5	0.0	6.9	680.5	63.8

(a) All figures refer to period averages.

Sources: ANZ Bank and ABS Cat. No. 6202.0.

Table 8: Current account

					Current account balance		Net income balance		Volume of		Terms of trade ^(a)
	Balance on merchandise trade	Balance on goods & services	Net income balance	Net current transfers	Percentage of GDP	Percentage of current account balance	Percentage of GDP	Exports of goods & services	Imports of goods & services		
Year	(\$ million)				(\$ million)	(per cent)	(per cent)	(per cent)	(\$ million)		
1997-98	-3546	-4738	-18091	-75	-22904	-4.1	79.0	-3.2	109752	-120528	105.4
1998-99	-12644	-14514	-18189	-778	-33481	-5.6	54.3	-3.1	111938	-126452	100.0
1999-00	-12955	-14452	-19346	70	-33728	-5.3	57.4	-3.1	122266	-142198	104.3
Quarter	(Seasonally adjusted)										
2000 Mar	-3035	-3481	-4682	-56	-8219	-5.1	57.0	-2.9	30880	-36386	106.3
Jun	-2380	-2628	-4919	-59	-7606	-4.7	64.7	-3.0	31765	-36222	106.0
Sep	-1791	-545	-4459	37	-4967	-3.0	89.8	-2.7	33061	-36270	108.1
Dec	-675	-871	-4832	1	-5702	-3.4	84.7	-2.9	32183	-35443	107.7
2001 Mar	720	212	-5056	128	-4716	-2.8	107.2	-3.0	32347	-34281	106.6
Month	(Seasonally adjusted)										
2000 Jun	-1108	-1168									
Jul	-407	-333									
Aug	-1112	-1219									
Sep	-465	744									
Oct	84	107									
Nov	-89	-109									
Dec	-563	-572									
2001 Jan	87	-57									
Feb	540	434									
Mar	498	377									
Apr	207	31									
May	261	248									

(a) The ratio of the implicit price deflator for exports of goods and services to the implicit price deflator for imports of goods and services, 1998-99 = 100, calculated on a National Accounts basis.

Sources: ABS Cat. Nos. 5368.0, 5302.0 and 5206.0.

Table 9: Australia's external liabilities

	Public sector gross debt	Private sector gross debt	Total gross debt	Net debt	Net external liabilities
(Levels of Australian foreign liabilities)					
(\$A million)					
As at end					
1998 Jun	86664	259317	345981	230212	298311
1999 Jun	75098	273733	348831	225292	324823
2000 Jun	63874	342021	405895	270398	341068
2000 Mar	67594	329950	397543	260294	329857
Jun	63874	342021	405895	270398	341068
Sep	68587	373348	441936	291077	351540
Dec	67514	389116	456631	292781	370366
2001 Mar	n.y.a.	n.y.a.	n.y.a.	316968	380919
(Percentage of GDP)					
As at end					
1998 Jun	15.3	45.9	61.3	40.8	52.8
1999 Jun	12.6	46.0	58.6	37.8	54.6
2000 Jun	10.1	54.1	64.1	42.7	53.9
2000 Mar	10.9	53.1	63.9	41.9	53.1
Jun	10.1	54.1	64.1	42.7	53.9
Sep	10.6	57.8	68.4	45.1	54.4
Dec	10.3	59.3	69.6	44.6	56.4
2001 Mar	n.y.a.	n.y.a.	n.y.a.	47.6	57.2

Source: ABS Cat. Nos. 5302.0 and 5206.0.

Table 10: Australia's income flows

	Public sector gross debt	Private sector gross debt	Total gross debt	Net debt	Net external liabilities
	(Gross and net interest payable, and net investment income)				
Year ended	(\$A million)				
1998 Jun	4391	9820	14211	11040	18046
1999 Jun	3513	9956	13469	10347	18132
2000 Jun	3434	12921	16355	12841	19209
Quarter ended					
2000 Mar	834	3459	4293	3346	4568
Jun	835	3526	4361	3390	4643
Sep	809	3608	4417	3457	4976
Dec	829	3698	4527	3465	4430
2001 Mar	n.y.a.	n.y.a.	n.y.a.	3585	4890
Year ended	(Percentage of exports of goods and services)				
1998 Jun	3.9	8.6	12.5	9.7	15.9
1999 Jun	3.1	8.9	12.0	9.2	16.2
2000 Jun	2.7	10.3	13.0	10.2	15.3
Quarter ended					
2000 Mar	3.0	10.2	13.1	10.4	16.1
Jun	2.7	10.3	13.0	10.2	15.3
Sep	2.5	10.2	12.7	9.9	14.0
Dec	2.3	10.1	12.4	9.6	13.1
2001 Mar	n.y.a.	n.y.a.	n.y.a.	9.4	12.9

Source: ABS Cat. No. 5302.0.

Table 11: Selected economic indicators

	Indices of unit labour costs & prices adjusted for exchange rate changes ^{(b)(c)} (1998-99=100)								
	Price based				Unit labour cost based ^(f)				
	Inventories to total sales ^(a)	Imports to domestic sales ^(a)	CPI based ^(d)	GDP deflator based ^(e)	Components of unit labour cost index			Saving ratio ^(g)	Trade weighted index ⁽ⁱ⁾
					Nominal unit cost index	Nominal exchange rate			
Year									
1997-98	0.860	0.349	109.1	110.2	110.0	100.6	109.3	2.1	58.3
1998-99	0.860	0.351	100.0	100.0	100.0	100.0	100.0	2.3	56.0
1999-00	0.861	0.376	98.6	98.8	98.0	100.2	97.9	2.5	55.2
Quarter ^(h)	(Seasonally Adjusted)								
2000 Mar	0.853	0.376	99.1	99.7	98.3	100.2	98.2	2.0	55.4
Jun	0.846	0.397	93.6	94.3	93.5	100.9	92.7	3.2	52.5
Sep	0.842	0.399	92.7	95.0	93.7	102.7	91.3	4.5	52.1
Dec	0.865	0.420	87.0	89.0	88.0	102.7	85.7	2.3	49.6
2001 Mar	0.842	0.388	88.7	91.0	89.8	103.5	86.8	0.7	50.0

(a) ABS National Accounts measure. All numbers derived from seasonally adjusted data.

(b) A discussion of these indices and detailed figures covering the period from the September quarter 1970 to the March quarter 1983 may be found in a supplement to the July 1983 Roundup of Economic Statistics titled 'International Comparisons of Relative Price and Cost Levels'.

(c) The weights used are based on a 3 year moving average of Australia's imports from the US, Japan, UK and Germany. The four countries are the source of about 45 per cent of Australia's merchandise imports. Observations are quarterly averages. A rise (fall) implies a deterioration (improvement) in Australian costs and prices relative to the four countries above after adjusting for exchange rate changes.

(d) The CPI based index is the ratio of the Australian Consumer Price Index to the weighted geometric average of the exchange rate adjusted consumer price indices of Australia's four major import sources.

(e) The GDP deflator based index is the ratio of the GDP deflator for Australia to the weighted geometric average of the exchange rate adjusted GDP deflator of Australia's four major import sources.

(f) The unit labour cost based index is the ratio of unit labour costs in the non-farm sector of the Australian economy to the weighted geometric average of the exchange rate adjusted unit labour costs in the business sector for Australia's four major import sources.

(g) Ratio of household saving to household disposable income.

(h) Quarterly data are seasonally adjusted except for the trade weighted index and the nominal exchange rate.

(i) Period Average, May 1970 = 100.

Sources: ABS Cat. Nos. 5206.0 and 5302.0.

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The net income deficit over the past two decades
Australian net private wealth |
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